ANALYSIS OF FINANCIAL PERFORMANCE OF THE COMMERCIAL BANKS IN THE GULF COOPERATION COUNCIL (GCC) COUNTRIES

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By

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ABSTRACT

Research on performance of banks in the Gulf Cooperation Council (GCC) countries is very limited despite being one of the key global banking markets, main suppliers of oil around the globe, and economies that attract significant foreign direct investment (FDI). Hence, this study provides new insight on bank performance using bank-specific, macroeconomic, and financial structure indicators. Using the generalized method of moments dynamic model estimation, this study analyses the performance of banks in GCC countries over the period from 2000-2015. This study finds that the performance of foreign banks is better than that of domestic banks and the performance of listed banks is better than that of unlisted banks. The results show that there is a significant direct impact of oil price shocks, FDI inflows, and financial crisis on bank performance. It also finds that the bank-specific factors, macroeconomic factors and financial structure indicators are significant determinants of bank performance. In terms of theories, the study finds evidence to support the moral hazard theory, competition-stability theory, defensive expansion theory and traditional intermediation theory (except Bahraini banks). The results are also robust when controlling for the Arab Spring transition period as well as when using alternative risk and bank competition measures. The results show that Arab Spring increases bank risk. The findings of this study have major policy implications. Gulf authorities need to enhance bank protection against risk by improving the application of Basel III especially during the crisis period like the Arab Spring. Gulf Banks also need to track the changes in oil prices as this also have impact on bank performance. There is a need for some ease of restrictions on the entry of foreign banks in the domestic market in the Gulf countries (except for Bahrain) as it can enhance bank performance.

Keywords: bank performance, macroeconomic and financial structure indicators, financial crisis, Arab Spring, GCC countries.

ABSTRAK

Kajian untuk menilai prestasi bank di negara anggota Majlis Kerjasama Negara Teluk (GCC) amat terhad walaupun negara-negara ini merupakan antara pasaran perbankan utama dunia, pembekal utama minyak di seluruh dunia, dan memiliki ekonomi yang dapat menarik pelaburan langsung asing (FDI) yang signifikan. Oleh itu, kajian ini memberikan wawasan baharu mengenai prestasi bank menggunakan penunjuk spesifik untuk bank, makroekonomi dan struktur kewangan. Dengan menggunakan model anggaran dinamik "*generalized methods of moments*", kajian ini menganalisis prestasi bank di negara GCC sepanjang tempoh 2000-2015. Kajian mendapati bahawa prestasi bank asing lebih baik berbanding bank domestik dan prestasi bank tersenarai adalah lebih baik berbanding bank yang tidak tersenarai. Dapatan kajian menunjukkan bahawa terdapat kesan langsung yang signifikan dari perubahan harga minyak, aliran masuk FDI, dan krisis kewangan terhadap prestasi bank. Kajian juga mendapati bahawa faktor spesifik bank, faktor makroekonomi dan penunjuk struktur kewangan adalah penentu yang signifikan bagi prestasi bank. Dari segi teori, kajian ini menemui bukti untuk menyokong teori bahaya moral, teori persaingan-kestabilan, teori pengembangan pertahanan dan teori pengantaraan tradisional (kecuali bank-bank di Bahrain). Dapatan kajian juga tidak berubah apabila tempoh peralihan *Arab Spring* (Kebangkitan Arab) dikawal serta apabila menggunakan ukuran-ukuran alternatif untuk risiko dan persaingan bank. Dapatan kajian menunjukkan bahawa *Arab Spring* meningkatkan risiko bank. Penemuan kajian ini mempunyai implikasi dasar utama. Pihak berkuasa negara Teluk perlu meningkatkan perlindungan bank terhadap risiko dengan meningkatkan penerapan *Basel III* terutamanya dalam tempoh krisis seperti *Arab Spring*. Bank-bank negara Teluk perlu juga mengesan perubahan harga minyak kerana hal ini turut memberikan kesan terhadap prestasi bank. Selain itu, terdapat keperluan untuk meringankan sekatan kemasukan bank asing ke dalam pasaran domestik negara-negara Teluk (kecuali Bahrain) kerana kemasukan ini dapat meningkatkan prestasi bank.

Kata kunci: prestasi bank, penunjuk struktur ekonomi makro dan kewangan, krisis kewangan, *Arab Spring*, negara GCC

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Abdulaziz Yousef Hazzaa Saif Al-Yousfi

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GCC	The Gulf Cooperation Council
UAE	United Arab Emiratis
MNCs	Multinational Corporations
MNBs	Multinational Banks
MNEs	Multinational Enterprises
SMEs	Small and Medium Enterprises
IMF	International Monetary Fund
WDI	World Development Indicators
WTO	World Trade Organization
OPEC	Organization Of Petroleum Exporting Countries
MENA	Middle East and North Africa
MSCI	Morgan Stanley Capital International
IPOs	Initial Public Offering
NBFIs	Nonbank financial institutions
SAMA	Saudi Arabia Monetary Agency
KIA	Kuwait Investment Authority
CEE	Central and Eastern European Countries
SFA	Stochastic Frontier Approach
FSAs	Firm-Specific Advantages
HRSAs	Home Region-Specific Benefits
SCP	The Structure–Conduct–Performance Theory
RMP	Relative Market Power Hypothesis
ESX	X-Efficiency Hypothesis
NEIO	New Empirical Industrial Organization
M&As	mergers and acquisitions
P&As	Purchases and Assumptions
GPI	Gross Personal Income
CPI	consumer price index
UNCTAD	United Nations Conference on Trade and Development
WTI	West Texas Intermediate
ROA	Return on Assets
ROE	Return on Equity
NIM	Net Interest Margin
Tobin's Q	Measure of The market-Based Shareholders Value
SDROA	Standard Deviation of ROA
SDROE	Standard Deviation of ROE
COST	Cost-Income-Ratio
NIR	Non-Interest Revenues

OPC	Opportunity Cost
LR	Liquidity Risk
DMDEP	Demand Deposits Ratio
MR	Market Risk
NPLs	Non-performing Loans
LLPs	Loan Loss Provision
CAR	Capital Adequacy Ratio
LOAN	Loan to Total Assets
LNGRTH	Loan Growth
SIZE	Bank Size
OBSs	Off-Balance Sheet Activities
GDP	Real GDP Growth
INF	Inflation Rate
RIR	Real Interest Rate
FDI	Foreign Direct investment Inflows
OIL	Oil Price shocks
HHI	The Herfindahl-Hirschman Index of Market Concentration
MARKE_CAP	Stock Market Capitalization to GDP
DCPS	Domestic Credit to Private Sector to GDP
LISTED	Listed Banks as dummy variable
FOREIGN	Foreign bank's ownership as dummy
CRISIS	Global Financial Crisis as dummy variable
COUNTRY	Country Dummies
ROAA	Average Return on Assets
ROAE	Average Return on Equity
SDROAA	Standard Deviation of Average ROA
SDROAE	Standard Deviation of Average ROE
CR5	Five Largest Bank Concentration Ratio
Lerner	Lerner Index of Market Power Measure
Boone	Boone Indicator of Bank Competition Measure
ZROE	Z-score measures based on ROE a measure of default risk
ZROA	Z-score measures based on ROA a measure of default risk
ZROA1	Z-score measures based on ROA a measure of bank portfolio
ZROA2	Z-score measures based on ROA a measure of leverage risk
ArabSpring1	Arab Spring Revolution Period
LLRs	Loan Loss Reserves
VROA	Variance of ROA
VROE	Variance of ROE
GMM	Generalized Method of Moments

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The financial services commercial banking sector is one of the most important service sectors in a nation's economy (Huang, Chiang, & Tsai, 2015; Saci, Giorgioni, & Holden, 2009). Banks provide a safe linkage between the savers and the borrowers. Therefore, government and the central bank of any country are always concerned to ensure continuing strength and stability of the country's banking and financial system for capital formation, innovation, the creation of job opportunities (Huang *et al.*, 2015). There are five key elements in the financial climate of any economy viz., money; financial institutions; financial tools; and system and rules (Karim & Alam, 2013; Saif-Alyousfi, Saha, & Md-Rus, 2017a).

Banks are the main component of the financial system of any country and are also active players in financial markets of any a nation (Dhanabhakyam & Kavitha, 2012). Efficiency in the financial performance of banks is, therefore, the key to ensuring economic growth and development. Analysis and evaluation of bank performance can identify the inherent strengths and also weaknesses in the financial position of banks. According to, Rachdi (2014) evaluation of bank performance is important for all parties: bank managers, borrowers, depositors, and regulators. Soundness in the financial health of banks also attracts shareholders interest to strengthen their capital base to bring it in line with the regulatory and prudential requirements.

Globalization and internationalization initiatives of the government of many countries have opened up the domestic banking sector by allowing foreign banks to enter domestic markets and to open branches and provide a broader range of banking services (Dekle & Lee, 2015). According to Hassan, Sanchez, and Safa (2013), globalization initiatives is not only to allow foreign banks to invest in the local markets but it also to ensure an increase in the growth of international trade in financial goods and services.

Chen and Liao (2011) argue that financial liberalization initiatives of various countries and improvements in the supervisory framework have benefited both domestic as well as foreign banks. At the domestic level, globalization enhances the competitiveness of banking and financial markets, economic performance of creditors, reduce the operation costs of banks and financial intermediation, reduce the net interest margin (NIM) creating pressure on banks to become more efficient. At the global level, globalization has allowed foreign banks to expand their business in the emerging and developing market economies (Chen & Liao, 2011; Claessens & Horen, 2011; Dekle & Lee, 2015). In addition, entry of foreign banks can help in improving the institutional and regulatory framework in a nation (Mishkin, 2009).

Bruno and Hauswald (2014) argue that contrary to the perception that foreign banks impede the real economic activities in the economy by constraining the availability of funds to local firms, the presence of foreign banks reduces financial constraints and facilitate economic growth in the developing economies. Claessens and Horen (2011) argue that in developing economies, the presence of foreign banks have an adverse effect on the creation of domestic credit. Demirgüç-Kunt, Laeven, and Levine (2004) and Herrero and Pería (2005) argue that entry barriers and limited development in a country can be lead to reduce the effectiveness of foreign banks. In the recent years, developing countries have provided greater access to foreign banks under the assumption that their presence in the local economy would increase the supply of credit availability credit thereby improve the efficiency of the banking system (Lin, 2011).

According to the survey of global industry revenues and profit in 2006, the banking sector has the highest revenue and profit compared to other industry which has amounted to USD 788 billion (Dietz, Reibestein, & Walter, 2008). Profitability of the global banking sector also has witnessed strong growth during 2009-2011. The profitability of the top 1000 banks in the world increases by USD 553 billion between 2008 and 2012 and further increases by 4.6 percent in 2013. In 2014, total profits of the 500 largest banks worldwide are about USD 650 billion, primarily due to the efforts taken by the banks to reign in their costs and disposition of non-core assets and unprofitable assets (Dietz *et al.*, 2014; Yadav & Suvarna, 2013). This indicates that the role of profitability in the banking sector is very important and the impact of the banking sector on the capital market and the entire economy is more significant, which makes these questions are of vital importance.

Importance of foreign direct investment (FDI) for emerging markets and developing economies arise from the fact that entry/presence of multinational corporations (MNCs) and multinational banks (MNBs) in the host country have positive effect on the productivity of the domestic firms due to increased competition and technology diffusion (Lee & Rugman, 2012; Bhaumik & Gelb, 2005). Alfaro, Kalemli-ozcan, and Sayek (2009), Borensztein, De Gregorio, and Lee (1998), Cipollina, Giovannetti, Pietrovito, and Pozzolo (2012), and Meyer and Sinani (2009) propose that under the right conditions like developed financial system and availability of human capital, FDI can raise employment, capital formation, exports, and environmental protection in the host countries. It also leads to technology transfer and the domestic firms also gains from productivity spillovers due to backward and forward linkages as domestic firms imitate multinational enterprises (MNEs), or employ workers trained by MNEs. Bruno and Cipollina (2014a, 2014b) argue that FDI can immediately result in technology transfer to branches of the foreign entity or totally new local firms' set-up during the process of FDI. The indirect impact may be due to horizontal (intra-industry) or vertical (inter-industry) effect. The vertical impact may be further divided into backward linkages (upstream domestic suppliers) and forward linkages (downstream domestic customers).

FDI inflow into developing economies in the world have risen dramatically since the beginning 1990s and has become more important after the period of financial crisis 2008. UNCTAD Report 2014 shows that developing economies presently attracts more than half of global inflows of FDI: it has amounted USD 682 billion out of USD 1228 billion in the world at the end of 2014. FDI to developing economies amounted to 55.5 percent of global inflows in 2014, of which Asia has accounted for about 68.5 percent (USD 465 billion) (UNCTAD, 2014).This increase may be due to mergers and acquisitions by foreign MNCs.

FDI performance index of Gulf Cooperation Council (GCC) countries has ranked amongst the first 40 countries in the world in 2012 (Table 2.4)[1]. The results of these efforts are reflected in numbers. FDI in the six GCC countries grows from USD6.1 billion in 2003 to USD62.6 billion in 2008, more than a tenfold increase. However, in recent years, the rate of FDI into the GCC has declined — from USD42.1 billion in 2010 to USD21.8 billion in 2014, a fall of almost 48.5

[1] Table 2.4 is on page 57
[2] Table 2.4 is on page 57
[3] Table 2.11 and Figure 2.16 are on page 85 and page 88 respectively.
[4] Figure 2.17 is on page 91.

[5] Table 2.8 is on page 76.
[6] Figure 2.16 is on page 88.
[7] Figure 2.15 is on page 84.

percent. The GCC's share of world FDI has dropped to 1.6 percent, compared to a high of 4.2 percent five years ago (Table 2.3)[2]. Some of the declines can be explained by the lower risk appetite of foreign corporations in the wake of the global financial crisis, and the drying up of credit. Yet, a part of the decline may be explained by a shift in how Gulf governments think about foreign investment (Al-Ammari, 2014) or it is may due to the impact of Arab spring revolutions on Gulf economies.

Banks are highly correlated because of their interlinking through the payment system and their commonality in their function. Failure of a bank, therefore, does not only affect the bank's investor or owners, but also all other banks and other companies linked to that bank (Kumbirai & Webb, 2010). In the era of globalization, the failure of the large bank in any country do not only have a negative effect on the development and economic growth in the home of the country but can extend fast and wide across countries; this is why the financial crisis which has originated in the USA has spread across the globe with its adverse effect on the global economy (Ongore & Kusa, 2013).

Around the world, many banks have failed during the financial crisis period and the profitability of the banking sector has reduced significantly. The financial crisis also lead to a major overhaul of the regulatory framework of banks and consequent stricter capital adequacy requirement (Maghyereh & Awartani, 2014b). Agnello and Sousa (2012) stress that global financial crisis has shaken the banking system worldwide and has forced governments and central banks in the individual country to intervene and pay special attention to maintaining the stability of the financial system of the country concerned.

[2] Table 2.4 is on page 57

The financial crisis raises concerns about the entry of foreign banks and the often claimed beneficial effects of such access on countries' economy. Following the collapse of Lehman Brothers bank in 2008 when global liquidity tightened on the global economy, banks have reduced their international exposure, particularly in the emerging and developing market countries. During financial crisis 2007-2008, international bank loans fell by 80 percent, from USD500 billion to USD100 billion (Dekle & Lee, 2015). This decrease has contributed to the decline the level of production in many economies after 2008, especially in the emerging market economies.

After a prolonged phase of deregulation, globalization, and innovation in financial instruments products and services, banking sector across many developed parts of the world is on the brink due to the global financial crisis. In view of major changes in the operating environment and market developments across the globe in the recent years, Mokni and Rachdi (2014) and Rosentha (2011) argue that there is a need for a fresh evaluation of the financial performances of banks.

Evaluation of financial performance enables the shareholders, regulators, and other stakeholders to assess their firm's performance. It also indicates how efficiently the banks' management invests customers' deposits, uses shareholders' equity and other liabilities in their effort to generate the profits. Evaluation results also provide information to the management of banks to initiate an appropriate action plan to improve bank performance (Lin, Liu, & Chu, 2005).

1.2 GCC Economy Overview

The GCC region is basically a custom union consisting of six members, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emiratis (UAE), four of them are oil-exporting countries and are amongst the decision-makers in Organization of Petroleum Exporting Countries (OPEC) (Srairi, 2011; Fernandez & Sahawneh, 2010; Hammoudeh & Choi, 2007; Islam, 2003). Furthermore, the GCC countries classify as the largest producer and exporter of petroleum, where a leading role in the world plays in general and OPEC in particular. GCC region has the largest oil reserve in the world (486.8 billion barrels), representing 35.7 percent of the world's total oil reserve. While the OPEC accounts for 70 percent of the world's total proved crude oil reserve, GCC region accounts for 52.1 percent of the OPEC total oil reserves and 49.1 percent of the OPEC total crude oil production. In addition, oil and gas in GCC countries represent about 41percent of its GDP, 63 percent of total government's revenue as well as 73 percent of total export earnings (Fernandez & Sahawneh, 2010; www.gulfbase.com).

During the period of 2002-2008, the GCC economy has tripled in size. At the end of 2008, the nominal GDP in GCC economies grow at a rate of approximately 29 percent to USD1077 billion compared to USD836 billion in 2007 with a growth rate of about 14 percent (Tompkins, 2013). The increase in global oil demand, privatization initiatives in GCC economies, political reform, and strength in the financial position of firms contributed to the economic performance of economies. In 2009, however, global financial crisis, which began in 2007 and consequent drop in global oil demand, adversely has affected the GCC economies; in 2007, the nominal GDP drops by 19.3 percent to reach USD868.5 billion. With the gradual ease in the crisis position, and the nominal GDP increase by 17.6 percent and 9.5 percent respectively during 2010 and 2013 respectively to reach USD1118 billion (Gulf annual reports, 2014).

Non-oil production in GCC countries has increased since 2000; however, progress in the direction of production diversification has been simple. Non-oil GDP growth rate averaged 6.85 percent during the period of 2000-2013 (IMF, 2014). Also, the share of non-oil output in real GDP of GCC rises by 12 percentage points to 70 percent, this mainly due to the UAE and Saudi Arabia (Callen, Cherif, Hasanov, Hegazy, & Khandelwal, 2014). However, Gruss (2014) and IMF (2014) indicate that high rates of non-oil GDP growth are essentially driven by concurrent growth in oil prices. Moreover, the rising of oil price from the 2002-2013 enables the government to finance spending resulting in strong growth in consumption demand and low productivity in the non-tradable domestic sector. IMF's regression estimates 2014 suggest that there has been a modest progress towards real diversification of output.

1.3 Banking Industry in GCC Countries

Over the last few decades, the banking sector in the GCC economies has witnessed rapid changes. Liberalization and globalization of financial markets, financial innovation, rapid progress in information technology revolution, and changes of customer level of preferences have put pressure on the banking sector and adjusted by the development of banking technology (Al-Jarrah & Molyneux, 2007; Carvallo & Kasman, 2005). Due to these changes, most of the Arab countries have introduced a lot of financial reform in their banking and financial sector which started from the1980s. Iimi (2004) Arab economic growth depends on the banking sector, which is the main source to cover financial needs and also the major financial intermediary to manage the investments and funds.

All GCC economies, except Kuwait and Bahrain, have started with a low level of financial depth since 1980. GCC economies have recorded significant and accelerated growth in banking habits since then. Their attempt to nurture the growth of financial market resulted in substantial increase in financial depth (Islam, 2003; Srairi, 2011). The banking sector in GCC countries consisting of domestic as well as foreign banks has a greater role in speeding up the economic growth and development.

According to Al-musalli and Ismail (2012) and Zeitun (2012) the GCC region has a significant financial sector with well-capitalized profitable banks. GCC banking sector also has a corporate governance regime that is more significant than other sectors in the GCC economies (Saidi & Kumar, 2008). Loghod (2010) indicates that the banking sector in the GCC region is the second largest contributor to the GDP in the region after the oil sector, as well as one of the main of the non-oil GDP growth driver in these economies.

The banking sector in GCC countries has a commanding position in the financial sector (Al-Hassan, Khamis, & Oulidi, 2010). Given the high dependency of the GCC economies on oil revenues, Al-Obaidan (2008) argues that banking sector is one of the diversification options available to them. In line with their commitments to the World Trade Organization (WTO), GCC economies have reduced the barriers to entry of foreign banks and have encouraged foreign and domestic banks to compete in their countries.

The economy of GCC countries shares a lot of commonalities. All GCC economies are oil exporters and follow fixed exchange rate mechanism which exposes them to the volatility of global oil price. The similarities in the drivers of these economies also reflect the vulnerabilities of their financial system to common shocks. GCC countries have one of the largest banking markets in the Arab and the Middle East and North Africa (MENA) countries and the GCC banking sector represents the main source of financial intermediation; dominating on average 82 percent of the total assets of the financial system in the region over the period 2000-2015 (BankScope). Moreover, the banking stocks in the GCC region are also the most heavily traded stocks in the GCC stock markets (Abraham, 2013).

Furthermore, over the last three decades, GCC banking sector has witnessed a significant structural change through applying numerous policies that encourage financial restructuring and financial liberalization as well as removal of barriers to investment in the financial sector in order to enhance the soundness of banks and make them more competitive. Moreover, GCC banks are subjected to wide-ranging reforms, like applying Basel II regarding capital adequacy, removal the controls of interest rate, and enhancing banking supervision and regulations (Maghyereh & Awartani, 2014b). In addition, research in Asian banks is very important since they are the principal financing source for Asian private sector businesses (Lee & Hsieh, 2013). There is no previous literature on a comprehensive analysis of the financial performance of banks in GCC countries (Al-Hassan *et al.*, 2010). An analysis of banking sector in GCC countries is necessary to identify the strengths and weakness as well as the gaps and understand how the financial systems in GCC countries can be affected by the changes in the GCC economic conditions. A detailed analysis of the banking sector in GCC countries is presented in Chapter two.

1.4 Problem Statement

In recent years, several factors have contributed to the competition in the GCC banking sector which poses significant challenges to banks and have contributed to systemic instability in the banking sector in the GCC countries. Globalization, frequent changes in supervisory framework, the advent of technology in banking and financial services industry and liberalization of entry of foreign banks in home countries are some of the contributing factors (Saif-Alyousfi, Saha, & Md-Rus, 2017b; Ghosh, 2014; Maghyereh & Awartani, 2014a, 2014b; Rachdi, 2014; Abraham, 2013; Arouri, Hossain, & Muttakin, 2011; Alsarhan, 2009; Turk-Ariss, 2009; Unite & Sullivan, 2003). Thus, it is reasonable to suppose that all these changes must have had some effect on GCC banks' performance.

Given this backdrop, evaluation of the financial performance of commercial banks is extremely relevant and crucial not only for investors and depositors but also for the regulator and the policy planners in those countries. Golin and Delhaise (2012) indicate that adequate profitability of banks is very important in order to maintain bank solvency and to enable them to survive under an unstable economic environment. The relationship between economic growth and bank profitability is also well documented (Mokni & Rachdi, 2014). Flamini, McDonald, and Schumacher (2009) have argued that weak economic performance exposes banks to risk as low economic growth promotes the deterioration in the credit quality and increases the probability of loan defaults. Banks in any country have a commanding role to ensure economic growth in general and in the financial sector, in particular, since efficient channelization of savings to investment is an essential prerequisite to growth (Al-Hassan, Khamis, & Oulidi, 2010). Banking insolvencies and bankruptcy, in turn, have significant negative fall-out on the economic development in a country (Bolt, de Haan, Hoeberichts, van Oordt, & Swank, 2012; Levine, 1997; Levine & Zerves, 1998; Pasiouras & Kosmidou, 2007). Therefore, a clear knowledge and understanding of the fundamental factors which affect banks' profitability is crucial and necessary not only for the shareholders, managers, depositors and borrowers of the banks but for several interested parties like governments, regulators, bankers' associations, central banks, Ministry of Finance, and other regulatory authorities in any country. Clarity regarding these driver variables will enable various stakeholders in the banking sector to assess how they could affect the health of banks with the changes in the economic conditions (Sun & Chang, 2011).

Furthermore, even when the solvency is high, lower profitability decreases the ability of banks to face adverse economic shocks that would ultimately affect the solvency of banks. Given an economic environment, profitability of banks reflects how well they are run. Profitability of banks reflects the efficiency and quality of banks' management, their competitive strategies, robustness in their risk management capabilities and also shareholders' behavior. High level of profitability apparently speaks good about the health of banks but it can also be the result of higher market concentration, less competition, and higher market power or higher economic growth. Low profitability, on the other hand, may lower the interest of investors in bank stocks thereby lower the market access to raise capital which is vital in determining the ability of banks in promoting economic growth through their lending activities. The GCC banks are apparently in the latter of the two states, as mentioned above.

The average NIM and return on equity (ROE) of banks in GCC region for the 2000–2007 (pre-crisis), 2008-2009 (during the crisis) and 2010-2015 (post-crisis) periods are 3.2 and 19.4 percent, 3.1 and 12.8 percent, and 3.1 and 13.6 percent respectively, lower than those values in other Asian economies such as East Asia excluding GCC countries (4.8 and 22.5 percent, 4.6 and 15.2 percent, and 3.9 and 17.8 percent respectively); South Asia region (4.1 and 25.0 percent, 4.8 and 25.4 percent, and 4.6 and 23.4 percent respectively). The said ratios are also much lower than, for instance, the average NIM and ROE of Turkey (5.8 and 33.1 percent, 5.4 and 23.8 percent, and 4.3 and 18.7 percent respectively), developing countries in Latin America and Caribbean (6.5 and 23.2 percent, 5.8 and 21.6 percent, and 5.7 and 18.6 percent respectively); as well as the average of the global banks (4.4 and 22.3 percent, 4.3 and 16.5 percent, and 3.8 and 14.4 percent respectively) over the same periods (World Bank, 2016). Therefore, lower profitability of GCC banks compared to other regions raises the question about knowing the factors that affect the profitability or the performance of banks in the GCC economies.

Assessing the effect of foreign banks in the domestic markets in developing and emerging countries is an important issue for academic research as well as policy makers (Jeon, Olivero, & Wu, 2011; Rajan & Gopalan, 2009; Yildirim & Philippatos, 2007). In spite of various literatures on foreign ownership and bank performance, the evidence is mixed and inconclusive. Moreover, most of these studies are carried out in a developed economy like U.S.A and European countries. Thorne (1993) argues that the presence of foreign banks in the local market has a positive effect on the domestic market due to the significant expertise, high skills, and the know-how. However, no studies have been done in the Middle-Eastern countries in general or in GCC countries in particular despite the presence of 117 foreign banks compared to 113 domestic banks in GCC countries. This study attempts to fill this gap in the literature by examining the performance of both domestic and foreign banks in GCC countries.

Several studies such as Chen and Liao (2011), Jeon *et al.* (2011), Lin (2011), and Tsai, Chang, and Hsiao (2011) find that foreign banks perform better than domestic banks around the globe. They argue that strong performance of foreign banks in home countries exerts a positive influence on the performance of its subsidiaries abroad. In addition, the weakness in the competitive environment in the domestic banking sector tends to increase the profitability of foreign banks. Similar conclusions have been made by Goldberg, Dages, and Kinney (2000), Crystal, Dages, and Goldberg (2002), and Peria and Mody (2004) for U.S.A and Latin America, Laeven (2005), Yokoi-Arai and Kawana (2007), and Rajan and Gopalan (2009) for Asia, Lin and Zhang (2009) and Xu (2011) for China, and Unite and Sullivan (2003) for Philippine. In contrast, Sturm and Williams (2004) find that domestic banks perform better than foreign banks, this is due to the fact that increased domestic market incumbency reduces the performance of foreign banks in the host market. Rosengren and Kasirye (1999), Claessens *et al.* (2001), and Peek and Sathye (2001) find that foreign banks suffer from "deprivation" compared to domestic banks in developed countries. However, Mian (2003), Crystal *et al.* (2002), and Vennet (1996) find no significant differences in performances between foreign and domestic banks. It is argued that the main cause for this finding is that the foreign banks have little knowledge about the home country when they make the investment (Deyoung & Nolle, 1996; Mahajan, Rangan, & Zardkoohi, 1996). The possible reason for these conflicting results may lie in the fact that empirical analysis of foreign banks' performance has mainly focused on USA and European

Union banks operating abroad. Moreover, cross-country studies focusing on the Middle Eastern countries especially the GCC countries have not been reported in the literature.

In general, the banking literature finds that bank performance depends on bank-specific factors, macroeconomic factors and financial structure indicators (Khediri, Charfeddine, & Youssef, 2015; Fu, Lin, & Molyneux, 2014a; Jara-Bertin, Jose, Moya, & Perales, 2014; Liang, Xu, & Jiraporn, 2013; Soedarmono, Machrouh, & Tarazi, 2013; Barry, Lepetit, & Tarazi, 2011; Chen & Liao, 2011). In terms of bank-specific factors, Caprio, Laeven, and Levine (2007), Dietrich and Wanzenried (2011, 2014), and Roman and Tomuleasa (2012) argue that efficient cost management is a prerequisite to improving the profitability of banks in any country. On the other hand, an increase in expenses may be related to an increase in the size of banking activities and, therefore, it will increase the income (Saghi-Zedek & Tarazi, 2014).The cost to income ratio (COST) of GCC banks ranged between 38 to 90 percent with an average of 56 percent compared to the average of the said ratio in China (38.24 percent); MENA (excluding GCC countries) (45.91 percent); India (47.44 percent); East Asia and Pacific (excluding GCC countries) (47.77 percent); South Asia (48.07 percent); Euro area (55.67 percent); and World (54.68 percent) during the period 2000-2015 (BankScope, 2016). Therefore, the higher the COST of banks in GCC region compared to other regions as well as the significant divergence in the value of this ratio raises the question about the efficiency differences of banks in the GCC region.

The high percentage of non-interest revenue (NIR) in the revenue stream of the GCC banks also create an issue to be studied. NIR ranged between 35 to 81 percent of gross income of GCC banks with an average of 52 percent compared to 14.18 percent for Chinese banks; 27.91 percent for banks in South Asia; 29.45 percent for banks in East Asia and Pacific (excluding GCC countries); 30.69 percent for Indian banks; 31.96 percent for banks in the MENA region (excluding GCC countries); 38.31 percent for Euro area; and 35.83 percent for the World over the period 2000-2015. The off-balance sheet activities to total assets (OBSs) of GCC banks also ranged between 15 to 27 percent (average 20 percent) during the same period (BankScope, 2015). Diversification in the sources of income depend on the bank's expertise and strategic objectives (Goddard, Molyneux, & Wilson, 2004b; Goddard, McKillop, & Wilson, 2008; Lepetit, Nys, Rous, & Tarazi, 2008; Mirzaei, Liu, & Moore, 2013; Saghi-Zedek & Tarazi, 2014). DeYoung and Rice (2004) and DeYoung and Roland (2001) provide three explanations: they argue that there is stiff competition in NIR generating activities which calls for high level of expertise in order to be successful in pursuing strategies to augment NIR. Moreover, fixed costs associated with fee-based activities and lack of regulation on NIR activities, require focused attention of the top management of banks. Casu and Girardone (2005) argue that non-traditional activities are increasingly important and failure to account for them will lead to biased conclusions.

As opportunity costs (OPC), which measured by total reserve to total assets, increase the cost of funds beyond the expected rate, banks gain NIM by compensating for these costs (Saunders & Schumacher, 2000). Chen and Liao (2011) and Naceur and Omran (2011) argue that a positive relationship of OPC with bank performance reflects that banks make customers pay a price above the OPC of keeping reserves (measured in terms of liquid reserves to total assets). Osuagwu (2014) argues that a negative relationship indicates that as banks hold more reserves the level of profitability declines. In the case of GCC banks, the OPC has increased sharply from 1.5 percent in 2000 to 8.8 percent in 2015 (around fivefold). Moreover, the NIM of GCC banks fell from 2.5 percent to 1.9 percent during this period (BankScope, 2015). Thus, there is a need to examine the impact of OPC on bank performance in GCC countries.

The sharp increase in loans to total deposits or liquidity risk (LR) of the GCC banks also creates an issue to be studied. Banks in GCC countries seem to keep low levels of liquidity compared to international standards, which argue that LR ratio of banks should be less than 100 percent (discounting for capital requirements, banks may want this ratio to be in the range of 75 percent to 90 percent). LR ratio of banks in GCC countries are extremely high (See Table 2.11, Figure.2.16)[3], a benchmark set by the international standard to indicate excessive lending (QCB, 2009). A lower LR ratio increases the liquidity of bank but it reduces the profitability of banks because liquid assets are usually related to lower rates of return (Akhtar, Ali, & Sadaqat, 2011; Chen & Liao, 2011). Fu, Lin, and Molyneux (2014b) and Molyneux and Thornton (1992) argue that the negative effect may due to resource immobilization, representing a significant cost to institutions. The high percentage of LR ratio in GCC banks raises the question of the impact of LR on banks performance in these countries.

Commercial banks in GCC countries depends more on stable deposits as their major source of funds. An insignificant percentage of bond financing obscures the ability of banks in managing the maturity mismatches between assets and liabilities in their balance sheet (See Figure 2.16). Demand deposits to total deposits (DMDEP) of GCC banks ranged between 15 to 65 percent with the average 33 percent during the period 2000-2015 (See Table 2.11). Due to the higher the short term deposit, lower is the cost of deposit and consequently, higher is the bank profitability

[3] Table 2.11 and Figure 2.16 are on page 85 and page 88 respectively.

(Jara-Bertin *et al.*, 2014). Having a higher proportion of DMDEP increases the level of efficiency because banks can utilize this source of financial resources (core deposits) without incurring higher interest cost (Chen, 2009; Osuagwu, 2014). Saghi-Zedek and Tarazi (2014) argue that banks with larger deposit base can be more profitable because such funds are cheaper especially in the presence of deposit insurance, but can also be less profitable because deposits are costly in terms of transaction cost (branching). In the literature, there is no conclusive evidence about the relationship between DMDEP and bank performance. As DMDEP account for a major percentage of total deposits in GCC banks, there is a need to examine this relationship in GCC banks.

Excessive risk-taking in financial markets may destroy the shareholder value (Fiordelisi & Molyneux, 2010). Fiordelisi and Molyneux (2010) stress that banks that involved in capital markets activity have a significantly negative link with profits. Fu *et al.* (2014b) report a significant positive relationship between market risk (MR) exposure and bank shareholder value (Tobin's Q). Leunga, Taylorb, and Evansa (2014) find that earnings contribute positively to MR during the non-crisis period, while the relationship reversed during the crisis period. This is possible since the losses from the mispriced risky investments have started to be realized. Furthermore, banks with more income arising from non-interest activities have significantly less MR during the crisis period. In the case of GCC countries, before the financial crisis, the investment securities as percentage of total assets of GCC banks increase sharply from 7.32 percent in 1990 to 35 percent in 2007, during the financial crisis 2008 the said ratio decrease to 24.62 percent, and after the financial crisis the said ratio goes up again to reach 25.40 percent in the end of 2015 (BankScope, 2015). Meaning that the GCC banks are strongly engaged in the

GCC stock market activities and hence it is pertinent to assess the extent to which MR has effect on GCC bank performance.

Non-performing loan (NPLs) of the GCC banks also create another issue to be studied. GCC banks are found to be saddled with high NPLs compared to a group of selected emerging and developed countries as well as the average NPLs ratio of the global banks during the period of 2005-2014, which may due to their risky strategies (Figure 2.17)[4]. Deficient risk management functions and poor asset quality feed into higher amounts of unpaid loans which negatively impacts bank performance (Miller & Noulas, 1997). Daly and Zhang (2014) argue that exposure to risky credit assets increases the exposure of banks to bad loans and hence lowers profit. Brock and Suarez (2000) argue that the negative relationship may be due to distortions caused by inadequate regulation that allows banks to report misstate loan losses. Dietrich and Wanzenried (2014), Jara-Bertin *et al.* (2014), Staikouras and Wood (2011), and Raza, Ansari, and Younis (2012) argue that competitive credit market condition, the successive cuts in interest rate, and the lower interest spread together with a higher loan-loss lead to lower profitability. In contrast, Maudos and Guevara (2004) find that banks facing higher credit risk might charge a higher risk premium on their loans, thereby increasing interest margins. Lee and Hsieh (2013), banks in Islamic countries anticipated for higher risk taking as large provision are used to meet the expected losses that might occur due to excessive risk taking. Furthermore, loan loss provision (LLPs) plays a vital role in determining a bank's success and failure. If a bank fails to handle NPLs properly it will lead to a significant loss to the bank. There is a large variation in the LLPs of GCC banks. Some banks do not have much fluctuation however some do fluctuate widely

[4] Figure 2.17 is on page 91.

over time. The LLPs to total loans of GCC banks is about 8.27 percent in 2002, 2.16 percent in the 2006 and goes up to 4.18 percent at the end of 2014 (BankScope, 2015). The high percentage of NPLs and fluctuating level of LLPs raises the question of their impact on the performance of GCC banks.

The role of capital adequacy requirement on financial banks performance is an issue to be studied. More stringent capital regulation with a corresponding increase in the capital is assumed to reduce the bank risk taking and increase the bank performance (Athanasoglou, Brissimis, & Delis, 2008; Barry *et al.*, 2011). In contrast, Dietrich and Wanzenried (2011) argue that high level of capital adequacy ratio (CAR) and cheap deposits, implies that some banks have not been able to exploit the opportunity to strengthen bottom-line through its lending activities because of low demand for credit during the financial crises. In the case of GCC banks, the minimum regulatory capital requirement (CAR) is between 8 to12 percent (GCC Authorities, 2015) but the said ratio ranged between 15 to 27 percent during the period 2000-2014 (See Table. 2.8)[5]. This raises a question as to whether the high CAR in GCC banks reflects their inability or reluctance to lend due to fear of adding to NPLs or it is due to the lack of demand for credit which is adversely affecting their financial performance of GCC banks.

Abreu and Mendes (2001) and Naceur and Omran (2011) stress that the positive effect of loans to total assets (LOAN) on bank performance may due to the ability of banks to maintain a low level of NPLs, thereby increasing margins and profits. Iannotta *et al.* (2007) argue that loans may be more profitable than other types of assets and hence has a positive relationship with bank performance. As noted by Bedendo and Bruno (2012) and Caprio *et al.* (2007), banks with

[5] Table 2.8 is on page 76.

higher loan growth (LNGRTH) will have higher NIM. Faster credit growth in relation to market may result in decreased in credit quality and hence lowered the bank performance (Dietrich & Wanzenried, 2011, 2014; García-Herrero, Gavilá, & Santabárbara, 2009). GCC banks have huge exposure to few customers and also to institutions having significant exposures in real estate and equity market which are prone to volatilities in the marketplace. In addition, between 50 to 70 percent of domestic credit in GCC countries are to the household sector which is secured by salary, can lead to massive loan defaults especially during the economic recession (IMF, 2015; Figure 2.16)[6]. The high percentages of loans to the household sector of the GCC banks indicate higher concentration risk. Thus, the relationship between loan concentration to risky sectors and GCC banks performance needs to be studied. Furthermore, increase in the reliance of some banks of GCC countries on external financing during recent years has significantly increased banks' susceptibility to conditions of external credit (Figure 2.15; Figure.2.16)[7] which also needs to be studied.

Flamini *et al.* (2009) argue that bigger banks tend to operate in markets where there is less competition and have higher tendency to gain profits. Houston, Lin, Lin, and Ma (2010) argue that larger banks are likely to have a higher range of products and have more loan diversification than smaller banks, and as a result, they benefit from economies of scale. In contrast, Arouri, Hossain and Muttakin (2014) and Dietrich and Wanzenried (2011) argue that the main reasons for a negative relationship between bank size (SIZE) and profitability are that bigger banks have relatively higher LLPs especially during the crisis and this may also be the consequence of some reputational problems that bigger banks faced during the crisis. In the case of 70 countries, Chen

[6] Figure 2.16 is on page 88.
[7] Figure 2.15 is on page 84.

and Liao (2011) indicate that smaller banks tend to earn higher profits while bigger banks tend to earn lower profits. They argue that compared to smaller banks, bigger banks experience diseconomies of scale and scope. In view of inconclusive evidence about the relationship between the size and the bank performance, it is necessary to examine the relationship between SIZE and GCC bank performance.

The impact of oil price fluctuations (OIL) on GCC bank performance is an issue to be studied. Crude oil is the world's most actively traded commodity in both volume and value. Oil revenue is the main source of revenue for the oil exporting countries in general, and GCC countries in particular. Traditionally, this oil revenue has supported the economic growth of these countries. Given the strong correlation between non-oil growth and government spending, GCC banking systems have been affected by the decline in oil prices. The effects of lower oil prices on GCC economic activity has weakened asset quality and liquidity as in Figure 2.16, and profitability of their banking sectors (IMF, 2015). During the financial crisis 2008-2009, the decline in oil price has resulted in declines in exports, revenues, fiscal balances, GDP growth, and real estate /equity prices in GCC countries which have put strains on both firm and bank balance sheets and credit growth to the private sector (IMF, 2012, Figure 2.16). These have significantly worsened the profitability of many corporations and banking sector in that region. Poghosyan and Hesse (2009) stress that oil prices can influence the bank performance in various ways. Directly, it may affect bank profitability due to increased oil-related lending or due to excess liquidity in the banking sector. Indirectly, the decline in fiscal spending affects the performance of private sector which in turn adversely affects bank performance. Also, the higher the oil prices, the higher is the public and private investments in the region, the higher the domestic demand and the higher the bank confidence, higher is the bank lending and lower is the NPL. Before the financial crisis, higher oil prices enabled GCC countries to undertake in large investment programs to diversify the domestic economy and develop human capital. GCC banks have reaped sizable profits and appeared financially stable with sound CAR and low NPLs (asset quality) (See Figure 2.16). This situation thus creates a question the extent of the relationship between OIL and GCC banks performance.

In terms of other macroeconomic variables, the results for the GDP growth, inflation (INF) and real interest rates (RIR) with bank performance have been mixed (Lee & Hsieh, 2013; Soedarmono *et al.*, 2013; Bolt *et al.*, 2012; Chen & Liao, 2011; Houston *et al.*, 2010; Flamini *et al.*, 2009; Lensink & Hermes, 2004; Unite & Sullivan, 2003; Claessens *et al.*, 2001; Bernanke & Gertler, 1989). They argue that demand for lending increases during cyclical upswings. In contrast, when GDP growth slows down, and, in particular, during recessions, credit quality deteriorates, companies borrow at higher margins, and defaults increase, thus reducing bank profit. On the other hand, higher INF increases uncertainty and reduces demand for credit and hence reduces bank profits. They also argue that banks are usually able to adjust interest rates if INF (satisfactorily expectation) increases which may feed back into increase profits and revenues. In the case of GCC countries, the link in the GCC countries may be somewhat different since the exchange rate peg to the U.S. dollar implies that INF is imported from abroad (given that monetary policy is geared towards maintaining the peg). This situation thus creates a question as to what is the extent of the relationship between GDP growth, INF, and RIR with GCC banks performance.

The importance of FDI inflow in developing and emerging countries in general, and in GCC countries in particular also creates another issue to be studied. FDI inflow into GCC countries has increased by tenfold during 2003-2008, however, after the financial crisis (2010-2014), FDI inflow into GCC economies fell by almost 48.21 percent (Table 2.3)[8]. FDI performance index of GCC economies has ranked amongst the first 40 countries in the world in 2012 (Table 2.4)[9]. Makino and Tsang (2011) argue that in making FDI decisions, the decision makers take into cognizance factors like historical ties that exist between two geographic regions. Sabi (1988) and Williams (1998a, 1998b) find that defensive expansion increases the profit of foreign banks. They argue that banks follow their clients into the host market in order to retain (defend) their bank-client relationship. To the contrary, Ursacki and Vertinsky (1992) find that many foreign banks, excepting from USA and Japan, have opened branches in Korea despite negligible levels of FDI by their clients which has negatively effect on foreign banks performance in Korea. Kosmidou *et al.* (2007) find that most Greek bank subsidiaries are located in the neighboring countries, which have not benefited from higher growth opportunities. The association of FDI inflow with both domestic and foreign bank performance as well as the importance of FDI inflow in GCC countries has not been studied before in the previous literature. Hence, there is a need to examine the impact of FDI inflow on the performance of GCC banks.

In terms of financial structure indicators, researchers have found mixed results between Herfindahl-Hirschman index (HHI) of market concentration and bank performance (Jara-Bertin *et al.*, 2014; Chen & Liao, 2011; Dietrich & Wanzenried, 2011; Fu & Heffernan, 2009; Garcia-Herrero *et al.*, 2009; Unite & Sullivan, 2003; Demirguc-Kunt & Huizinga, 1999; Hannan &

[8] Table 2.3 is on page 55
[9] Table 2.4 is on page 57

Berger, 1991). They argue that the better management and/or better technology lead to lower costs, higher profits, and bigger market share. They also suggest that in a financial system characterized by less banking competition, firms tend to have larger scales of operation, and this, in turn, leads to a higher degree of market concentration and profits. In contrast, higher HHI are associated with low bank performance. Furthermore, the hypothesis of structure–conduct–performance (SCP) stresses that in a highly concentrated market there is less competition; banks collude to generate unusual returns. Concentration in the banking sector of GCC economies is very high compared to other Asian countries and some other developed economies (World Bank Data, 2015). During the post-financial crisis period 2010-2015, the average assets of the five larger GCC commercial banks (CR5) account for 92.75 percent (95.87 percent for Bahrain, 100 percent for each Kuwait and Oman, 99.09 percent for Qatar, and 79.55 percent and 82.01 percent for Saudi Arabia and UAE respectively), an increase of 2.48 percent compared to the crisis period 2007-2009. In comparison, the CR5 ratio is either comparatively low or very low in other Asian countries, like China (82.39 percent), India (39.76 percent), Japan (58.03 percent), Malaysia (78.28 percent), Thailand (68.50 percent), and Indonesia (57.83 percent). Including other developed countries, such as USA (47.42 percent), UK (78.28 percent), and Turkey (67.13 percent) over the same period. Hence, the high banking concentration in the GCC banking markets compared to other developing, emerging and developed markets is another issue that needs to be investigated regarding its impact on the banks' performance in the region.

Similarly, findings on stock market capitalization as a percent of GDP (MARKE_CAP) and bank performance are mixed (Demirguc-Kunt & Huizinga, 1999; Dietrich & Wanzenried, 2014; Pasiouras & Kosmidou, 2007). These researchers argue that at a lower level of financial development, development of stock market leads to a better profitability of banks. As stock markets enlarge, improved information availability increases the potential number of bank customers by easing identification and monitoring of borrowers that increases bank activity and profitability. In contrast, other researchers argue that tougher competition results in lower profitability of banks. As the GCC countries are Islamic countries, the linkage between the financial structure indicators and bank performance may be different. However, with the rapid development and corresponding integration with the international financial market, GCC countries are increasingly taking a more active interest in innovative financial instruments that can help them manage their savings or provide them with appropriate investment tools. Thus, it creates concern whether the relationship between financial structure indicators and bank performance in developed countries are applicable to the GCC countries.

Barry *et al.* (2011) and Saghi-Zedek and Tarazi (2014) find that listed banks perform better than unlisted banks. This may be due to that such banks can raise additional equity capital at lower transaction costs, which enables them to generate faster growth in assets and, thus become larger. Farazi, Feyen, and Rocha (2011) argue that listed banks have performed better than non-listed banks, and this may be due to the stricter governance standards and disclosure requirements imposed on these banks. They also argue that listed banks tend to generate higher NIM, due to lower interest expenses and higher interest income relative to total assets. Agyei and Yeboah (2011) find that unlisted banks outperform listed banks. This may be due to the flexible control over banks (investors) and weak stock market regulations in Ghana to ensure that investors get their money's worth. Dietrich and Wanzenried (2011) argue that listed banks are facing increase pressure to be profitable by their shareholders, analysts and financial markets in general. Unlike unlisted banks, listed banks are faced with potentially negative impact of reports and other requirements, which create significant additional costs. Therefore, the overall effect is indeterminate and remains to be answered empirically. Trinugroho, Agusman, and Tarazi (2014) find little evidence in NIM between listed and non-listed banks. There are relatively large number of unlisted banks compared to listed banks (69 domestic banks are listed and 41 domestic banks are unlisted) in the GCC region. No previous study has compared the performance of listed and unlisted banks in GCC countries and hence there is a need to address the said issue.

The inconclusive evidence on the effect of the financial crisis (CRISIS) on bank performance also creates an issue to be studied. Saghi-Zedek and Tarazi (2014) argue that the positive effect of CRISIS on bank performance in low and medium income economies may due to the private support from their ultimate controlling shareholders, the government support or from their related firms within the pyramid during the CRISIS. Dietrich and Wanzenried (2014) argue that in high-income countries, the CRISIS has severely weakened the banking industry resulting in lower profitability. In contrast, banks in low-income countries are better able to face the challenges created by the economic downturn compared to developed economies. In GCC countries, limited OBSs losses, reduced exposures in the derivatives market before the crisis, increase equity capital buffers and profits of GCC banking sector before CRISIS (Al-tamimi, 2014; Callen, Cherif, Hasanov, Hegazy, & Khandelwal, 2014; Tompkins, 2013) have helped the GCC economies to withstand the effect of CRISIS. However, the CRISIS has revealed that the GCC banking sector has some vulnerability such as exposures to the equity prices and concentration and real estate sector, and increased reliance on external financing (Al-Hassan *et* *al.*, 2010; Ghosh, 2014) which have an effect on these economies. The Central Bank of Kuwait halted the trading in Gulf Bank share after it suffered huge losses in the foreign currency derivative contracts in 2008. Similarly, Qatar authorities have invested in the stocks of their banks to tide over the CRISIS. The UAE and Saudi Arabia injected liquidity into their banking sectors. In addition, to maintain the confidence level in the financial system, Kuwait and the UAE have moved to guarantee deposits. The Dubai's debt crisis (2009) and the default of the two larger business groups (Saad and Al Gosaibi) in Saudi Arabia may be due to the potential problems that arose in the banking sector of GCC region (Maghyereh & Awartani, 2014b). Such developments create a question as to what extent the CRISIS has affected GCC banks' performance.

Lag performance is included, following earlier literature, to capture the convergence effect, which is consistently positive, implying that banks experiencing higher performance in the previous year may face higher performance in the subsequent year. A value between zero and one implies persistence of profits and risk, but they will eventually return to their normal level. A value close to zero indicates an industry that is competitive, while a value close to one implies a less competitive structure. Given the dynamic nature of the study model with the included lagged dependent variable as regressor, least squares estimation methods produce inconsistent and biased estimates (Arellano & Bond, 1991; Arellano & Bover, 1995; Baltagi, 2008). Therefore, this study uses techniques for dynamic panel estimation that are able to deal with these inconsistencies of study estimates. Another challenge with the estimation of bank profitability and risk refer to the endogeneity problem. This study has good reasons to believe that at least some of study explanatory variables (in addition to the lagged dependent variable) are endogenous.

It is evident from the above that comprehensive evaluation of the performances of banks, both foreign and domestic (including the listed and the unlisted banks) in the GCC economies has eluded the attention of researchers. Given the importance of the GCC economies in the arena of global financial markets, it is extremely important to carry out a comprehensive evaluation of banks in GCC economies which should include both domestic as well as foreign banks operating in these countries. Thus, the current study aims to analyse the performance of both domestic and foreign banks in GCC countries in general and also country by country analysis and contribute to fill-in a yawning gap in the literature, as mentioned above.

1.5 Research Questions

The study attempts to answer the following questions:

1. What is the overall level of banks' performance in GCC countries?
2. What are the differences in performance between GCC domestic and foreign banks?
3. Is there any relationship between bank specific characteristic (lagged of bank performance ($LPERFORM_{it-1}$) cost to income ratio (COST), non-interest revenues (NIR), opportunity cost (OPC), liquidity risk (LR), demand deposit to total deposit ratio (DMDEP), market risk (MR), non-performing loans ratio (NPLs), loan loss provision (LLPs), capital adequacy ratio (CAR), loan to total assets (LOAN), loan growth (LNGRTH), bank size (SIZE), and off-balance sheet activities (OBSs)) and banks' performance?

4. Is there any relationship between macroeconomic factors (GDP growth rate, inflation rate (INF), real interest rate (RIR), FDI inflow, and oil price shocks (OIL)) and banks' performance?
5. Is there any relationship between financial structure indicators (Herfindahl-Hirschman index (HHI) of market concentration, stock market capitalization as a percent of GDP (MARKE_CAP), and credit to private sector as a percent of GDP (DCPS)) and banks' performance?
6. Is the performance of listed banks better than unlisted banks in GCC countries?
7. Did global financial crisis (CRISIS) affect GCC banks' performance?

1.6 Research Objectives

This study aims to analyze the financial performance of commercial banks, both foreign and domestic in the GCC countries. The specific objectives are the following:

1. To identify the overall level of banks' performance in GCC countries.
2. To investigate the difference between GCC domestic and foreign banks.
3. To examine if some bank specific characteristics ($LPERFORM_{it-1}$, COST, NIR, OPC, LR, DMDEP, MR, NPLs, LLPs, CAR, LOAN, LNGRTH, SIZE, and OBSs) have relationship with banks' performance.
4. To examine whether macroeconomic factors (GDP, INF, RIR, FDI inflow, and OIL) have relationship with banks' performance.
5. To examine whether financial structure indicators (HHI, MARKE_CAP, and DCPS) have relationship with banks' performance.

6. To investigate whether there are differences in performance of listed and unlisted banks in GCC countries.
7. To determine the impact of CRISIS on GCC banks' performance.

1.7 Significance of the Study

Banks play a major role in the economic development of any country and hence ensuring financial stability has become one of the major mandates of the central banks in economies across the globe. Hence, analysis of the financial performance of both domestic and foreign commercial banks and identification of factors that drives banks' performance has been a subject of continuing interest to the researchers. Identification of these factors is crucial for the government, regulators, shareholders and other stakeholders and will continue to attract the attention in future academic research. As commercial banks in most countries dominate the financial system, identification of the sources of strengths and vulnerabilities, and understanding how the banking system can be affected with changing economic conditions becomes the concern of one and all. It is argued that entry of foreign banks enhances competition in domestic banking markets, improves the efficiency of domestic bank operations, provides financial services at lower costs, and promotes economic growth by boosting the efficiency of resource allocation. While others argue that due to the high quality of foreign banks services, the domestic banks have become less competitive, inefficient, and unprofitable. The empirical evidence on this issue remains mixed as well as inconclusive.

As of now, there is only few research studies reported in the literature on the determinants of banks' performance in GCC countries in general and in each GCC country in particular. It is, therefore, important to study the parameters that influence the performance of the financial sector in general and the banking sector in particular in GCC region because of the dominant presence of this sector. The economy of GCC countries is well connected to the global economy and holds a significant position at the global level. Kingdom of Saudi Arabia, the largest country in GCC region, is also an active member of the G20 and various global financial organizations, like Financial Stability Board, International Settlements, International Association of Insurance Supervisors, Basel Committee, and the Islamic Financial Services Board.

In addition, the contribution of GCC countries to international trade is significant. Moreover, GCC attracts huge foreign investments and is also the largest exporter of oil. The assessment of the financial soundness of banks in GCC economies is gaining significance over time. Hence, the findings of this research can be considered as an important contribution to literature which focuses on the health of banking sector in the developing economies especially GCC economies. This identification of drivers of financial performance of banks in the GCC economies will be useful to owners, investors, policymakers, government, community and other financial institutions as well as researchers.

This study provides a comprehensive analysis of financial performance of both domestic as well as foreign banks in GCC countries. Being unique in this area, the findings of this study will be of significance to bank regulatory authorities, bank managers as well as financial analysts in GCC economy.

The results of this study will be helpful to financial analysts in order to identify the strengths and weaknesses and may provide a benchmark to prospective investors in GCC economies. Investors will also be able to assess the impact of various risks on the financial performance of banks. Finally, this study will be useful to the future researchers interested in analysing bank performance.

This thesis contributes to the previous literature in several ways:

First, there is a lack of published research that compared the financial performance of both domestic and foreign banks in GCC countries in general and also country by country. Assessing the effect of the presence of foreign banks in the domestic markets in developing and emerging countries is an important issue for academic researchers as well as policy planners (Goldberg *et al.*, 2000; Crystal *et al.*, 2002; Peria & Mody, 2004; Galindo, Micco, Powell, & Bank, 2005; Laeven, 2005; Yildirim & Philippatos, 2007; Rajan & Gopalan, 2009; Jeon *et al.*, 2011). Jeon *et al.* (2011) and Rajan and Gopalan (2009) also suggest that more research should be carried by using data from other countries.

Second, the existing literature has paid extensive attention to the financial system in the USA and the European countries. Although, GCC region has become an important economic zone in the world economic order by virtue of its status as one of the largest in oil-exporting regions and has the largest presence of foreign banks (127 foreign banks compared to 113 domestic banks in the region), assessment of the financial health has somehow skipped the attention of researchers across the globe. Therefore, this present study will be among the first comprehensive study on the financial performance of commercial banks in GCC countries in general and in each of GCC country in particular. In essence, it takes into account bank-specific characteristics, macroeconomic factors, and financial structure indicators in the analysis.

Third, it is reported in the literature that there is a significant impact of CRISIS on bank performance in the high-income economies and it has mixed impact on the financial performance of banks in medium and low-income economies. However, as researcher knowledge, no specific study has been done on the impact of CRISIS on bank performance in GCC economies. Maghyereh and Awartani (2014b) take the CRISIS as a dummy variable to examine the efficiency of only listed banks in GCC countries during the period 2000-2009. As it has excluded foreign banks as well as other domestic banks in these economies, it has limited scope and hence relevance. The present study will be among the first of its kind that looks at the impact of CRISIS on bank performance in GCC countries on a comprehensive basis.

Fourth, as of now, all the previous studies have reported in the literature on the banks' performance in GCC countries, have focused on listed banks in GCC stock exchanges (See, e.g. Abraham, 2013; Al-Hussain, 2009; Almazari, 2013; Al-Musali, 2013; Al-Musalli & Ismail, 2012a, 2012b; Khediri *et al.*, 2015; Maghyereh & Awartani, 2014b; Muharrami, 2009; Tai, 2014). The present study will be among the first of its kind that makes a comparative evaluation of performances of both listed as well as unlisted banks in GCC economies.

Fifth, to the best knowledge of the researcher, the study provides new information regarding drivers of performance of both domestic and foreign bank performance. The study has considered numbers of new key variables which have so far not been tested in earlier studies as drivers of bank performance (profitability, market-based performance, and bank risk). For example, the relationship between MR with bank profitability as measured by ROE and NIM, and LNGRTH with ROE are not considered in the previous studies. Moreover, bank-specific factors like DMDEP and NPLs ratio, macroeconomic factor like RIR; and financial structure indicators like MARKE_CAP and DCPS have not been used to assess bank performance with Tobin's Q as a proxy for market-based performance. Similarly, bank-specific characteristics like OPC, DMDEP, LNGRTH, and OBSs; and financial structure indicators: HHI and MARKE_CAP have not been used to assess bank risk as measured by standard deviation ROA (SDROA) and standard deviation ROE (SDROE). In addition, there are no studies which have examined the impact of FDI inflow on both domestic and foreign banks performance either in terms of profitability, Tobin's Q or bank risk. Kosmidou *et al.* (2007) also recommend that more research should be done to investigate the influence of FDI on bank performance.

Sixth, to the best of the knowledge of the researcher, there is no study which has evaluated the impact of fluctuations in oil price (OIL) on bank performance using parameters like profitability, Tobin's Q and bank risk in all oil exporting economies. Investigating the effects of oil price on GCC banks performance is interesting for several reasons. First, GCC economies are an oil-based economy and major suppliers of oil in the world, their markets are therefore susceptible to changes in oil prices, and hence the relationship between OIL and income generating activities of banks cannot be ignored. Second, OIL affects corporate and consequently affect the domestic share prices in GCC economies. Third, they are overly sensitive to regional political events (Hammoudeh & Li, 2008), and finally, they are very promising areas for international portfolio diversification (Arouri & Rault, 2012). So far, there is only one study that examines the association between OIL and bank performance in the MENA area. Poghosyan and Hesse (2009) analyze the effect of OIL on the bank profitability using the only ROA in MENA countries for the period 2000-2011. The present study, thus, represents one of the first comprehensive studies of the impact of oil price risk on bank performance (profitability, Tobin's Q, and bank risk) in oil exporting countries.

Seventh, past researchers evaluate the performance of commercial banks using profitability (ROA and ROE) and other bank-specific characteristics. On the other hand, present study will be more comprehensive in evaluating the performance of commercial banks using six dependent variables which are three for profitability: ROA, ROE, and NIM; two for risk: SDROA, and SDROE; and one for market-based performance- Tobin's Q, with thirteen bank-specific characteristics, five macroeconomic factors, three financial structure indicators as well as three dummy as independent variables. Using six dependent variables will give more comprehensive results relating to the performance of banks in GCC countries and find out the proxy for performance that is suitable for these banks.

Eighth, this study also incorporates a range of robustness tests using various model specifications. To the best of the knowledge of the researcher, this study is the first study that provides robustness test of the results regarding the impact of competition on bank profitability, market-based performance as well as bank risk-taking behavior through replacing HHI by both structural (CR5) and non-structural approaches (Lerner index and Boone indicator) as indicators of competition. The use of the Lerner index and Boone indicator provide the competitive conditions of different ownership types of GCC banks. The study uses a new method proposed by Boone (2008) which is based on the idea that competition crashes the performance of ineffective banks and improves the 'performance of efficient banks. Until now, only Schaeck and Cihak (2014) and Kasman and Kasman (2015) have used Boone indicator to investigate the relationship between competition and bank stability.

Ninth, this study is one of the earliest studies to consider the impact of Arab Spring on the performance of banks in Arab economies. Until now, only Ghosh (2016) and Bitar, Saad, and Benlemlih (2016) have addressed the impact of the Arab Spring on the banking sector. They investigate the effect of Arab Spring on ROA, cost efficiency, capital and credit risk of banks in MENA countries. Present study examines the impact of the Arab Spring on bank profitability (ROA, ROE, and NIM), Tobin's Q, as well as bank risk-taking behavior (SDROA and SDROE) in the GCC countries.

Finally, unlike most of the reported studies in the literature which makes use of linear panel framework, present study adopts dynamic panel methods (two-step system GMM estimator) to control for the persistence of profitability and risk and endogeneity problem in the model.

1.8 Scope of the Study

There are 230 domestic and foreign banks operating in GCC countries: 94 banks in Bahrain, 23 banks in Kuwait, 21 banks in Oman, 18 banks in Qatar, 23 banks in Saudi Arabia, and 51 banks in UAE. All these banks are included in the sample except for banks with missing data. This study covers 113 domestic banks and 117 foreign banks in GCC countries for the period from

2000 to 2015. This study uses Bankscope Database of Bureau van Dijk's company from Universiti Teknologi MARA (UITM) Perlis/Malaysia to collect the data of listed banks in GCC stock markets. The data for unlisted and foreign banks are collected from their respective annual reports for the period 2000-2015. Annual Economic Reports, International Monetary Funds (IMF) Reports, UNCTAD Reports and West Texas Intermediate (WTI) for each country in GCC are used to collect the data on macroeconomic factors and financial structure indicators for the same period.

In this study, the analysis is carried out in five main stages. In the first stage, the independent variables (bank-specific, macroeconomic, and financial market indicators) are regressed without dummy variables of the listed banks, foreign banks, CRISIS as well as a country dummy. In the next stages, the independent variables are regressed with the LISTED_Dummy in the second stage, FOREIGN_Dummy in the third stage, CRISIS as a dummy variable in the fourth stage, and a country dummy in the fifth stage, respectively. In order to get more robust findings and to avoid the noise on the main variables of interest that may distort the findings, the analysis involving dummy variables are estimated separately.

1.9 Organization of the Thesis Chapters

This thesis has six chapters organized as follows: chapter one is the introduction, which explains the background of this study, GCC economic overview, the banking industry in GCC Countries, problem statement, research questions, objectives of the study, significance of the research and scope of the study. In chapter two an analysis of the GCC economies and banking sector is discussed. Chapter three presents the empirical insight of financial performance of commercial banks. Chapter four explains the methodology, sample data and the research framework of the study. Chapter five discusses the empirical analysis and the findings and Chapter six summarize the findings and provide recommendations and suggestions for further research.

CHAPTER TWO

ANALYSIS OF THE GCC ECONOMIES AND BANKING SECTOR

2.1 Introduction

This chapter provides an analysis of the economies and banking sector in the GCC countries. Section 2.2 shows an analysis of the main indicators of the GCC economies. Section 2.3 illustrates the GCC financial systems before and after the financial crisis. Section 2.4 presents an analysis of the main characteristics of banking sector in the GCC countries, covering the structure of the GCC banking sector; profile in the growth of credit commercial banks; the balance sheet of the GCC banking sector- stylized facts; financial soundness indicators of GCC countries over the period of the study (2000-2014); and the key weakness in the GCC banking sector. Section 2.5 is the chapter summary.

2.2 An Analysis of GCC Economies

The GCC is established in 1981 in order to integrate the in the GCC countries (Al-Muharrami, 2005; Ariss, Rezvanian & Mehdian, 2007). The GCC region consists of six Arab countries, namely, Saudi Arabia, the UAE, Kuwait, Oman, Qatar, and Bahrain. These regions share cultural and historical links and are looking forward to developing their economy through an economic block between the countries (World Bank, 2010). Over the past decade, GCC economies have evolved significantly by implementing several policies to improve economic diversification, to develop infrastructure, improve the work environment and increase the size of financing for all firms, in general, and for the small and medium enterprises (SMEs) in particular (Callen *et al.*, 2014).

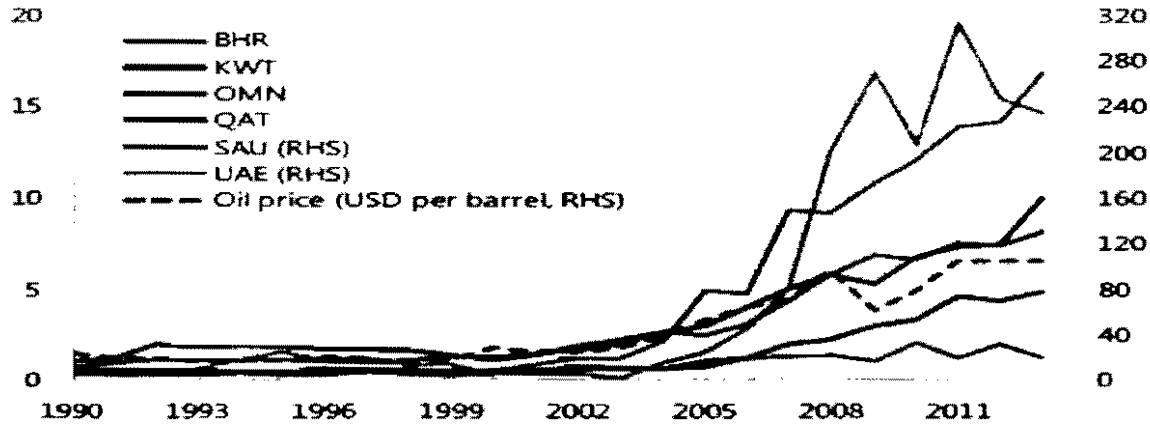


Figure 2.1:
GCC Capital Spending and Oil Price, 1990–2013 (Billions USD)
Source: IMF, 2014

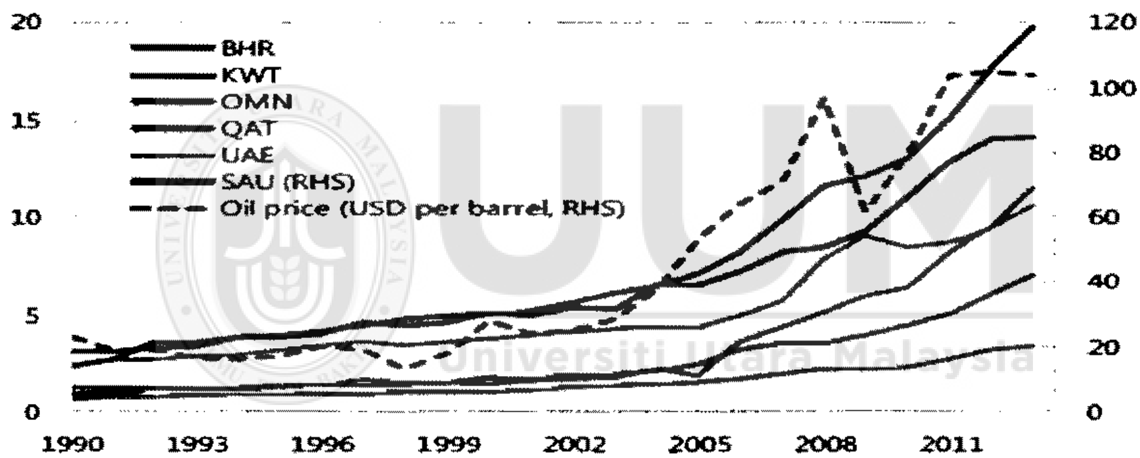


Figure 2.2:
GCC Public Wages and Oil Price, 1990–2013 (Billions USD)
Source: IMF, 2014

Being the largest producer and exporter of petroleum (Al-Muharrami, 2005), GCC countries are one of the key regions in the world. In recent years, GCC countries have shared 35.7 percent of the world's total oil production compared to 18 percent at the end of 1999. The revenues of oil sector dominate the government spending and fiscal revenue and hence the major driver of GCC economies. In 2013, the oil revenue constitutes 80 percent of the total revenues of GCC governments (Rashid *et al.*, 2014). Figures 2.1 and 2.2 show that the government spending has significant correlations with oil sector developments in GCC countries; the average relationship among oil prices and government spending is 0.33 during the period 1995– 2007. However, the average correlation between the oil sector and the wages of the public sector is approximately 0.40 during the same period (Rashid et al., 2014).

2.2.1 Trends of Economic Growth

2.2.1.1 Trends of Economic Growth in GCC Countries

The GDP is widely used to measure the performance of economic development of any country in the world. The financial crisis has interrupted a decade of high but volatile growth of GCC countries. Before the financial crisis of 2008, the economies of GCC countries grow at an annual average rate of 14.9 percent (Table 2.1; Figure 2.3). Among the GCC countries, Qatar has witnessed the highest growth rate at 27.1 percent during the period of 2000-2007; followed by Kuwait at 18.9 percent; the UAE at 15.6 percent; Bahrain at 14.3 percent; Oman at 13.6 percent; and finally Saudi Arabia which grow by 12.4 percent during the same period. These increases are due to the rising energy prices, increased government spending as well as the revenues from hydrocarbon (ICAEW, 2014a; Kammer & Dorsey, 2011; Kern, 2012).

The impact of the CRISIS on the GCC economies reaches its peak 2009. In 2009, the GDP of the GCC economies go down by 19 percent: Kuwait's economy has experienced the highest decline rate at 28.1 percent in 2009; followed by Oman's economy at 20.6 percent; the UAE at 19.2 percent; Saudi Arabia at 17.4 percent; and Qatar at 15.2 percent. Bahrain's economy has witnessed the lowest decline of 10.8 percent during the said year (Table 2.1; Figure 2.3).

Between 2010 and 2015, the economies of GCC countries have experienced an average growth rate of 10.9 percent. Qatar's economy has witnessed the highest average growth of 15.6 percent; while Saudi Arabia records the second highest average growth of 11.2 percent. They are followed by Kuwait's economy, which held the third rank with average growth rate of 10.5 percent; followed by Oman, the UAE, and Bahrain with annual average growth rates of 9.9 percent, 9.3 percent, and 7.1 percent, respectively (Table 2.1; Figure 2.3).

As per the IMF forecasts that the performance of GCC economies will continue to develop during the next four years, i.e., 2016-2019, with an average GDP growth rate of 4.7 percent; it expects that Qatar's economy will grow by 7.2 percent and the UAE will grow by 5.1 percent. Saudi Arabia will have the third highest growth at 4.2 percent, followed by Oman, Kuwait, and Bahrain economies with growth rates of 3.9 percent, 3.5 percent, and 3.4 percent respectively (Table 2.1; Figure 2.3).

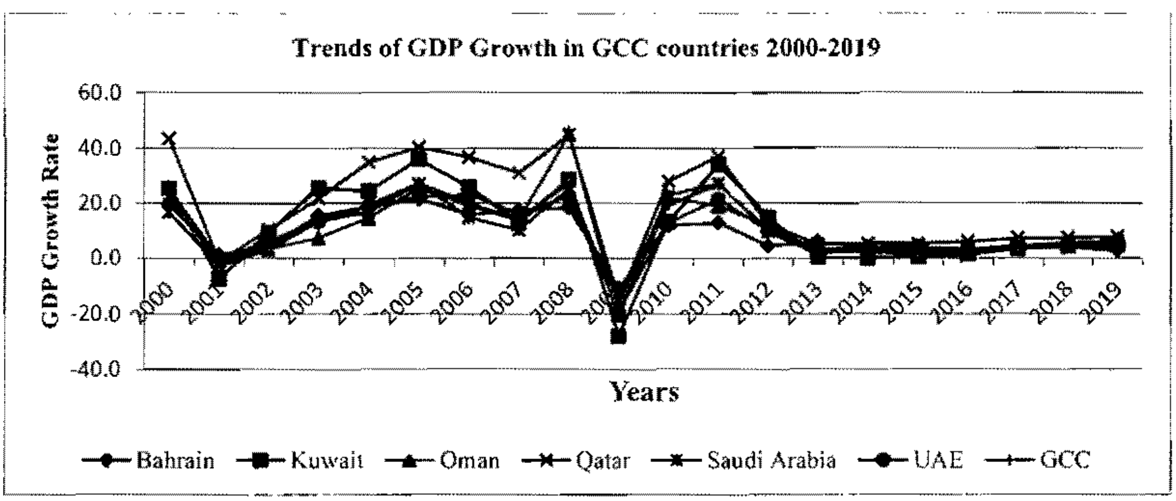


Figure 2.3:
Trends of GDP Growth in GCC Countries during the Period of 2000-2019
Source: IMF reports 2014, 2015 and various versions (estimates start after 2014)

Table 2.1

GDP Growth Rate of GCC Countries and other Regions 2000-2019(USD. Billion)

	GCC Countries						Other Regions					
Year	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	GCC	World	Asia	MENA	USA	Euro area
2000	19.5	25.2	25.2	43.3	16.6	25.4	21.3	3.1	8.1	11.0	6.5	-8.9
2001	1.4	-7.5	-0.3	-1.3	-2.8	-0.6	-2.4	-0.6	5.5	1.0	3.3	1.2
2002	4.4	9.3	3.3	10.4	2.9	6.3	4.9	3.9	9.4	0.7	3.3	9.1
2003	15.4	25.5	7.5	21.5	13.6	13.2	14.8	12.3	14.0	13.5	4.8	23.3
2004	18.7	24.2	14.5	34.8	16.8	18.9	19.1	12.6	16.0	21.5	6.6	14.5
2005	21.4	35.9	25.3	40.3	26.9	22.2	27.2	8.2	15.4	22.6	6.7	3.8
2006	15.9	25.7	19.1	36.7	14.7	22.9	19.9	8.2	18.7	18.7	5.8	6.0
2007	17.4	12.9	13.8	30.9	10.4	16.2	14.1	12.7	26.8	18.2	4.5	15.1
2008	18.3	28.5	45.0	44.6	25.0	22.3	27.1	9.6	20.6	25.0	1.7	9.9
2009	-10.8	-28.1	-20.6	-15.2	-17.4	-19.2	-19.0	-5.2	8.4	-10.8	-2.1	-8.7
2010	12.1	13.2	21.9	27.9	22.8	12.8	19.3	9.2	20.8	17.1	3.7	-2.1
2011	13.0	34.0	19.0	37.0	27.1	21.3	26.7	10.7	19.5	17.8	3.8	7.8
2012	4.5	14.9	11.9	12.2	9.6	10.1	10.6	1.7	9.0	4.0	4.6	-7.0
2013	6.1	0.4	2.9	5.3	1.5	3.2	2.4	2.6	8.5	1.4	3.4	4.3
2014	4.0	0.0	2.1	5.5	3.7	4.1	3.5	3.8	7.8	4.6	4.3	5.5
2015	2.7	0.6	1.4	5.3	2.4	4.3	3.0	5.5	8.9	5.3	4.8	4.7
2016	3.0	1.3	2.8	6.1	3.2	3.3	3.4	5.6	8.7	5.6	5.0	4.3
2017	3.7	3.5	3.8	7.3	4.1	4.5	4.6	5.8	8.7	6.0	5.0	4.7
2018	4.1	4.3	4.2	7.5	4.6	5.7	5.2	5.7	8.5	6.5	4.6	4.6
2019	2.9	4.8	4.6	7.8	4.9	6.5	5.6	5.3	7.0	6.9	4.3	4.6
Average	8.9	11.4	10.4	18.4	9.5	10.2	10.6	6.0	12.5	9.8	4.2	4.8

Source : IMF reports 2014, 2015 and various versions (estimates start after 2014)

2.2.1.2 Trends of Economic Growth in GCC Countries Vis-à-Vis other Economies

Table 2.1 and Figure 2.4 show the performance of GCC economies compared to economies in other regions. A close look at Table 2.1 indicates that between 2000 and 2007, GCC economies performed better than other economies, such as the USA and the Euro Area. GDP of GCC economies grow by 14.9 percent which is more than double compared to USA economy with a growth rate of 5.18 percent, and Euro Area grows by 8.01 percent during the said period. Furthermore, during the same period, the GDP growth of GCC economies is highest amongst the Asian economies, in general, and in the MENA in particular, where the GDP grows by 14.2 percent and 13.4 percent respectively. During the period of financial crisis of 2008-2009, the GDP growth of the world fell by 5.5 percent; the GDP of the USA shrunk by 2.1 percent; the Euro Area by 8.7 percent; while that of the GCC economies by 19 percent over the same period (Table 2.1 & Figure 2.4). After the financial crisis, GDP of the GCC economies gains its growth momentum and grow by average of 10.9 percent during 2010 to 2015 compared to the average growth rate of 2.2 percent in the Euro Area, and the average of GDP of USA grows by 4.1 percent during the same period (Table 2.1; Figure 2.4).

IMF expects that the GCC economy will on an average grow by 4.7 percent between 2016 and 2019, which will be equal the GDP growth of the USA and more than the GDP growth rate of Euro Area 4.5 percent. IMF also expects that the GDP of the world will grow by 5.6 percent and the Asia economies by 8.2 percent during the same period, which is almost double the GDP growth of GCC countries. IMF expects that the GDP of the MENA region will grow by an average of 6.3 percent (Table 2.1; Figure 2.4). Hence it may be concluded that in terms of economic outlook of IMF, GCC economies are projected to grow even faster than some of the advanced economies of the world during 2016 to 2020.

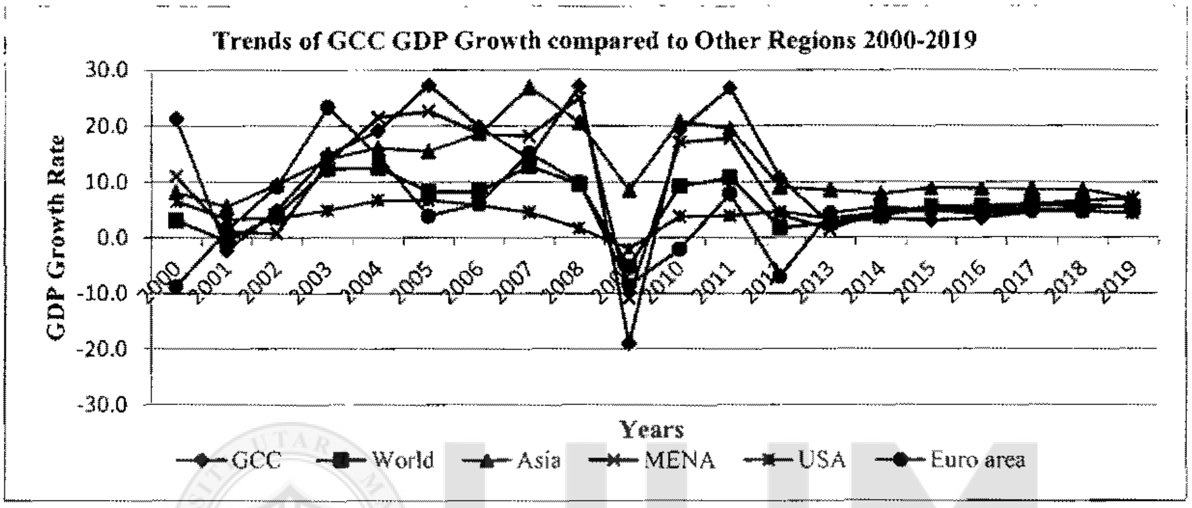


Figure 2.4:
Trends of GCC GDP Growth Compared with Others Regions during the Period of 2000-2019
Source: IMF reports 2014, 2015 and various versions (estimates start after 2014)

2.2.2 Trends of Inflation Rate

2.2.2.1 Trends of Inflation Rate in GCC Countries

Over the last decade, inflation rates (INF) in GCC countries underwent several changes: starting at zero level at the beginning of 1990 (https://malgendy.wordpress.com) it rises to 0. 8 percent in 1999 (Table 2.2), which may due to the rising global demand for oil. Due to the discreet management of the monetary and fiscal policies and the sufficient availability of services and goods in the region, GCC countries have recorded very low INF during the pre-crisis period of 2000-2007, especially until the beginning of 2004. Between 2000-2007, the average INF in GCC countries is 2.8 percent. At the level of each GCC country, Qatar has witnessed the highest average level of INF of 5.9 percent, whereas UAE has experienced the second-highest average INF level at 5.2 percent. Kuwait, Oman, Bahrain and Saudi Arabia have recorded average INF of 2.3 percent, 1.2 percent, 1.2 percent and 0.8 percent, respectively during the same period (Table 2.2; Figure 2.5).

In 2008, GCC countries have witnessed a sharp rise in the INF: Qatar sees the highest INF level at 15.2 percent while the lowest level of INF is at Bahrain at 3.5 percent. Furthermore, Oman has experienced the second-highest level of INF at 12.6 percent, followed by the UAE at 12.3 percent, Kuwait at 6.3 percent; and Saudi Arabia 6.1 percent (Table 2.2; Figure 2.5). In general, the main reason for this higher INF is a rise in global oil demand and its corresponding effect on the oil price. Depreciation of the US Dollar against world's major currencies, imported INF, high spending, declining interest rates, shortage of housing, ample liquidity, demand/supply imbalances for services and commodities, especially construction material, food, beverages and others have been identified as major drivers for this sharp rise in INF in GCC economies (Bahrain, 2009; Kammer & Dorsey, 2011; Kern, 2012; Prasad, Kumah, Williams, & Espinoza, 2010).

After the outbreak of the CRISIS, average INF in the GCC region declines sharply and reaches the level of 2.01 percent at the end of 2009. This may due to prudent and timely policies of GCC governments in view of declining the world demand of energy and CRISIS (Kern, 2012). Over the last six years (2010-2015), the average INF in the Gulf region is 2.6 percent; Kuwait has witnessed the highest average level of INF at 3.8 percent while the UAE has experienced the lowest average INF level of 1.4 percent during the same period. Qatar, Bahrain, Oman and Saudi

Arabia have recorded average INF of 1.9 percent, 2.1 percent, 2.9 percent and 3.4 percent, respectively over the same period (Table 2.2; Figure 2.5).

The IMF expects that during the next four years (2016-2019), the average level of INF in GCC economies will be 3.4 percent. Kuwait's economy is expected to witness the highest INF level averaging 4.01 percent, followed by economies of Oman, Qatar and Saudi Arabia which are forecasted to witness an average INF of 3.5 percent during the same period. The UAE economy will witness the third highest average INF level at 3.3 percent, and Bahrain's economy is forecasted to see the lowest average INF level during the coming years (Table 2.2; Figure 2.5).

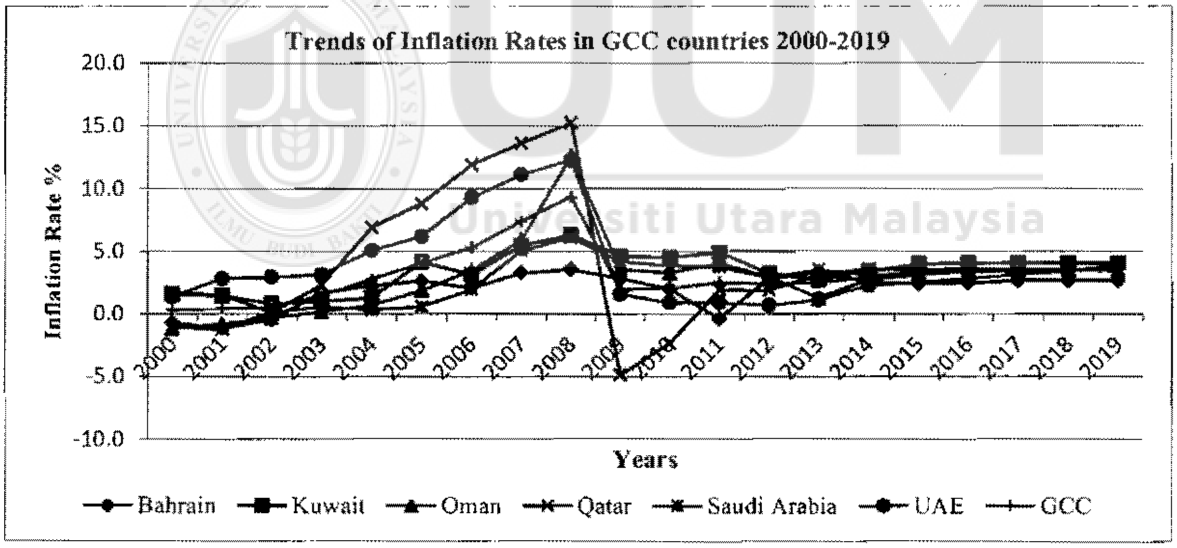


Figure 2.5:
Trends of Inflation Rates in GCC Countries during the Period of 2000-2019
Source: IMF reports 2014, 2015 and various versions (estimates start after 2014)

Table 2.2

Inflation Rates, Average Consumer Prices of GCC Countries and other Regions 2000-2019(USD. Billion)

	GCC Countries						Other Countries					
Year	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	GCC	World	Asia	MENA	USA	Euro area
1999	-1.3	3.1	0.5	2.3	-2.1	2.1	0.8	5.4	2.5	5.6	2.2	1.2
2000	-0.7	1.6	-1.2	1.7	-1.1	1.3	0.3	4.6	1.9	3.6	3.4	2.2
2001	-1.2	1.4	-0.8	1.5	-1.3	2.8	0.4	4.3	2.9	3.6	2.8	2.4
2002	-0.5	0.8	-0.3	0.1	0.1	2.9	0.5	3.5	2.1	5.0	1.6	2.3
2003	1.7	1.0	0.2	2.3	0.5	3.1	1.5	3.7	2.6	5.2	2.3	2.1
2004	2.2	1.3	0.7	6.9	0.3	5.0	2.7	3.6	4.1	6.6	2.7	2.2
2005	2.6	4.1	1.9	8.8	0.5	6.2	4.0	3.8	3.7	6.8	3.4	2.2
2006	2.0	3.1	3.4	11.9	1.9	9.3	5.3	3.8	4.3	8.2	3.2	2.2
2007	3.3	5.5	5.9	13.6	5.0	11.1	7.4	4.0	5.3	10.6	2.9	2.2
2008	3.5	6.3	12.6	15.2	6.1	12.3	9.3	6.0	7.4	12.3	3.8	3.3
2009	2.8	4.6	3.5	-4.9	4.1	1.6	2.0	2.5	3.2	6.3	-0.3	0.3
2010	2.0	4.5	3.3	-2.4	3.8	0.9	2.0	3.6	5.3	6.5	1.6	1.6
2011	-0.4	4.9	4.0	1.9	3.7	0.9	2.5	4.9	6.5	9.3	3.1	2.7
2012	2.8	3.2	2.9	1.9	2.9	0.7	2.4	3.9	4.6	10.6	2.1	2.5
2013	3.3	2.7	1.3	3.1	3.5	1.1	2.5	3.6	4.5	10.5	1.5	1.3
2014	2.5	3.4	2.7	3.6	3.0	2.2	2.9	3.5	4.5	8.4	1.4	0.9
2015	2.4	4.0	3.1	3.5	3.2	2.5	3.1	3.4	4.3	8.3	1.6	1.2
2016	2.5	4.0	3.5	3.6	3.5	2.8	3.3	3.6	4.1	7.8	1.8	1.3
2017	2.6	4.0	3.5	3.5	3.5	3.1	3.4	3.5	4.0	7.7	2.0	1.5
2018	2.7	4.0	3.5	3.5	3.5	3.4	3.4	3.4	3.9	7.7	2.0	1.5
2019	2.6	4.0	3.4	3.4	3.5	3.9	3.5	3.4	3.9	7.6	2.0	1.6
Average	1.9	3.4	2.8	4.1	2.5	3.9	3.1	3.8	4.2	7.6	2.2	1.9

Source : IMF reports 2014,2015 and various versions (Estimates Start After 2014)

2.2.2.2 Trends of Inflation Rate in GCC Countries Vis-à-Vis Other Economies

Table 2.2 and Figure 2.6 also show the comparative trends of the INF for GCC countries and other regions during the period 1999-2019. For the period 2000-2007, the average INF as measured by consumer prices, for the global economies is 3.9 percent. USA has an average INF of 2.8 percent which is equal to the average INF for GCC countries as a whole during the same period. The Euro Area has witnessed lower average INF level than GCC countries (Table 2.2; Figure 2.6).

During the 2008 CRISIS, the average INF level for the world is 6.01 percent. Asian countries have recorded an average level of an INF of 7.4 percent while the MENA region has witnessed the highest average INF of 12.3 percent during the CRISIS. The USA and Euro Area have experienced an average level of INF of 3.8 percent and 3.3 percent, respectively, compared to the average INF of 9.3 percent in the Gulf region. Between 2010 and 2015, the average INF for the world declines to 3.8 percent; Asian countries to 5.01 percent; and the MENA region to 8.9 percent. The average INF of the Euro Area and the USA are 1.7 percent and 1.9 percent respectively, compared to the average INF level of GCC countries of 2.6 percent during the same period (Table2.2; Figure 2.6).

IMF forecasted that the average INF level will be 3.5 percent between 2016 and 2019 in the world economies, 4.01 percent in Asian countries and 7.7 percent in the MENA region. The average level of INF in developed countries such as in the USA and Euro Area will be 2.01 percent and 1.5 percent respectively compared to the average level of INF rate in GCC economies of 3.4 percent during the same period (Table 2.2; Figure 2.6).

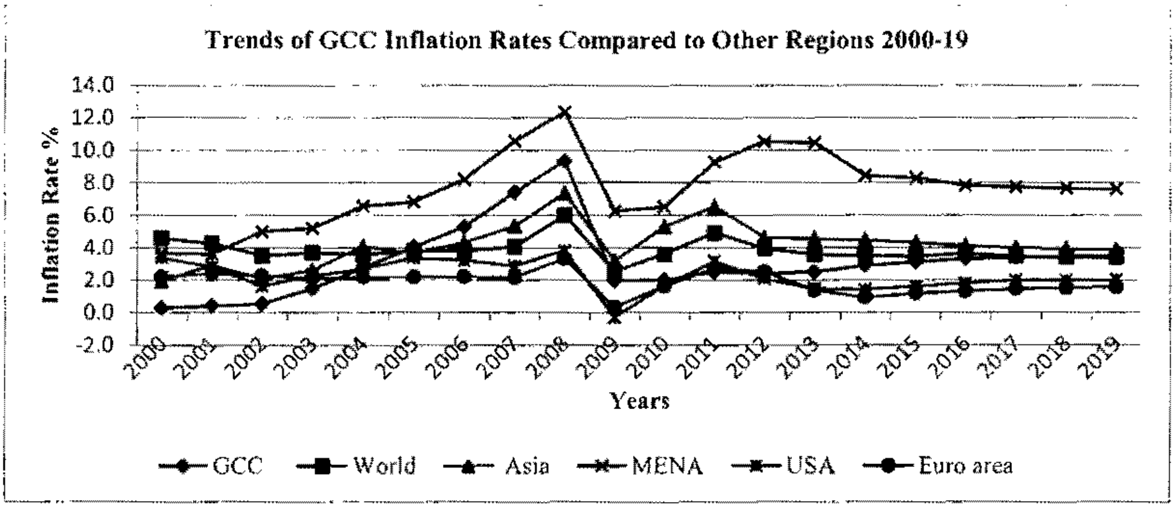


Figure 2.6:
Trends of GCC Inflation Rates Compared with Others Regions during the Period of 2000-2019
Source: IMF reports 2014, 2015 and various versions (Estimates Start After 2014)

2.2.3 Trends of FDI in GCC Countries

In general, FDI has consisted of capital flow, expertise as well as technology in a host country. Officially, it is defined as "an investment make to achieve fixed benefits in enterprises operating outside of the country of the investor" (IMF, 1993). In the era of globalization, liberalization and privatization, FDI constitutes a significant component of international capital flows. Its linkage with the economic growth process of any country is well recognized in the literature as also by international organizations like the World Bank, IMF. FDI is considered as one of the important factors in a country's effort to limit dependence on natural resources as well diversifying economic activities in the long term.

Recognizing the importance of FDI, the governments of GCC countries are working towards developing sustainable knowledge-based economies away from oil and gas sectors by raising investment rates especially for private sectors, strengthening skills and domestic technological capacities, encouraging the competitiveness of exports in global markets and attracting foreign investments. It is hoped that openness to foreign capital and FDI will result in attracting new technology and raise efficiency with which the side technologies are used. This will also upgrade the techniques and management skills and increase marketing capabilities of domestic firms. FDI is therefore treated as one of the pillars for the structural transformation of the GCC economies (Mina, 2014).

Table 2.3 presents the FDI inflow into GCC economies during the period of 2000 to 2014, which shows that inflow of FDI is significant in most of the Gulf countries. As a percentage of GDP, average FDI inflow in GCC economies is more than FDI inflow in the U.S.A, developed economies as well as world average in five of the six GCC economies (Bahrain, Oman, Qatar, Saudi Arabia and UAE). In the case of Bahrain, the FDI inflow grows at an average annual growth rate of 4.6 percent over the past decade reaching USD 1.01 billion or nearly 3 percent of GDP in 2014. Meanwhile, inward of FDI stock grow by an average 58.7 percent of total GDP growth which amounts around USD 19 billion or about 55.4 percent of GDP at the end of the same year. FDI inward stock in Saudi Arabia has witnessed the highest level, which grows by a 19.1 percent of GDP during the period of 2000-2014 reaching USD 215.9 billion or 28.7 percent of GDP at the end of 2014 (Table 2.3).

UAE has witnessed the highest level of FDI inflow at USD 10.1 billion at the end of 2014 compared to the rest GCC countries. At the same time, FDI stock grows from USD 1.1 billion (1 percent of GDP) in 2000 to USD 115.6 billion (28.8 percent of GDP) in 2014, the second highest GCC country after Saudi Arabia. Followed by UAE, FDI in Qatar and Oman grow from USD 1.9 and 2.6 billion (10.8 and 13.6 percent of GDP) in 2000 to USD 31.0 and 19.7 billion or almost 14.8 and 25.3 percent of GDP percent, respectively in 2014. Kuwait has experienced the lowest level of FDI inflow and FDI stock during the period of 2000-2014 at an average 0.6 and 4.8 percent of GDP and reached USD 0.5 and 15.4 billion, respectively at the end of 2014 (Table 2.3). Most of FDI inward stocks in GCC countries are concentrated in finance, real estate, construction, and M&A in finance, communications, transportation and utilities (Mina, 2014).

Before the CRISIS period, FDI inflows to the Saudi Arabia grow from USD 0.5 billion (0.1 percent of GDP) in 2000 to USD 24.3 billion (5.8 percent of GDP) in 2007. Inflows of FDI to the UAE rise from USD 1.2 billion (1.1 percent of GDP) in 2001 to USD 14.2 billion (5.5 percent of GDP) in 2007. Followed by Qatar, Oman, and Bahrain, where FDI inflows grow from USD 0.3, 0.1, and 0.4 billion (1.4, 0.4 and 4.0 percent of GDP) in 2000 to USD 4.7, 3.3, and 0.9 billion in 2007 (5.9, 8.0 and 8.1 percent of GDP), respectively in 2007. Following the 2008 CRISIS period, Inflows of FDI to the UAE has dropped significantly to USD 4.0 billion (1.6 percent of GDP) in 2009, followed by Oman to USD 1.5 billion and Bahrain to USD 0.3 billion in the same year. However, Saudi Arabia and Qatar rise to USD 36 and 8.1 billion (8.5 and 8.3 percent of GDP), respectively in 2009. Flows of FDI to UAE rises gradually after the CRISIS (2010-2014), however still remained well below the level of 2007 at USD 10.1 billion (2.6 percent of GDP) at the end of 2014 (Table 2.3).

At the aggregate level, Global FDI inflow reaches USD 1228.3 billion in 2014 (2.4 percent of GDP), increasing at an average annual growth rate of 2.4 percent of GDP since 2000. Furthermore, there are large increases in the share of developing economies in the inflows of FDI. Inflows of FDI to developing economies grow by 3.1 percent of GDP reaching USD 681.4

billion in 2014 while the share of developed economies rises at an annual average growth rate of 2.01 percent of GDP. FDI inflows in Asian countries have witnessed a significant rise during the same period (average growth of 2.8 percent). There is a significant rise in the FDI inflow in the UK which grows at an average growth rate of 3.6 percent of GDP. However, in the USA, it grows at the rate of 1.3 percent of GDP (Table 2.3).

Most important factors that explain this increase in inflows of FDI into developing economies in general and GCC countries, in particular, are strong competitiveness in several industries, the rise in the prices of several commodities, reduction of taxes on FDI, rich natural resources, encouragement of foreign investment (UNCTAD, 2014). UNCTAD also argues that FDI inflow to developing countries will increase in the future because of the favorable expected economic growth, profit opportunities, opportunities arising out of corporate restructuring and the appetite of the source country to explore new markets.

Table 2.4 shows the performance index of inward FDI of UNCTAD in 2012. It can be seen from the table that the FDI performance index of GCC countries is higher than many others in the list: Qatar is ranked second; UAE is ranked fifth in the said table followed by Bahrain which is ranked twenty-third, Saudi Arabia twenty-ninth, Kuwait thirty-seventh and Oman thirty-ninth. This clearly reflects that GCC countries are considered as of the most preferred destinations for foreign investments.

Table 2.3

FDI in GCC Economies and Other Regions during the Period of 2000-2014

Country/Region	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
									FDI Inflows (USD Billion)							
Bahrain	0.4	0.1	0.2	0.5	0.9	1.0	2.9	0.9	2.6	0.3	0.2	0.8	0.9	1.0	1.0	0.9
Kuwait	0.0	- 0.1	0.0	- 0.1	0.0	0.2	0.1	0.1	- 0.0	1.1	1.3	3.3	2.9	1.4	0.5	0.7
Oman	0.1	0.0	0.1	0.0	0.1	1.5	1.6	3.3	3.0	1.5	1.2	0.9	1.0	1.6	1.2	1.1
Qatar	0.3	0.3	0.6	0.6	1.2	2.5	3.5	4.7	3.8	8.1	4.7	0.9	0.4	- 0.8	1.0	2.1
Saudi Arabia	0.2	0.5	0.5	0.8	1.9	12.1	18.3	24.3	39.5	36.5	29.2	16.3	12.2	8.9	8.0	13.9
UAE	- 0.5	1.2	0.1	4.3	10.0	10.9	12.8	14.2	13.7	4.0	5.5	7.7	9.6	10.5	10.1	7.6
GCC -Total	0.5	2	1.5	6.1	14.1	28.2	39.2	47.5	62.6	51.5	42.1	29.9	27	22.6	21.8	
									FDI Inflows as % of GDP							
Bahrain	4.0	0.9	2.3	4.7	6.6	6.6	15.8	8.1	7.0	1.1	0.6	2.7	2.9	3.1	3.0	4.6
Kuwait	0.0	-0.3	0.0	-0.1	0.0	0.3	0.1	0.1	0.0	1.1	1.1	2.0	2.1	1.3	0.8	0.6
Oman	0.4	0.0	0.6	0.1	0.4	5.0	4.3	8.0	4.9	3.1	3.0	2.2	1.3	2.0	2.1	2.5
Qatar	1.4	1.7	3.2	2.7	3.8	5.6	5.7	5.9	3.3	8.3	3.7	-0.1	0.2	-0.4	0.5	3.0
Saudi Arabia	0.1	0.3	0.2	0.4	0.8	3.7	4.9	5.8	7.6	8.5	5.5	2.4	1.7	1.3	1.1	3.0
UAE	-0.5	1.1	0.1	3.4	6.8	6.0	5.8	5.5	4.4	1.6	1.9	2.2	2.5	2.7	2.6	3.1
									FDI Inward Stock (USD Billion)							
Bahrain	5.9	6.0	6.2	6.7	7.4	8.3	11.2	12.1	14.7	15.0	15.2	15.9	16.8	17.8	18.8	11.9
Kuwait	0.6	0.4	0.4	0.4	0.4	0.6	0.8	0.9	8.7	10.2	11.9	15.2	18.1	16.1	15.4	6.7
Oman	2.6	2.6	2.7	2.7	2.8	4.4	6.0	9.3	12.3	13.7	15.0	15.9	16.9	18.5	19.7	9.7
Qatar	1.9	2.2	2.8	3.5	4.7	7.2	10.7	15.4	17.8	25.9	30.6	31.5	30.9	30.0	31.0	16.4
Saudi Arabia	17.6	17.3	17.7	18.5	20.5	33.5	50.7	73.5	112.9	148.1	176.4	186.8	199.0	207.9	215.9	99.7
UAE	1.1	2.3	2.3	6.6	16.6	27.5	40.3	54.5	68.2	72.2	77.7	85.4	95.0	105.5	115.6	51.4

Source : Constructed from UNCTAD (2015) http://unctad.org/en/Pages/Statistics.aspx

Table 2.3 (Continued)

Country/Region	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
							FDI Inward Stock as % of GDP									
Bahrain	65.2	65.2	64.7	60.7	55.9	51.8	60.5	55.7	57.3	65.4	58.9	54.9	54.9	54.3	55.4	58.7
Kuwait	1.6	1.2	1.2	0.8	0.7	0.8	0.8	0.8	5.9	9.7	10.3	9.8	10.4	9.2	8.9	4.8
Oman	13.6	13.7	13.9	13.1	11.9	14.5	16.5	22.8	20.7	29.4	26.4	23.4	22.4	24.1	25.3	19.5
Qatar	10.8	12.6	14.6	14.7	14.7	16.1	17.5	19.3	15.4	26.5	24.4	18.6	16.2	14.7	14.8	16.7
Saudi Arabia	9.3	9.4	9.4	8.6	7.9	10.2	13.5	17.7	21.7	34.5	33.5	27.9	27.1	27.9	28.7	19.1
UAE	1.0	2.2	2.1	5.3	11.2	15.2	18.1	21.1	21.6	28.5	27.2	24.6	25.5	26.2	28.8	17.3
							FDI Inflow as % of GDP in Other Regions									
GCC	0.1	0.5	0.4	1.4	2.6	4.2	4.8	5.2	5.2	5.4	3.7	2.0	1.8	1.5	1.7	2.7
World	4.3	2.6	1.9	1.6	1.7	2.1	2.9	3.5	2.9	2.1	2.2	2.4	1.8	1.9	1.4	2.4
Developed economies	4.5	2.4	1.7	1.3	1.3	1.8	2.7	3.3	2.5	1.6	1.7	2.0	1.2	1.3	1.3	2.0
Developing economies	3.8	3.2	2.4	2.5	3.1	3.1	3.4	3.9	3.8	3.0	3.1	3.0	2.8	2.8	2.9	3.1
Developed Asia	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.7	0.7	0.3	0.1	0.1	0.2	0.3	0.3	0.3
Developing Asia	3.7	2.9	2.1	2.5	2.8	3.2	3.5	3.6	3.4	2.7	2.9	2.6	2.3	2.2	2.2	2.8
UK	8.2	3.6	1.6	1.5	2.6	7.7	6.3	7.0	3.3	3.5	2.2	2.1	1.9	1.5	0.9	3.6
U.S.A	3.0	1.5	0.7	0.5	1.1	0.8	1.7	1.5	2.1	1.0	1.3	1.4	1.0	1.1	0.5	1.3

Source : Constructed from UNCTAD (2015) http://unctad.org/en/Pages/Statistics.aspx

Table 2.4
Rankings of some Developed and Developing Countries by the Inward FDI Performance Index, 2012

GCC Countries	Rank	Other Asian Countries	Rank	Developed Countries	Rank
Bahrain	23	China	27	U.S.A	1
Kuwait	37	Malaysia	35	U.K	11
Oman	39	India	79	Germany	6
Qatar	2	Japan	26	Canada	14
Saudi Arabia	29	Thailand	56	France	20
UAE	5	Indonesia	84	Australia	15

Source: UNCTAD, World Investment Report 2012
http://chartsbin.com/view/2266 and http://unctad.org/SearchCenter/Pages/results.aspx?k

2.3 GCC Financial Systems Before and After the Financial Crisis

Prior to the CRISIS in 2008, there was optimism about the dynamism and growth forecasts of the economies in GCC region and their financial centers. The economy of the GCC countries expanded at rates (14.9 percent) well above the global average (7.6 percent) and financial sectors have witnessed significant growth throughout the last decade (Kern, 2012). The economies of GCC countries, however, did not escape the world turmoil that has shaken the financial markets. But, the continued availability of income from hydrocarbons (oil and gas) in the region, GCC economies appear stable despite the spill-over effect of the CRISIS over the last six years 2010-2014.

Financial systems in GCC countries have witnessed two major issues during the course of the financial and economic crisis. Firstly, there is significant decline in the indices of financial markets in the USA and the European Union since the latter half of 2008 and continue during the early days of 2009. This has a knock-on effect on the financial markets of GCC economies and as well the other way round: stock market index drops by 50 percent in the Kingdom of Saudi Arabia; around one-fifth in Oman; two-thirds in Dubai; and almost one-third in the case of Abu Dhabi, Bahrain and Kuwait (Callen *et al.*, 2014; Sal, 2013, 2014; Kern, 2012; Bahrain, 2011;

World Bank, 2010). Secondly, at the end of 2009, USD10 billion debt problems of the state-owned enterprises Saad and Al-gosaibi in Saudi Arabia and similarly in Dubai are bailed-out by neighboring Abu Dhabi. This shows that there exist a cooperation between the financial markets in GCC countries to solve the debt problems caused by the CRISIS, in general, and state-owned firms, in particular (Baraka et al., 2013, 2014; Kern, 2012). This turmoil has not only had a significant impact on domestic financial markets but also on global financial markets.

During the CRISIS 2008-2009, GCC markets fell by between one-fifth and two-thirds compared to about 50 percent decline in the Morgan Stanley Capital International (MSCI) Emerging Markets and S&P 500 (Kern, 2012). Since the critical phase of the financial turmoil, there is a wide divergence in the performance of stock markets in GCC countries: with stock indices in Kuwait, Dubai and Bahrain remained below 50 percent of their levels immediately prior to the financial crisis (Kern, 2012). In contrast, Abu Dhabi, Oman and Saudi Arabia have recovered around 80 to 90 percent of their index values before CRISIS period and are in line with S&P 500 in the USA (Callen *et al.*, 2014; Hammoudeh & Choi, 2007; Kern, 2012; Mclaurin, 2007; World Bank, 2010). However, even the rebound in these three GCC markets has been very weak to keep up with the pace in other stock markets especially in emerging countries where price levels have risen to 15 percent above pre-crisis levels.

With regards to stock price development, the market capitalization of listed companies in Saudi Arabia, Kuwait, Abu Dhabi and Dubai have declined significantly compared to their level before the CRISIS. However, the market capitalization of companies listed in Oman, Bahrain, and Qatar stock exchanges are close to pre-crisis levels or more at the end of 2010 (Al-Ammari, 2014; Ahmed, 2014; Callen *et al.*, 2014; Kammer & Koranchelian, 2013; Kern, 2012).

An analysis of the GCC stock markets will indicate that the Qatar stock exchange is the best performing market in GCC countries during 2014: total returns have amounted to 18.4 percent in the said year. Total return is 24.2 percent at the end of 2013, the second highest among all GCC countries (see Figure 2.7). Though the trading activities on the Bahrain stock exchange declined to its lowest level in 2014, it has experienced the second highest growth rate of 14.2 percent. This is followed by the Dubai financial market and Abu Dhabi securities market which rises by 12.0 percent and 5.6 percent respectively during the same period (see Figure 2.7). The total market capitalization of the combined GCC stock markets rises by 7.6 percent to reach USD 1 trillion, compared to USD 961.5 billion at the end of 2013. On the other hand, compared to 2013, trading activities in the GCC stock markets grow by 60.3 percent in 2014: the total trading value has amounted to USD 796.6 billion during 2014 compared to USD 497.1 billion in 2013 (Central Bank of Bahrain, 2014; IMF, 2013; Kammer, 2013).

The performance of GCC stock markets at the end of 2014 is a shock to the investors, as they are expecting that the upward trend as is witnessed in 2013. However, the decline in oil prices in 2014 lead to random selling of stocks which has affected the overall performance indices of GCC stock markets (Al-Ammari, 2014; Baraka *et al.*, 2014). Nevertheless, despite the drop in the region's markets, the combined market capitalization rise by 7.6 percent to reach USD 1 trillion, as a result, entry of new firms in GCC markets during 2014.

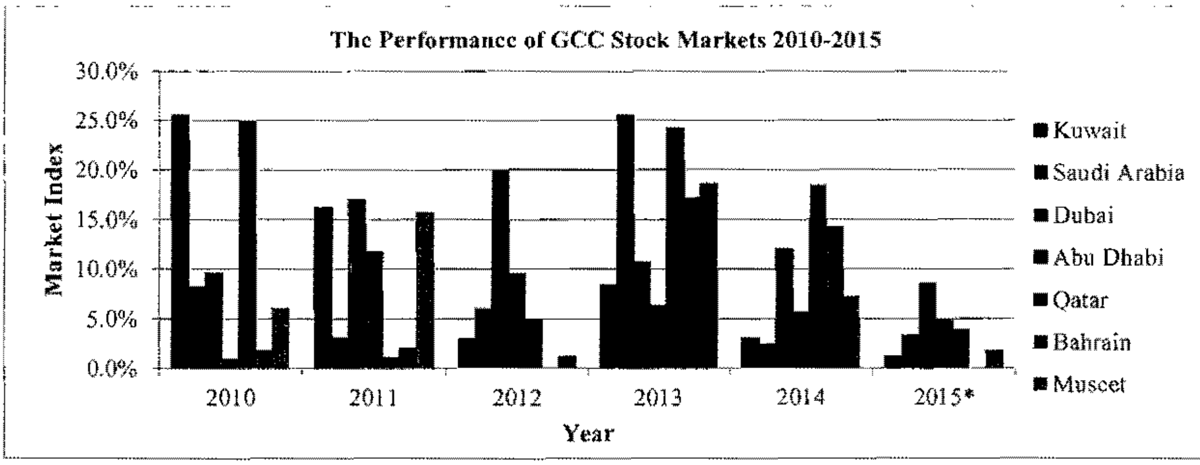


Figure 2.7:
Performance of GCC Stock Markets during the Last Five Years (2010-2014) and the beginning of 2015
Source: http://al-seyassah.com/

There are 15 new listed firms in 2014, which is the largest number of new firms that have been listed since 2008. Initial Public Offering (IPOs) of the newly listed firms is highest in the Saudi Stack Exchange; significant amongst them is that of the shares of the National Commercial Bank which is listed on November 14, 2014. In the said year, five new firms are listed in Dubai and Abu Dhabi stock market, three in Muscat and one in Kuwait (Baraka *et al.*, 2015).

2.4 The GCC Banking Sector

The banking sector in GCC countries has a dominant position in the financial sector (Al-Hassan *et al.*, 2010). These economies are primarily driven by oil revenues and want to diversify and expand their economies. Al-Obaidan (2008) argues that the financial sector is one of the most economically feasible diversification options available to these economies. The GCC regions have a significant financial sector with well-capitalized and profitable banks (Al-Musalli & Ismail, 2012a; Zeitun, 2012). The banking sector in the region is the second largest contributor to the GDP after the oil sector, as well as the main driver of the non-oil GDP growth in these economies (Loghod, 2010).

Prior to the period of the CRISIS (2000-2007), when the oil and gas prices are high, increase governmeut spending, high liquidity in the banking sector, bullish sentiments of the consumer and investors resulted in rapid rise in bank lending to non-oil creating domestic imbalauces (e.g., bubbles of asset price) (Tata & Mazarei, 2008; Al-Hassan *et al.*, 2010; Kammer & Dorsey, 2011; Kern, 2012). During the period of the CRISIS (2008-2009), the hydrocarbon revenues decrease; there is a reversal of the short-term capital inflows to the GCC countries and straining of the rollover of external debt, especially for the private sector in the Gulf region.

The CRISIS has revealed that the GCC banking sector has some weaknesses. High exposure to equity prices, construction and real estate sector and increasing dependence on external financing (Al-Hassan *et al.*, 2010; Ghosh, 2014; Kammer & Koranchelian, 2013; Kern, 2012) are some of these weaknesses. During the CRISIS, the Central Bank of Kuwait has stopped the trading in Gulf Bank share after the bank has suffered huge losses in foreign currency derivative contracts in 2008 (Maghyereh & Awartani, 2014b). After the CRISIS, the levels of bank profitability, capitalization and liquidity improve as a result of decline in the ratio of loans to total deposits as well as increase government support which is expected to continue in future (Al-Hassan *et al.*, 2010; Baraka *et al.*, 2013, 2014, 2015; Kern, 2012).

An in-depth analysis of the performances of the banking sector in GCC countries is necessary to identify the strengths and weaknesses as well as the gaps and understand how the financial systems in GCC countries, especially the banking sector, can be affected by the changes in the GCC economic conditions. The remainder of this section is organized as follows: section 2.4.1 illustrates the structure of the GCC banking sector; section 2.4.2 describes the profile in the growth of credit to commercial banks in GCC countries; section 2.4.3 shows the analysis of the GCC banking sector balance sheet during the study period; section 2.4.4 shows the analysis of credit risks of the GCC banking sector; and section 2.4.5 analysis the indicators of financial health of the GCC banking sector.

2.4.1 Structure of the GCC Banking Sector

Banking has a prominent position in the GCC economies. Total assets of the banking sector in GCC economies as a percentage of GDP grow from 85 percent in the year 2000 to 125 percent of GDP in 2007. Even after the CRISIS, though the percentage declines to 110 percent of GDP in 2012, it rose to 121 percent by the end of 2014. Nonbank financial institutions (NBFIs) have limited presence in the GCC economies. Investment funds tend to remain largely focused on domestic equity and real estate. In addition, most of the investment funds are banks' ownership: 245 investment funds in Saudi Arabia, 71 in Kuwait, 45 in UAE, 17 in Oman, 6 in Qatar and 4 in Bahrain at 7th September 2015 (http://www.gulfbase.com).

At the country level, Bahrain has the largest banking sector in the Gulf region, with average assets amounting to almost 169 percent of GDP for the period 2000 to 2014, while Oman has the smallest banking sector assets at 61 percent of GDP during the same period. The UAE has the second largest banking sector with assets of 132 percent of GDP; followed by Kuwait at 101 percent of GDP; Qatar at 97 percent of GDP; and Saudi Arabia at 67 percent of GDP over the same period (Table 2.5).

Table 2.5
Total Banking Sector Assets 2000-2014 as % of GDP

Year	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	GCC
2000	106	99	52	80	62	109	85
2001	103	115	51	85	63	111	88
2002	74	120	52	85	68	111	85
2003	101	103	52	84	64	105	85
2004	119	94	50	76	65	107	85
2005	140	81	45	80	61	120	88
2006	187	84	50	85	61	133	100
2007	246	101	64	103	71	162	125
2008	252	84	66	94	68	142	118
2009	222	120	70	113	85	162	129
2010	222	112	68	125	72	152	125
2011	197	100	65	98	62	135	110
2012	186	92	71	108	64	140	110
2013	192	99	74	118	68	144	116
2014	194	109	79	120	71	152	121
Average	169	101	61	97	67	132	105

Source: IMF Reports, and GCC Central Banks and Calculation by the Researcher

Over the period of 2000-2007, Bahrain's banking sector has the highest average level of total assets amounting to 135 percent of GDP; while the average total assets of the banking sector in Oman is the lowest (52 percent of GDP) during the same period. In the case of Kuwait, Qatar and Saudi Arabia, the average total assets of the banking sector as a percentage of GDP is 100 percent, 85 percent, and 64 percent respectively (Table 2.5).

In 2008, except in Bahrain and Oman, total asset of the banking sector as a percentage of GDP the banking sector in all GCC countries go down. The ratio declines to 142 percent, 94 percent, 84 percent and 68 percent respectively for UAE, Qatar, Kuwait and Saudi Arabia. The total assets of the Bahrain's banking sector grow to 252 percent of GDP, while, in the case of Oman, the ratio goes up to 66 percent of GDP during the same year (Table 2.5). Oman banking sector is the smallest in the GCC region. It may be recalled here that in 2008, the Central Bank of Kuwait halted trading in the Gulf Bank stocks and appointed an auditor to monitor operations after the bank suffered big losses in currency derivative contracts. Both Kuwait and the UAE introduce the system of deposit insurance in the year 2008 to ensure financial stability. To tide over the crisis, the central banks of UAE and Saudi Arabia Monetary Agency (SAMA) inject liquidity into their banking systems. Qatar, to the contrary, invests in the stocks of the country's banks in the said year (Maghyereh & Awartani, 2014a, 2014b).

Post-CRISIS, during the last five years (2010-2014), an average of total assets of Bahrain's banking sector are 198 percent of GDP; followed by the UAE at 145 percent of GDP, Qatar at 114 percent of GDP, Kuwait at 102 percent of GDP. In the case of Oman and Saudi Arabia, the average levels of total assets of the banking sector as a percent of GDP are 71 and 67 percent respectively during the same period (Table 2.5).

The banking sector in GCC countries is dominated by foreign banks. This is the result of the reduction of entry barriers and licensing restrictions for foreign banks in the Gulf region. In GCC countries, a number of foreign banks represent 54 percent of the total number of banks at the end of 2014. The percentage of foreign banks is highest in Bahrain: of the total number of 103 banks in the country, 57 are foreign banks accounting for 74 percent of the total assets of the Bahrain's banking sector at the end of 2014 (Table 2.6).

In 2014, the number of foreign banks in UAE is 28 banks representing 55 percent of the total number of banks in the country. Assets of foreign banks constitute, 76 percent of the total assets of UAE's banking sector. There are 12 foreign banks both in Kuwait and Saudi Arabia. However, foreign banks assets in Kuwait represent 50 percent of total banking sector assets, while it is 36 percent of Saudi banking sector assets at the end of 2014. Assets of foreign banks in Oman and Qatar have totaled 50 percent of the total assets of the banking sector in each country. At the end of 2014, assets of foreign banks represent 73 percent of the total assets in the banking sector of Oman, while it is 29 percent for the banking sector in Qatar (Table 2.6).

Table 2.6
Structure of the Domestic and Foreign Banking Sector in GCC Countries in the End of 2014

Country	**Total Banks**	**Domestic Banks No**		**Foreign Banks No.**		**As % of Banking Sector Assets**	
						Domestic Assets %	**Foreign Assets %**
Bahrain	103	46	45%	57	55%	0.26	0.74
Kuwait	23	11	48%	12	52%	0.50	0.50
Oman	18	9	50%	9	50%	0.71	0.29
Qatar	18	9	50%	9	50%	0.27	0.73
Saudi Arabia	24	12	50%	12	50%	0.64	0.36
UAE	51	23	45%	28	55%	0.24	0.76
GCC	237	110	46%	127	54%		

Source: Bahrain Central Bank, 2014; Kuwait Central Bank, 2014; Oman Central Bank, 2014; Qatar Central Bank, 2014,SAMA, 2014; UAE Central Bank, 2014

2.4.2 Trends in Credit Growth of the GCC Banking Sector

In the last decade, GCC countries have experienced rapid growth in domestic credit to the private sector as percentage of GDP (DCPS), rising from 34.31 percent of GDP in 2000 to 53.08 percent of GDP at the end of 2014 or at an average of 47.18 percent over the period of 2000-2014 (Figure 2.5; Table 2.7). During the period of 2000-2014, Kuwait has witnessed the highest significant growth in DCPS at 64.32, while Saudi Arabia's credit growth has the lowest growth rate in the Gulf countries at around 34.81 percent of GDP over the same period. As for other GCC countries, Bahrain witnesses the second largest credit growth in the region at almost 55.65 percent of GDP; followed by the UAE at 53.01 percent; Oman at 38.48 percent; and Qatar at 36.86 percent of GDP (Figure 2.8; Table 2.7).

The average DCPS is more than their counterparts in other developing and emerging countries (Figure 2.9; Table 2.7). During the period of 2000-2014, DCPS in GCC countries grow by an average of 47.18 percent of GDP compared to 38.6 percent in the Arab World; 40.71 percent in MENA; and 39.37 percent of GDP in South Asia. The average level of DCPS grows by an average of 128.28 percent in the world, 185.16 percent in the USA and 160.13 in the UK during the same period (Figure 2.9; Table 2.7).

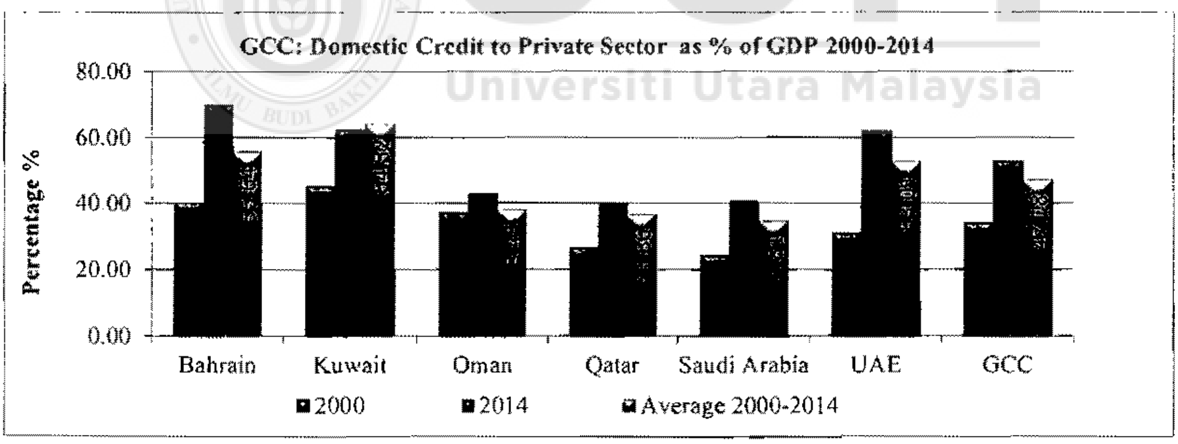


Figure 2.8:
Trends the Domestic Credit to Private Sector as Percentage of GDP in GCC Countries 2000-2014
Sources: Country Authorities. IFS and World Economic Outlook (IMF): and Researcher Calculate.

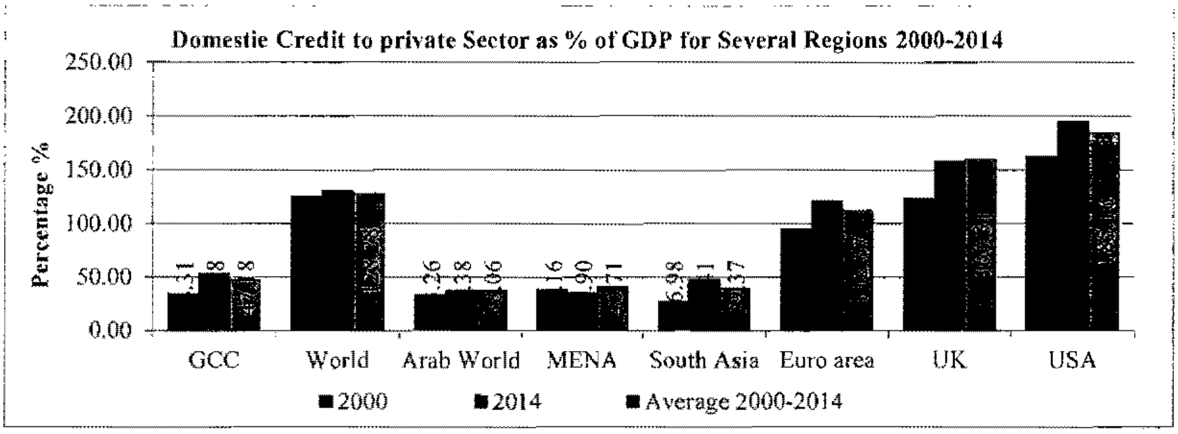


Figure 2.9:
Trends the Domestic Credit to Private Sector as percentage of GDP in Different Region 2000-2014
Sources: Country Authorities; IFS and World Economic Outlook (IMF); and Researcher Calculate.

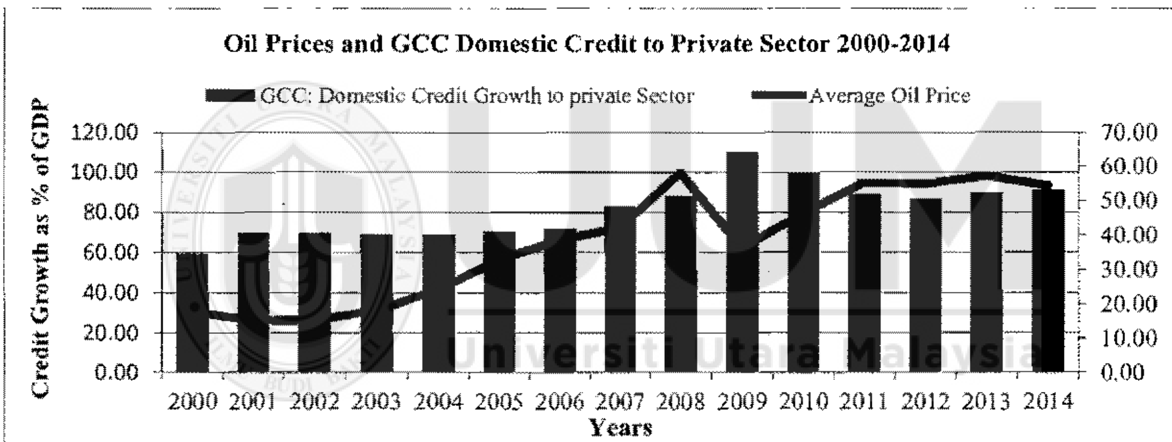


Figure 2.10:
Trends the Oil Prices and Domestic Credit to Private Sector in GCC Countries 2000-2014
Source: Country Authorities; IFS and World Economic Outlook (IMF); and Researcher Calculate.

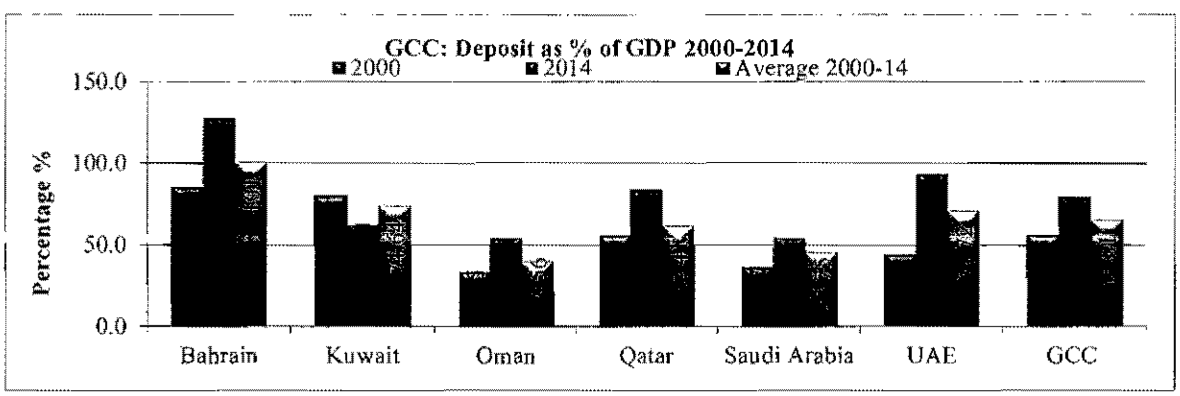


Figure 2.11:
Trends the Banking Sector Deposits as Percentage of GDP in GCC Countries 2000-2014
Source: Different Versions of Gulf Central Banks

An increase in the average global oil price led to increasing the DCPS (Figure 2.10). Al-Hassan *et al.*(2010), Hesse and Poghosyan (2009) and Crowley (2008) argue that increased oil prices have strengthened non-oil GDP growth and government spending, resulting in increase in the level of business confidence, regional and domestic private activities as well as investments. Over the period of 2000-2014, average oil prices grow by USD 64.67 to reach USD 93.17 per barrel at the end of 2014 compared to USD 30.38 per barrel in 2000. In turn, DCPS in the Gulf region grows by 47.18 percent of GDP over the same period to reach 53.08 percent at the end of 2014 compared to 34.31 percent of GDP in 2000 (Figure 2.10). In addition, an increase in the deposits of the banking sector has strengthened its capacity of lending (Figure 2.11; Table 2.7): at the end 2014, Bahrain has witnessed the highest level of deposits and credit growth as a percentage of GDP (at 127.7 and 69.72, respectively). It is lowest in Oman (54.6 and 43.33 respectively) (Figures 2.8, 2.11; Table 2.7).

Al-Hassan *et al.* (2010) argue that the experience at the global level suggests that high rates of DCPS during economic recovery may lead to increase in the levels of credit default, especially when the economic activity starts slowing down. The recent higher growth in DCPS is driven by the revival of projects, which are frozen during the past five years (Central Bank of Bahrain, 2014a, 2014b).

Table 2.7

Trends the Domestic Credit to Private Sector (% of GDP) during the Period 2000-2014

	GCC Countries							Other Regions						
	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	GCC	World	Arab World	MENA	South Asia	Euro area	UK	USA
2000	40.51	45.39	37.46	26.85	24.37	31.28	34.31	125.25	33.26	38.16	26.98	94.46	123.37	162.09
2001	41.82	64.29	40.13	34.89	27.26	34.42	40.47	126.23	36.13	41.59	27.36	95.86	129.25	170.21
2002	44.36	66.67	38.90	28.68	29.11	36.12	40.64	123.26	36.80	42.08	30.33	96.17	133.17	161.69
2003	42.13	67.74	36.79	29.99	28.40	36.18	40.20	127.18	35.86	40.95	30.21	98.33	137.03	176.56
2004	43.94	63.44	34.23	28.98	32.35	37.72	40.11	127.13	34.68	39.69	34.41	100.26	144.50	183.94
2005	43.68	58.48	30.65	33.72	35.42	43.77	40.95	129.51	35.74	40.47	37.70	105.62	150.90	187.85
2006	44.88	57.43	30.73	36.00	33.72	47.30	41.68	132.30	35.77	40.38	40.11	110.90	161.60	197.71
2007	53.12	66.08	35.55	41.58	37.07	56.04	48.24	132.23	38.86	44.13	41.92	117.23	177.69	206.30
2008	64.21	63.54	35.12	40.80	37.68	67.08	51.41	126.74	40.67	44.92	44.77	122.41	200.61	188.02
2009	71.44	85.17	46.70	51.74	45.63	84.05	64.12	135.06	47.79	50.35	43.48	129.02	201.09	196.53
2010	67.70	79.25	42.35	44.70	39.27	75.04	58.05	129.44	43.20	43.63	45.92	129.00	190.54	190.71
2011	68.91	64.47	40.24	39.28	34.19	63.99	51.85	124.66	39.71	40.12	46.36	127.02	175.10	182.35
2012	69.13	58.70	41.53	36.52	36.44	59.07	50.23	126.33	38.27	34.90	46.83	124.11	166.42	186.00
2013	68.89	61.58	42.69	39.27	40.29	61.07	52.30	128.44	36.82	34.39	46.71	118.97	155.49	192.31
2014	69.92	62.50	43.33	39.86	40.90	61.98	53.08	130.37	37.38	34.90	47.41	120.76	157.82	195.20
Average	55.64	64.32	38.43	36.86	34.81	53.01	47.18	128.28	38.06	40.71	39.37	112.67	160.31	185.16

Sources: Country Authorities; IFS and World Economic Outlook (IMF); and Researcher Calculate.

2.4.3 Balance Sheets of GCC Banking Sector: Stylized Facts

The banking sector in the Gulf region still depends on the deposits and loans as the main sources and uses of funds (Figure 2.12, 2.10). Banking sector' assets in GCC countries mainly consist of loans as well as securities investments. Oman has the highest level of loans at 70 percent of total assets during the period of 2014; while Bahrain has witnessed the lowest level of loans in the Gulf region at 55 percent of total assets in the banks' balance sheet during the same period. The said ratio is 65 percent in the balance sheet of banks' in Qatar at the end of 2014, followed by Kuwait, Saudi Arabia, and the UAE at 62, 60 and 60 percent, respectively (Figure 2.12).

Securities investments as a percentage of total assets are 10 percent in both Oman and the UAE; 13 percent in Kuwait; and 17 percent in Qatar and about 21 percent in Bahrain and Saudi Arabia (Figure 2.9). During the CRISIS, the banking sectors have witnessed significant losses on these securities investments by mark-to-market valuations of their trading portfolios, despite there being no evidence to indicate the investment book of banks are in the classes of high-risk assets, financial derivatives or stocks (Al-Hassan *et al.*, 2010). At the end of 2008, the GCC banking sector held almost 18 percent of their portfolio investments in different securities, with only around one percent of this percentage in stocks and derivatives (Bahrain, 2009; ICAEW, 2014a, 2014b; IMF, 2009, 2014).

Due from banks, constitute almost 16 percent of total assets in Qatar; approximately 14 percent in the UAE; 11 percent in Bahrain and Kuwait; and 0.5 percent in Saudi Arabia, which is the lowest due from banks in GCC countries at the end of 2014.

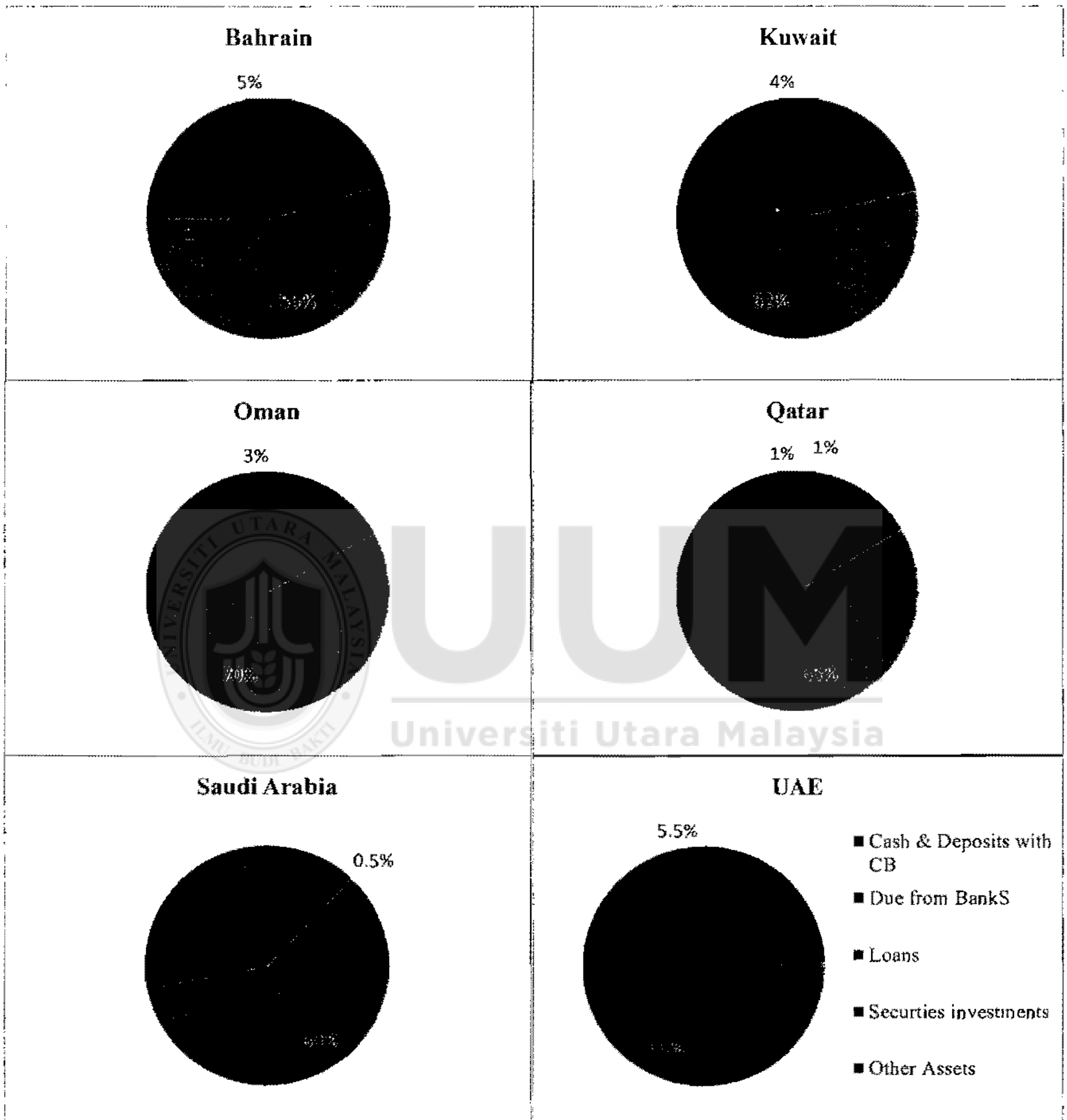


Figure 2.12:
Assets Structure of Banking Sector in GCC Countries 2014
Source: Gulf Central Banks and Researcher Calculate. 2014

Customer deposits constitute the highest component of banks' liabilities in GCC countries. At the end of 2014, the percentage of customer deposits is at the highest level in Saudi Arabia (75 percent); followed by Bahrain at 73 percent; Kuwait and Oman at 70 percent each, UAE at 62 percent and Qatar at 60 percent (Figure 2.13). This means that the customer deposits are the main source to finance loans GCC banks.

Shareholders' equity as a percentage of total liabilities is at the lowest level at 12 percent in Saudi Arabia; while it is at the highest level at 15 percent Oman. Bahrain, Kuwait, Qatar and the UAE have a similar level of shareholders' equity as a percentage of total liabilities at the end of 2014. Furthermore, the item due to banks constitutes 17 and 14 percent of total liabilities in Qatar and UAE respectively at the end of 2014. Bahrain and Saudi Arabia have witnessed the lowest level of due to banks as a percentage of total liabilities at 4 and 6 percent, respectively. It is nine and seven percent respectively in Kuwait and Oman's banking sectors (Figure 2.13).

Reliance on bond financing is low in the banking sector in GCC countries. On a comparative basis, however, bond financing as a percentage of total liabilities is highest in Qatar (four percent), while in the Oman and Bahrain two percent at the end of 2014. The said ratio in Saudi Arabia, Kuwait, and the UAE is only one percent at the end of 2014 (Figure 2.13). This leads to heightened mismatch between assets and liabilities in the GCC banks.

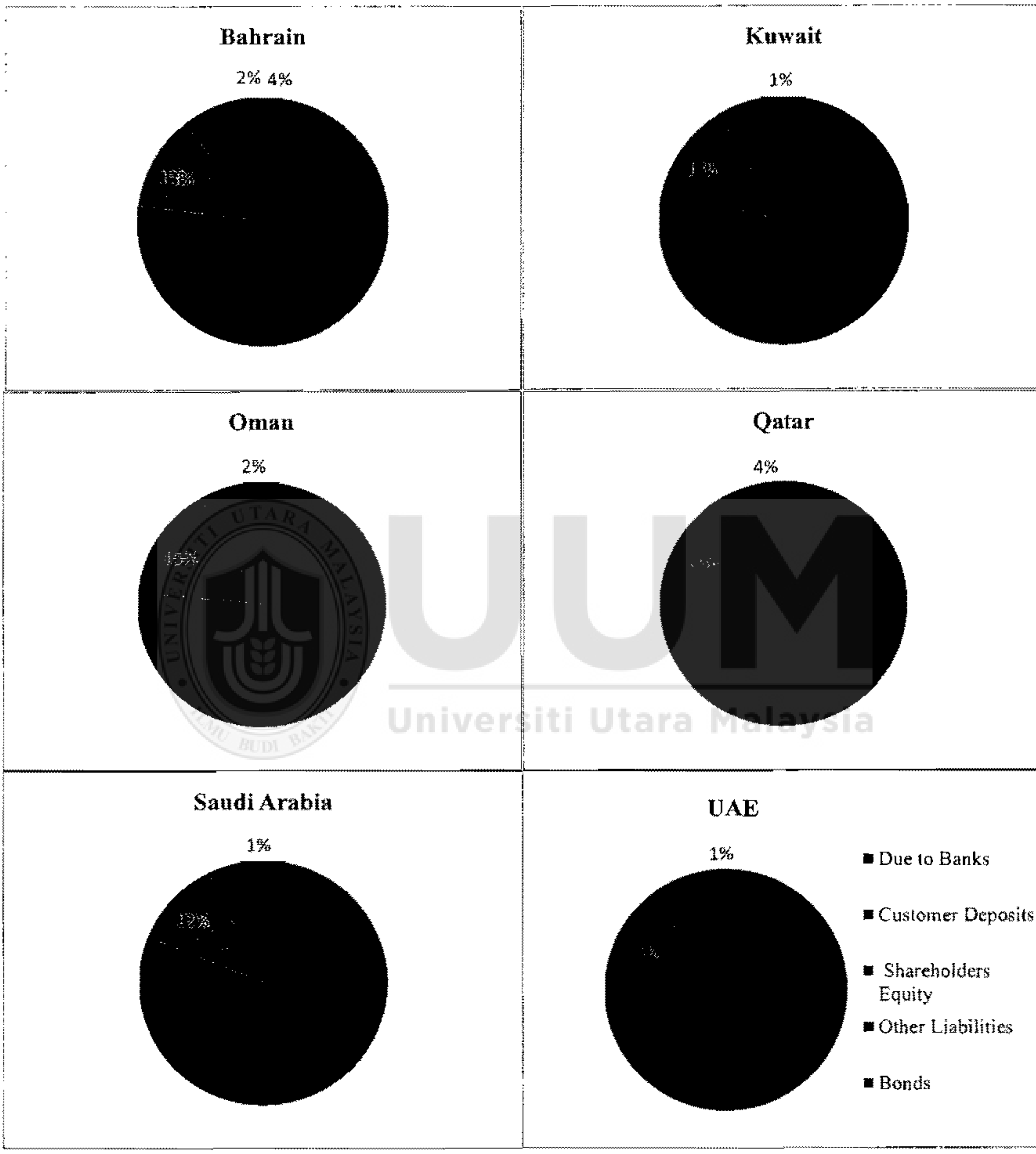


Figure 2.13:
Liabilities and Equity Structure of Banking Sector in GCC Countries 2014
Source: Gulf Central Banks and Researcher Calculate, 2014

Furthermore, except for Bahrain, foreign liabilities in the balance sheet of banks GCC countries are still limited (Figure 2.14). The average level of foreign liabilities to total liabilities in the banking sector of Bahrain is 79 percent during the period of 2000-2014. This suggests that the foreign liabilities have played a major role in the lending activities Bahrain banks. Average foreign liabilities as a percentage of total liabilities in the UAE and Qatar are 16 percent during the same period and it averages 27 and 23 percent respectively for these countries during the CRISIS. In general, foreign liabilities in the balance sheet of GCC banks have grown since the CRISIS. The average foreign liabilities as a percentage of total liabilities in the banking sector of Oman, Kuwait, and Saudi Arabia are ten, nine and eight percent respectively during the period of 2000-2014. During the CRISIS, the average levels of foreign liabilities as a percentage of total liabilities are 14, 11, and nine percent respectively in Oman, Kuwait, and Saudi Arabia.

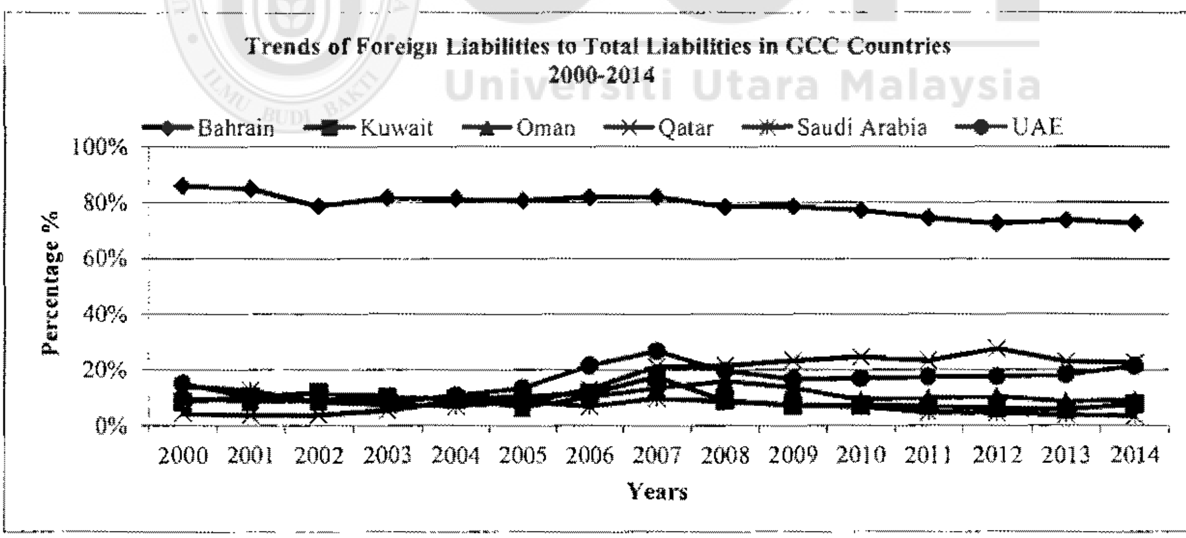


Figure 2.14:
Trends of Foreign Liabilities to Total Liabilities for the Banking Sector in GCC Countries 2000-2014
Source: Different Versions of Gulf Central Banks 2000-2014

2.4.4 Financial Soundness Indicators of GCC Countries

2.4.4.1 Capitalization

Capitalization of the banking sector in GCC is presented in Table 2.8. The minimum regulatory CAR is 12 percent in Kuwait and Bahrain; 11 percent in the UAE; 10 percent in Qatar and Oman; and eight percent in Saudi Arabia (GCC Authorities, 2015). According to IMF (2010), a higher level of capitalization during 2000 to 2007 is associated with higher level of profitability. In 2008, profitability is adversely affected by the higher level of provisioning. Post-CRISIS, there is an overall decline in the level of capitalization with a corresponding drop in the level of profitability.

During 2000-2007 and also during the CRISIS of 2008-2009, the banking sector in Qatar has the highest average level of CAR of 24 and 20.2 percent respectively; while the banking sector in the UAE has the lowest average level of CAR at 17.2 and 13 percent respectively during the same period. As for Bahrain, it averages 23.2 and 18.1 percent, at 20.2 and 17.1 percent in Kuwait, at 19.5 and 16.0 percent in Saudi Arabia; and at 17.3 and 14.7 percent respectively in Oman over the same period.

Post-CRISIS, the CAR of the banking sector in Oman is at the lowest average level in the Gulf countries at 15.8 percent; as a result of capital injections into banks by the UAE government in 2009, banks in UAE has the highest average level at 19.9 percent during the same period (Baraka *et al.*, 2015). The average level of CAR of the banks in Bahrain, Kuwait, Saudi Arabia and Qatar are 19.4, 18.2, 17.7 and 17.3 percent respectively during the same period (Table 2.8).

Table 2.8

Financial Soundness Indicators (Capitalization) of GCC Countries 2000-2014 (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Capital Adequacy Ratio																
Bahrain	17.0	25.8	23.4	23.8	25.7	26.9	22.0	21.0	18.1	19.6	19.9	19.9	19.3	19.2	18.3	21.3
Kuwait	22.2	22.0	19.7	18.4	17.3	21.1	21.2	19.4	17.1	16.7	18.9	18.5	18.0	18.9	18.3	19.2
Oman	17.4	16.8	17.2	17.6	17.6	18.5	17.2	15.8	14.7	15.6	15.8	15.9	16.0	16.2	15.1	16.5
Qatar	24.3	24.6	24.6	25.3	24.9	24.5	22.2	21.7	20.2	16.1	16.1	20.6	18.9	16.0	16.3	21.1
Saudi Arabia	19.8	19.6	19.2	19.4	17.8	17.8	21.9	20.6	16.0	16.9	17.6	17.6	18.2	17.9	17.9	18.5
UAE	20.2	20.0	18.3	18.9	16.9	17.4	16.6	14.4	13.0	19.9	20.7	20.0	21.2	19.3	18.1	18.3
Capital to Assets																
Bahrain	12.7	12.7	12.8	12.9	13.6	13.7	14.3	12.6	12.9	12.4	13.7	13.7	12.6	11.8	12.2	13.0
Kuwait	11.5	11.2	10.4	10.7	12.1	13.0	11.7	12.6	11.7	12.1	13.9	12.4	12.6	12.2	11.3	12.0
Oman	12.4	13.2	13.6	12.6	12.9	14.6	12.9	14.5	13.3	13.5	13.5	12.5	13.0	13.5	11.7	13.2
Qatar	11.5	12.1	12.3	14.0	13.5	12.8	15.1	13.5	15.5	16.1	16.1	20.6	18.9	16.0	16.5	15.0
Saudi Arabia	8.1	8.4	8.8	8.8	8.0	8.8	9.3	9.9	10.1	11.9	12.8	14.2	13.9	13.6	13.8	10.7
UAE	10.6	10.9	11.2	11.4	11.1	11.9	12.6	10.5	11.8	16.0	16.6	17.2	16.8	15.2	12.3	13.1

Sources: IFS and World Economic Outlook (IMF); Country Authorities; and Researcher Calculate

2.4.4.2 Asset Quality

The asset quality of the banking sector in GCC countries has improved over the period 2000 to 2007 (Table 2.9): average ratio of NPLs to total loans ratio has witnessed a decline from 9.7 percent in 2000 to reach around 2.5 percent at the end of 2007 in GCC countries. The said ratio reduces from 19.2 and 12.7 respectively in 2000 in Kuwait and UAE to 3.2 and 2.9 in 2007.

There is a sharp rise in NPLs ratio in 2009 (Table 2.9). NPLs ratio in the banking sector of Kuwait increases from 5.3 in 2008 to 11.5 percent in 2009. Banks in Qatar has the lowest level of NPLs ratio which increases from 1.2 in 2008 to 1.7 in 2009. The NPLs ratio in the banks of Bahrain, UAE, Oman and Saudi Arabia rise from 2.3, 2.3, 2.1 and 1.4 percent in 2008 to 3.9, 4.3, 2.7 and 3.3 percent respectively in 2009. Over the period of 2010-2014, the average NPLs ratio is highest in the banking sector of Kuwait at 5.7 percent: the Gulf Bank in Kuwait is closed in 2009 due to NPLs problem. UAE banks have the second highest average level of NPLs ratio (7.01 percent) during this period. The average value of the said ratio is 5.2, 2.2, 1.8 and 1.8 in the banks of Bahrain, Oman, Saudi Arabia and Qatar respectively.

The fall in asset quality during the CRISIS, which has reflected in the rise in NPLs ratio, is more prominent in countries that have faster growth in credit prior to the CRISIS and higher exposure to real estate and construction sectors. Loan growth has witnessed the highest average level in Banks in Saudi Arabia and UAE at 80 and 36 percent respectively before the CRISIS period and around 29 and 46 percent during the CRISIS of 2008. The supervisory and regulatory authorities in the Gulf countries have directed the banks to create LLPs in expectation of increasing NPLs in the future.

Table 2.9

Financial Soundness Indicators (Asset Quality) of GCC Countries 2000-2014 (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Asset Quality																
NPLs to Total Loans																
Bahrain	7.8	7.9	8.1	10.3	7.6	5.8	4.8	2.3	2.3	3.9	5.1	4.9	5.8	5.6	4.6	5.8
Kuwait	19.2	10.3	7.8	6.1	5.3	4.1	3.9	3.2	5.3	11.5	8.9	7.3	5.2	3.6	3.5	7.0
Oman	8.7	8.4	9.3	12.8	11.0	7.0	4.9	3.2	2.1	2.7	2.7	2.2	2.1	2.0	2.0	5.4
Qatar	6.9	7.2	7.7	8.1	6.3	4.3	2.2	1.5	1.2	1.7	2.0	1.7	1.7	1.9	1.7	3.7
Saudi Arabia	2.6	3.3	3.7	5.4	2.8	1.9	2.0	2.1	1.4	3.3	3.0	2.2	1.7	1.3	1.1	2.5
UAE	12.7	11.2	12.8	14.3	12.5	8.3	6.3	2.9	2.3	4.3	5.6	7.2	8.4	7.3	6.5	8.2
Bank Provisions to NPLs																
Bahrain	80.3	80.5	80.6	67.7	68.0	67.7	68.5	74.0	84.0	60.3	49.5	53.6	53.1	56.0	59.4	66.9
Kuwait	50.1	53.7	64.3	39.7	42.5	48.1	47.8	48.2	41.6	38.3	33.9	29.5	26.9	31.7	30.4	41.8
Oman	76.1	78.4	83.6	85.4	87.6	97.4	109.6	111.8	127.3	59.8	65.6	63.3	69.6	71.5	70.5	83.8
Qatar	83.2	84.6	85.0	85.4	87.6	84.3	94.0	90.7	83.2	84.5	85.1	87.2	97.5	96.8	99.1	88.5
Saudi Arabia	95.5	110.1	119.2	128.2	175.4	202.8	182.3	142.9	153.3	89.8	122.3	132.8	145.1	157.4	182.9	142.7
UAE	86.0	88.5	88.5	88.5	94.6	95.7	98.2	100.0	102.6	85.0	89.0	90.0	85.1	93.4	81.2	91.1
Loan Growth																
Bahrain	14.0	14.3	14.5	14.5	14.6	36.4	21.7	45.2	4.2	3.7	50.9	10.7	2.7	7.2	34.8	19.3
Kuwait	10.5	10.9	12.4	13.2	19.0	28.9	39.5	10.9	3.2	5.1	2.8	18.6	11.0	19.1	20.4	15.0
Oman	2.1	2.4	2.5	2.5	3.6	7.7	18.4	18.6	20.0	7.7	11.1	20.8	15.3	9.6	8.9	10.1
Qatar	19.8	21.6	22.2	20.0	54.9	43.6	42.8	50.5	13.5	8.9	24.0	17.1	18.2	21.5	22.8	26.8
Saudi Arabia	29.8	29.6	28.8	30.2	32.2	24.1	17.6	43.3	28.6	3.6	5.1	14.0	18.5	7.7	14.3	48.5
UAE	28.6	30.4	32.8	34.4	35.1	45.7	45.3	32.9	45.7	4.2	9.3	4.8	13.2	1.2	19.9	25.6
Net Loans to Total Assets																
Bahrain	40.5	41.0	41.2	41.2	40.5	46.4	47.7	46.8	45.8	44.8	46.8	44.9	42.7	24.1	33.4	41.9
Kuwait	45.4	51.2	59.8	67.5	71.5	75.9	76.1	80.6	80.9	81.1	80.2	77.2	79.0	70.8	75.3	71.5
Oman	93.1	96.3	92.7	91.9	92.7	89.3	88.6	80.6	83.8	86.8	84.5	89.9	83.9	70.0	75.3	86.6
Qatar	42.3	43.2	46.4	47.2	42.7	55.2	54.9	67.2	82.4	77.5	71.5	69.6	61.5	45.0	55.0	57.4
Saudi Arabia	28.7	26.9	28.2	29.9	45.9	57.3	51.8	56.2	63.9	49.0	44.5	64.9	72.1	55.6	61.8	49.1
UAE	65.7	69.5	76.9	78.9	80.7	76.5	74.9	69.7	79.6	80.6	82.5	81.9	82.3	75.6	73.3	76.6

Sources: IFS and World Economic Outlook (IMF); Country Authorities; and Researcher Calculate

In general, GCC banks' provision to NPLs is high compared to the international standards. Banks in Saudi Arabia had the highest average level of provisions for NPLs among the GCC countries: it averages 142.7 percent during the period of 2000-2014. Kuwait has the lowest average level at 41.8 percent. The average level of Banks' provisions for NPLs in the UAE is 91.1 percent, followed by Qatar, Oman, and Bahrain at an average level of 88.5, 83.8 and 66.9 percent, respectively over the same period (Table 2.9).

2.4.4.3 Profitability

GCC banking sector has stable traditional sources of income. Net interest income constitutes the major source of banks' income in the region; it ranged between 57 to 90 percent of total gross income across the GCC countries during the period of 2000-2014 (Table 2.10). During 2000-2007, Bahrain's banking sector has the lowest level of net interest income to gross income ratio at an average level of 64.8 percent; the said ratio is highest (85.8 percent) in Oman. In 2008, net interest income to the gross income of banks declines to 57.1 percent and 78.1 percent in Bahrain and Oman respectively. After the financial crisis, the average ratio of net interest income to gross income for the banking sector in Qatar is the highest (82.2 percent) among GCC countries and is lowest (69.1 percent) in the case of banks in Saudi Arabia.

The average ROE of GCC banks during 2000-2007 is 19.4 percent. During 2008-2009, the average value of the said ratio is 14.6 and it is 13.1 percent during 2010-2014 (Table 2.10). Banks in Saudi Arabia has the highest average level of ROE (29.6 percent) during 2000-2007 and the said ratio is the lowest (9.5 percent) in Oman during the said period. In 2008, ROE of banks in Saudi Arabia declines to 22.7 percent, while the value of the said ratio increases to 12.6

percent in the case of banks in Oman. Post-CRISIS period (2010-2014), ROE in the banking sector in Qatar is the highest average level (17.8 percent) amongst the GCC countries and it is lowest (8.3 percent) in the case of banks in Kuwait.

The average returns on assets (ROA) of banks in GCC countries are 2.3 percent during 2000-2007, it is 1.8 during 2008-2009 and 1.7 during 2010-2014 (Table 2.10). Prior to the CRISIS (2000-2007), banks in Qatar have the highest average level of ROA of 2.9 percent, followed by banks in Saudi Arabia and Kuwait at 2.6 percent each, banks in UAE at 2.1 percent and banks in Bahrain and Oman at 1.7 percent each. During 2008-2009 and post-CRISIS (2010-2014), banks in Kuwait has the lowest level of average ROA at 0.9 and 1.1 percent respectively, while banks in Qatar has the highest level of ROA at 2.9 and 2.4 percent respectively during 2008-2009 and 2010-2014.

The average NIM as a percentage of total assets prior to the CRISIS (2000-2007) of GCC banks is 3.2 percent and continues at the same level during 2008-2009 and goes marginally down to 3.1 percent during 2010-2014. Prior to the CRISIS, banks in Oman have the highest average level of NIM as a percentage of total assets (3.8 percent); the said ratio is the lowest (2.7 percent) in banks in Kuwait. During and after the CRISIS, banks in UAE have the highest level of NIM as a percentage of total assets at 3.7 percent and 4.01 percent respectively. It is lowest (2.4 and 2.2 percent) in the case of banks in Bahrain. The drop in profitability in the banking sector in some of the GCC countries is due to a slowdown in the economic activities in those countries or loan loss provision due to the exposure of the banks in those countries to certain sectors like real estate and construction (IMF, 2014).

The ripple effect of the CRISIS is more palpable in Kuwait and Bahrain due to the linkage of their stock markets with the developed world. In 2008, the Gulf Bank, which is one of the three largest banks in Kuwait, suffers heavy losses due to the transaction of foreign exchange derivatives. The bank is recapitalized by Kuwait Investment Authority (KIA) via capital injection by shareholders and the Kuwaiti government in the ratio of 68 and 32 percent respectively (Al-Hassan *et al.*, 2010; AL-Omar & AL-Mutairi, 2008; Enders, Hasan, Williams, Prasad, & Erbas, 2008). Profitability in the banking sector in Bahrain is the second least profitable sector after Kuwait among GCC countries during the crisis period of 2008-2009. As a result of the crisis, the Arab Banking Corporation and Gulf International Bank in Bahrain have registered huge losses during the CRISIS period (USD 0.9 billion and USD 1.1 billion, respectively) due to the exposure of their portfolios in several advanced economies (Al-Ajmi, Hussain, & Al-Saleh, 2009; Bahrain, 2009).

On the other hand, the banking sector in Qatar has been least affected by the CRISIS due to the booming gas sector in the said country, and the government support to Qatari banks. The Qatari government bought real estate assets and stocks of Qatari banks up to approximately USD 6.01 billion which represent 6.1 percent of GDP at the end of the first half of 2009 (Callen *et al.*, 2014; Kammer & Marston, 2011; Al-Hassan *et al.*, 2010; Muharrami, 2009). Moreover, it may be mentioned that the Qatari banks have the second highest diversified sources of income in the Gulf countries.

Table 2.10
Financial Soundness Indicators (Profitability) of GCC Countries 2000-2014 (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Profitability																
ROA																
Bahrain	1.4	1.5	1.5	1.9	2.2	2.1	2.1	1.2	1.3	1.2	1.1	1.2	1.2	1.1	1.4	1.5
Kuwait	2	2	1.8	2	2.5	3.3	3.7	3.6	0.9	0.7	1.2	1.1	1.2	1.0	1.0	1.9
Oman	0.8	1.3	1.5	1.2	1.7	2.3	2.3	2.1	1.7	2.1	1.9	1.8	1.8	1.8	1.8	1.7
Qatar	1.7	2.2	2.4	2.5	2.8	4.3	3.7	3.6	2.9	2.6	2.6	2.7	2.4	2.1	2.1	2.7
Saudi Arabia	1.9	2.1	2.2	2.2	2.4	3.4	4.0	2.8	2.3	1.9	2.0	2.1	2.1	2.0	2.5	2.4
UAE	1.8	1.7	2	2.3	2.1	2.7	2.3	2.0	2.1	1.4	1.3	1.5	2.0	2.0	1.8	1.9
GCC	1.6	1.8	1.9	2.1	2.3	3.1	3.1	2.5	1.9	1.6	1.7	1.7	1.8	1.7	1.8	
ROE																
Bahrain	1.1	13.2	13.2	18.3	20.8	14.3	15.4	18.4	16.9	10.6	9.6	10.7	11.5	16.2	13.2	13.6
Kuwait	17.6	18.2	17.4	18.6	20.9	26.2	28.8	29.4	7.7	6.1	9.1	8.1	9.0	7.4	8.0	15.5
Oman	1.7	5.2	5.9	1.8	13.5	15.6	17.8	14.3	12.6	15.0	13.4	12.4	12.4	11.0	12.2	11.0
Qatar	19.2	19.5	20.2	20.8	20.8	28.5	27.2	30.4	21.5	19.3	19.9	18.6	17.7	16.5	16.5	21.1
Saudi Arabia	21.6	22.6	24.25	25.9	31.7	38.5	43.4	28.5	22.7	14.2	13.6	15.0	15.1	14.6	18.2	23.3
UAE	14.9	14.6	15.5	16.4	18.6	22.5	18.2	19.3	17.3	10.9	10.4	11.4	11.5	15.3	13.7	15.4
GCC	12.7	15.6	16.1	17	21.1	24.3	25.2	23.3	16.5	12.7	12.8	12.7	12.9	13.5	13.6	
NIM																
Bahrain	2.4	2.5	2.3	2.5	2.1	3.9	4.0	4.0	2.4	1.7	1.4	1.8	1.8	3.0	3.1	2.6
Kuwait	2.1	2.3	2.4	2.6	2.6	3.3	3.5	3.0	3.6	2.7	2.9	3.0	2.9	3.1	2.8	2.9
Oman	2.6	3.2	3.9	4.1	4.2	4.6	4.5	3.8	3.3	3.5	3.6	3.5	3.2	3.0	3.0	3.6
Qatar	2.7	2.9	3.0	3.0	3.0	3.1	4.1	3.7	3.5	3.4	3.7	3.6	3.0	3.0	2.9	3.2
Saudi Arabia	2.6	3.2	3.5	3.6	3.4	3.2	4.2	3.9	3.4	3.2	3.2	3.1	2.9	2.8	2.7	3.3
UAE	3.0	3.2	3.1	3.2	3.3	3.8	3.5	3.3	3.7	3.9	3.8	4.0	4.1	4.1	4.2	3.6
GCC	2.6	2.9	3.1	3.2	3.1	3.7	4.1	3.6	3.3	3.1	3.1	3.2	2.9	3.2	3.1	
Net-interest income to gross income																
Bahrain	64.9	64.5	63.6	65.5	62.9	64.3	59.9	72.8	57.1	67.3	65.4	66.0	86.4	84.6	83.7	68.6
Kuwait	82.1	80.5	80.1	78.3	79.7	75.8	79.7	79.1	83.2	80.7	80.2	79.7	74.7	81.7	80.3	79.7
Oman	89.4	88.2	87.8	88.8	84.0	85.4	84.9	77.9	78.1	80.7	83.5	80.9	80.0	72.7	77.4	82.6
Qatar	81.3	80.2	79.9	79.6	73.3	60.9	73.7	77.6	75.2	80.2	84.9	82.0	80.6	81.8	81.6	78.2
Saudi Arabia	89.3	89.1	88.6	88.4	78.5	71.1	72.7	80.1	79.1	76.4	72.2	69.1	68.1	68.6	67.5	77.2
UAE	80.1	78.3	77.6	76.2	73.5	70.6	84.6	76.6	79.3	81.0	80.8	82.4	80.3	77.7	74.6	78.2
GCC	81.2	80.1	79.6	79.5	75.3	71.4	75.9	77.4	75.3	77.7	77.8	76.7	78.4	77.9	77.5	

Sources: IFS and World Economic Outlook (IMF): Country Authorities; and Researcher Calculate

2.4.4.4 Liquidity

Deposits are the main source of liquidity of the banking sector in GCC countries (Table 2.11). The deposits constitute between 40 to 78 percent of GCC banking sector's total assets during the period 2000-2014. Prior to the CRISIS, during the CRISIS and after the CRISIS period, Bahrain's banking sector has the lowest average ratio of deposits to total assets at 48.8, 46.4 and 50.5 percent respectively. The said ratio is the highest (73.4, 70.4 and 74.1 respectively) in the case of banks in Saudi Arabia during the same periods. Most of these deposits are demand deposits.

Loans to total deposit ratio is a major indicator of the liquidity risk (LR). If the ratio is less than one, it indicates that the bank depends on its own deposits to provide the loans without any external borrowing. If the ratio is more than one, i.e., the loans more than the deposits, it indicates that the bank has become dependent on external financing, in other words, there is a funding gap. When the LR is too high, it implies that the bank does not have sufficient liquidity and may not be able to face the fall-out of economic crisis or any unexpected funding needs by customers (End, 2013, 2014; Rengasamy, 2014). LR in the banking sectors in GCC countries is very high (Table 2.11) which implies that banks in GCC countries have become significantly dependent on external financing: external financing rises by more than four-fold to reach USD 86 billion at the end of 2014 compared to USD 20 billion in 2001 (Figure 2.15). On an average over the period of 2000-2014, the banking sector in the UAE, Bahrain, and Saudi Arabia have the highest level of external financing at USD 18.5, USD 15.5, and USD 14 billion, respectively. Banks in Oman have the lowest level of external financing of USD1.3 billion; followed by Kuwait banks at around USD 3.8 billion; and Qatar at USD 11 billion during the same period.

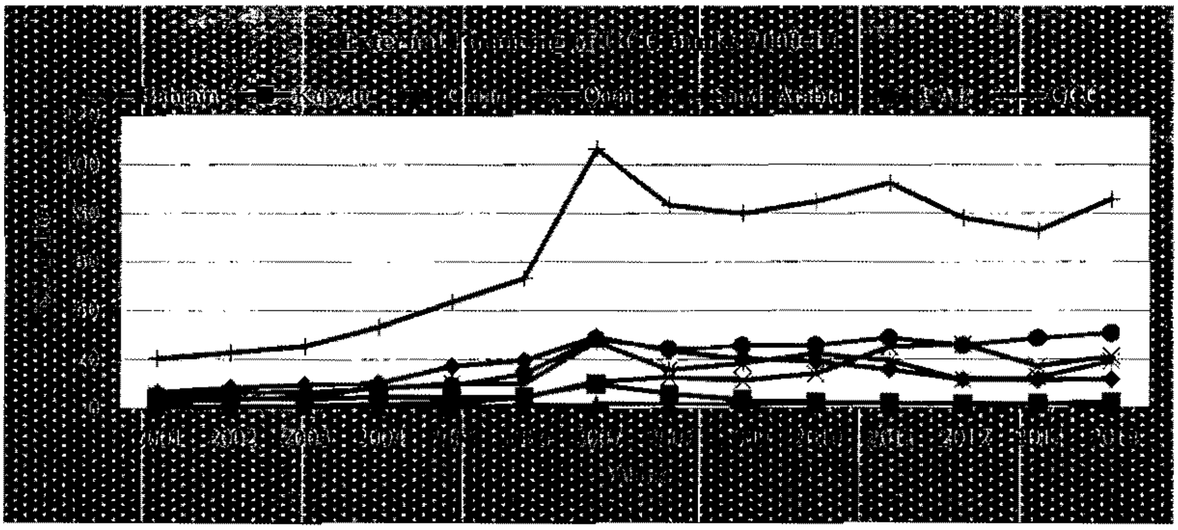


Figure 2.15:
Trends of External Fnancing of GCC Banks during the Period of 2000-2014
Source: BIS Consolidated Banking Statistics.

The average level of liquid assets to total assets ratio of banks in GCC countries is 24.7 percent during 2000-2007; it is 25.4 percent during the CRISIS period 2008-2009 and 26.9 percent during 2010-2014 (Table 2.11). Prior to the CRISIS (2000-2007), banks in Bahrain sector have the highest average level of liquid assets to total assets ratio of 29.3 percent, followed by banks in Saudi Arabia at 28.1 percent. Liquid assets to total assets ratio of banks in Qatar, UAE, Oman and Kuwait are 26.7, 24, 21 and 19.4 percent respectively. During 2008-2009 and post-CRISIS (2010-2014), banks in UAE have the lowest level of average liquid assets to total assets ratio at 19.1 and 19 percent respectively, while banks in Qatar have the highest average level of liquid assets to total assets ratio at 34.6 and 42.2 percent respectively during 2008-2009 and 2010-2014 (Table 2.11).

Table 2.11

Financial Soundness Indicators (Liquidity) of GCC Countries 2000-2014 (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Liquidity																
Loans to Total Deposits																
Bahrain	88.7	90.4	91.5	92.5	163.8	269.4	124.7	126.4	122.3	107.9	116.7	126.7	144.3	217.3	200.6	138.9
Kuwait	90.6	98.7	110.2	113.4	116.7	137.5	134.9	140.8	130.9	132.5	133.2	183.9	132.7	112.1	123.4	126.1
Oman	125.3	137	143.3	119	127	123	125	116	120	119	111	109	109	97.9	102	118.8
Qatar	107.1	104.1	103.8	101.0	95.5	103.6	108.7	138.4	149.1	140.6	118.3	117.1	112.1	104.4	107.7	114.1
Saudi Arabia	140.7	144	138.8	147	138	137.7	137	136	124	129	136	136	132	129	134.7	136.0
UAE	100.0	107.8	109.5	109.9	111.8	112.9	116.5	107.6	125.1	124.2	115.4	115.8	113.7	99.4	101.1	111.4
Liquid Assets to Total Assets																
Bahrain	18.3	25.4	31.2	31.3	32.3	33.6	32.3	29.6	26.2	27.1	26.2	26.8	26.8	25.5	23.3	27.7
Kuwait	16.3	14.8	14	12.9	15.7	13.8	34.5	32.9	28.4	27.9	22.8	26.5	27.3	25.4	29.5	22.8
Oman	16.5	17.1	17.35	31.5	20.6	21.5	20.9	22.3	15.5	24.8	22.3	20.7	28.3	24.5	25.7	22.0
Qatar	19.5	22.1	23.4	32.1	29.8	26.4	28.9	31.1	32.9	36.3	38.5	36.3	38.1	50.9	47.3	32.9
Saudi Arabia	31.4	30.6	30.3	29.4	27.3	28.9	25.4	21.7	22	25.3	24.7	22.6	23.7	21.5	25.9	26.0
UAE	34.8	33.8	22.7	23.2	26.9	16.4	13.2	20.8	20.4	17.8	15.3	15.1	15.1	24.2	25.5	21.7
Deposits to Assets																
Bahrain	50.1	50.3	50.5	51.0	48.8	47.6	44.2	41.7	46.4	48.5	50.4	51.8	52.5	47.6	50.2	48.8
Kuwait	60.9	62.1	60.5	59.4	58.5	62.8	62.3	61.6	59.0	61.8	64.4	62.8	62.5	62.2	60.9	61.4
Oman	58.4	61.1	64.6	77.1	73.8	72.8	71.0	68.8	68.4	70.8	72.1	75.6	74.1	64.7	74.7	66.2
Qatar	72.2	74.3	75.0	75.5	72.1	71.7	68.9	61.1	57.2	57.2	61.4	60.2	63.6	66.2	66.2	66.9
Saudi Arabia	72.4	75.3	75.7	73.4	73.1	70.8	73.7	72.5	70.4	69.2	72.1	74.1	75.0	73.9	75.3	73.1
UAE	70.1	71.5	72.1	72.8	73.0	67.8	66.3	64.8	66.7	66.1	68.3	68.1	68.7	69.4	69.4	69.0
Demand Deposits to Total Deposits																
Bahrain	40.9	52.4	50.7	59.9	65.1	54.1	43.9	33.2	35.3	23.7	23.3	26.1	25.3	41.5	48.1	41.6
Kuwait	32.3	33.5	35.1	36.7	33.8	43.0	34.9	28.7	11.7	14.0	16.4	22.0	33.2	36.9	57.9	31.3
Oman	14.6	14.9	15.2	15.7	24.8	24.9	22.4	22.5	20.3	24.2	25.7	25.1	31.8	46.8	44.5	24.9
Qatar	25.5	27.6	26.8	27.8	26.4	34.2	29.7	27.4	26.5	22.7	24.5	26.9	26.4	20.4	21.7	26.3
Saudi Arabia	45.2	46.6	49.7	48.5	49.9	45.6	41.2	43.4	40.5	46.1	53.8	58.1	59.8	61.1	65.2	50.3
UAE	15.8	16.6	17.1	17.3	22.5	23.8	21.1	23.0	22.9	23.2	21.5	24.4	26.1	33.0	38.1	23.1

Sources: IFS and World Economic Outlook (IMF); Country Authorities; and Researcher Calculate

2.4.5 Some of the Key Weaknesses of the Banking Sector in the GCC Countries

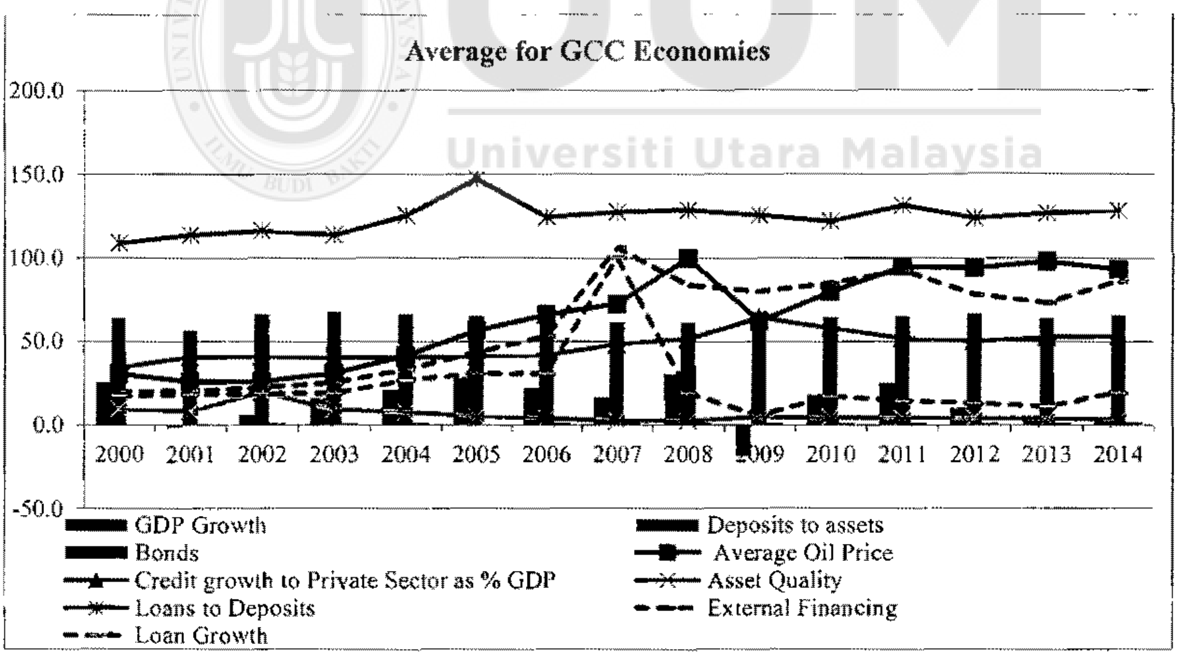
In general, the level of capitalization of banks in GCC countries appears comfortable despite the adverse effect of the CRISIS. However, experience suggests that the position might become vulnerable especially in those countries which have registered high credit growth and have significant exposures to real estate and construction (which by nature, are pro-cyclical). Despite apparent financial soundness as presented earlier in the write-up, there are certain weaknesses in the banking sector of GCC countries which needs investigation.

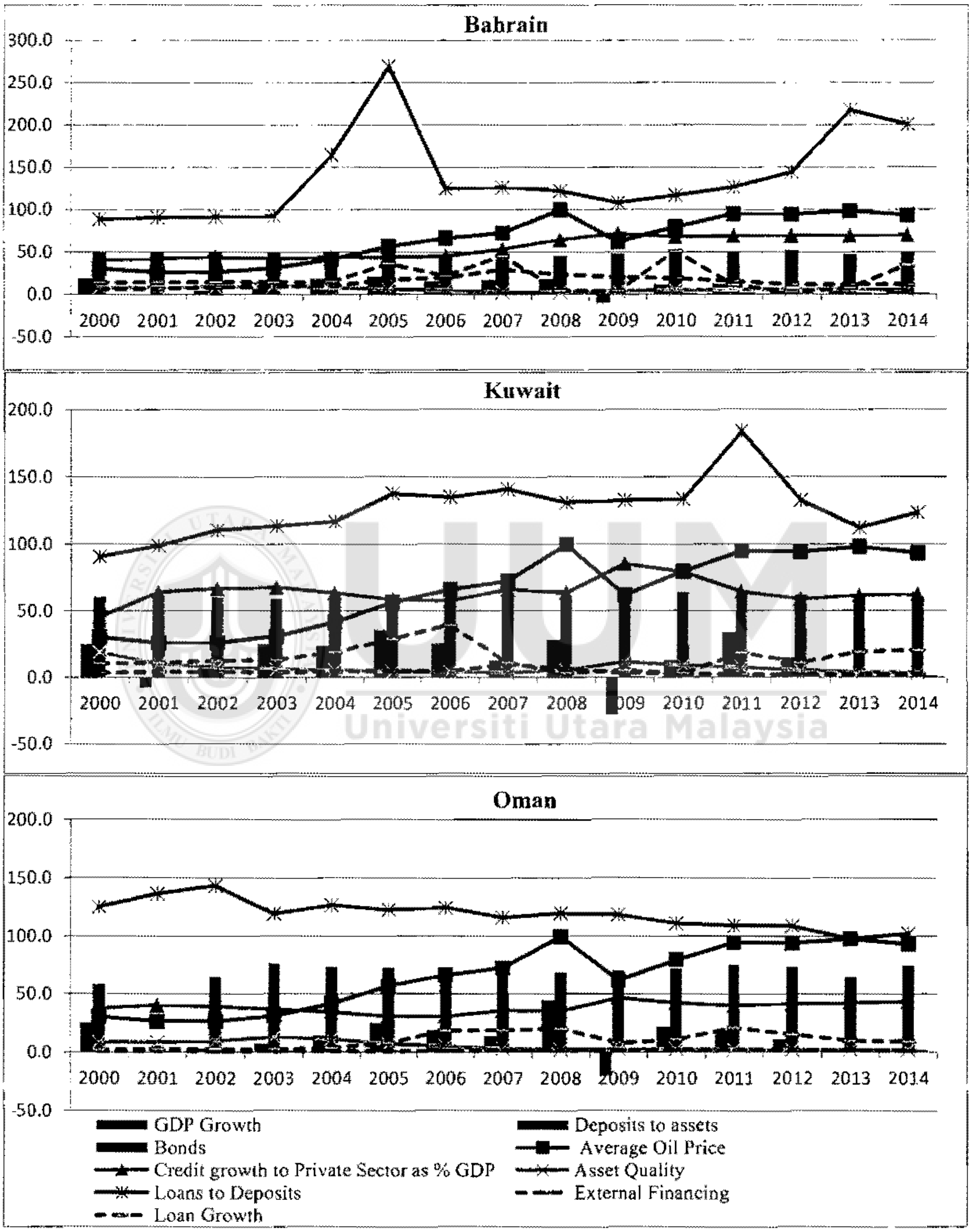
Firstly, GCC countries have registered sharp growth in of credit in consonance with the steady rise in the price of oil straining the liquidity position of banks. International experience suggests that swift growth of credit during the period of high real economic growth leads to high level of loan impairment when there is a reversal in economic conditions. During the CRISIS, there is a sharp decline in oil prices that have resulted into a slowdown in the economic activity, as well as worsening banks' asset quality. This phenomenon has drawn the attention of the policymakers in GCC economies and is examining policy measures that can reduce the influence of oil prices on the economic activities and finally on the health of the financial sector (IMF, 2015; Figure 2.16).

Secondly, there are concerns regarding asset management practices of banks in GCC countries. According to IMF Reports (2010, 2014), GCC banks have huge exposure to few customers and also to institutions having significant exposures in real estate and equity market which are prone to volatilities in the marketplace. In addition, some banking systems in GCC countries are highly exposed to households including expats secured by their salaries which are associated with the level of economic activities in the respective countries (for example, in Bahrain, the personal domestic credit that secured by salary ranging between 50 to 60 percent of the total personal domestic credit, while more than 70 percent in Qatar during the period 2005 to 2014). As a result, a slowdown in economic activities in those GCC economies results in massive loan defaults.

Thirdly, other pressing issue varies across countries but often include the resolution of NPLs, curbing consumer lending, and curtailing directed lending. Brownbridge (1998) and Kammer (2013) NPLs, which is an important indicator of risk has reduced the quality of banks assets and eroded the banks' profits. Brownbridge (1998) also argues that high NPLs ratio lead to financial distress and bank failure. Furthermore, he also stresses that the severity of bad debt problems is attributable to moral hazard on bank owners and the adverse selection of bank borrowers. Although the overall NPLs ratio in the GCC banking sector is at historically low levels, however, it has remained high when compared to a group of selected emerging and developed countries as well as the average NPLs ratio of the global banks during the period of 2005-2014 (Figure 2.17). This may be due to their risky strategies. The average NPLs ratio to total loans in the banking sector of UAE and Kuwait (6.01 and 5.8 percent) have witnessed almost double than the average NPLs ratio of the global banks (3.01 percent) while it has experienced 4.6 percent in Bahrain and 3.6 percent in Oman during the same period (Figure 2.17). However, the delinquency periods for NPLs under loan classification norms differ, being more conservative in Qatar, and Saudi Arabia, and less so in the UAE, Kuwait, Bahrain, and Oman. In other word, enforcing NPLs ceilings, increasing financing and coverage of the problem loan fund, stronger enforcement of provisioning rules, and stricter requirements for the accurate classification of NPLs in GCC countries are still needed.

Fourthly, there is a need to evaluate the liquidity management practices of banks in GCC countries. In general, banks in GCC countries seem to keep low levels of liquidity compared to international standards. Loan to total deposits or LR of banks in GCC countries are extremely high (Table-2.11; Figure.2.16). Though banking institutions in GCC countries rely comparatively more on stable deposits as their major source of funds, little share of bond financing obscures the ability of banks in managing the maturity mismatches between assets and liabilities in their balance sheet. Furthermore, increase in the reliance of some banks of GCC countries on external financing during recent years has significantly increased banks' susceptibility to conditions of external credit. This has been proved during the CRISIS as liquidity of banks is squeezed with the constriction in the conditions of global liquidity.




Bahrain
300.0
250.0
200.0
150.0
100.0
50.0
0.0
-50.0
2000
2001
2002
2003
2004
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2006
2007
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2009
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2011
2012
2013
2014
Kuwait
200.0
150.0
100.0
50.0
0.0
-50.0
Universiti Utara Malaysia
Oman
GDP Growth
Deposits to assets
Bonds
Average Oil Price
Credit growth to Private Sector as % GDP
Asset Quality
Loans to Deposits
External Financing
Loan Growth

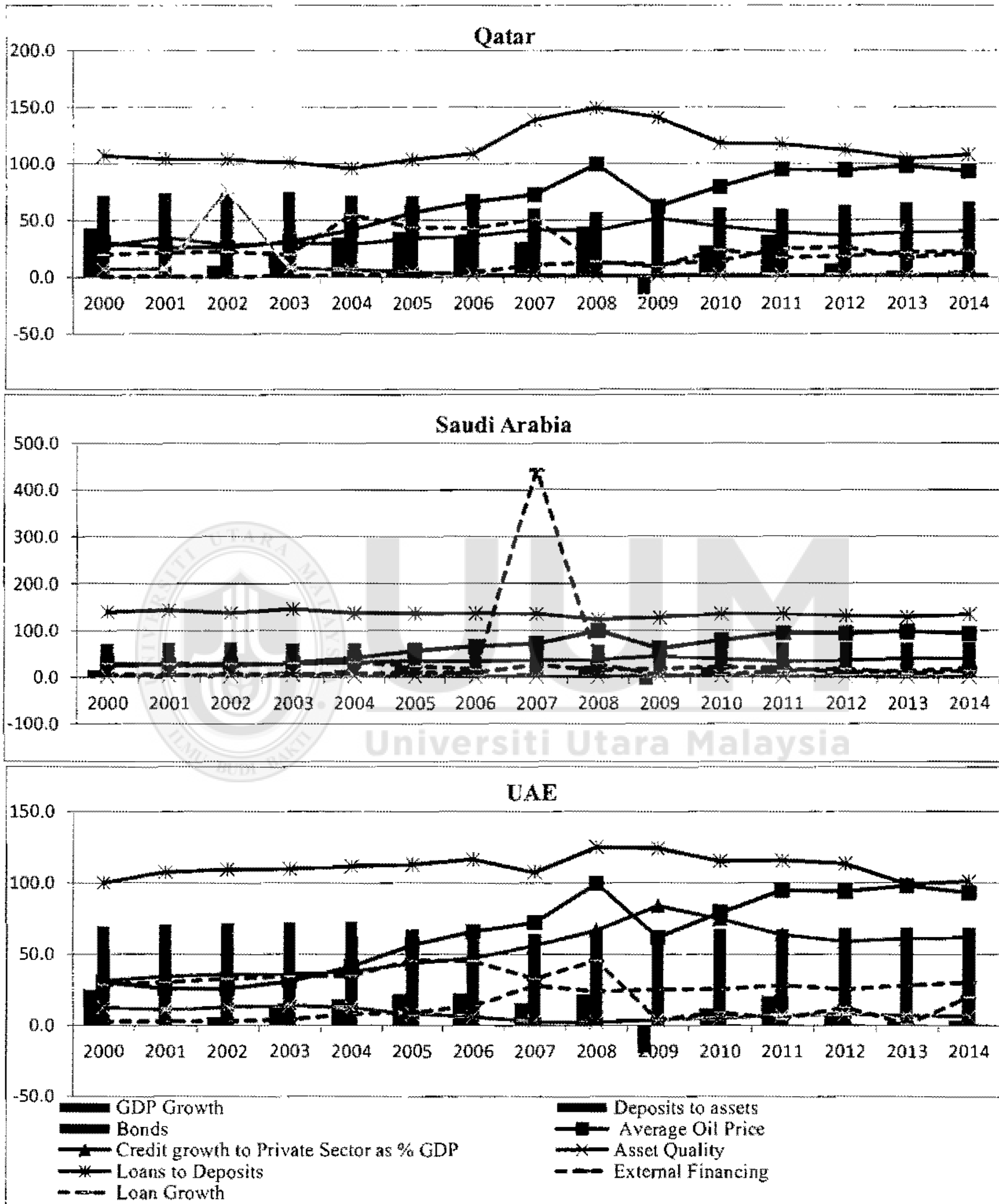

Figure 2.16:
Key Indicators of Performance in GCC Economies
Sources: IFS and World Economic Outlook (IMF); Country Authorities; and Researcher Calculate

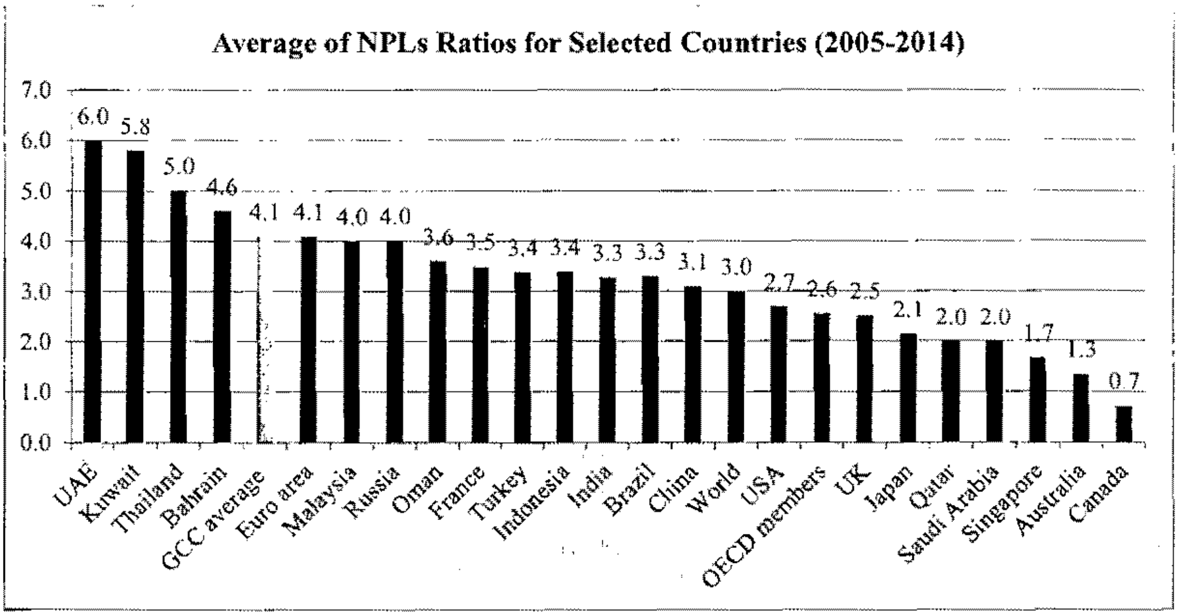

Figure 2.17:
Average of NPLs Ratio to Total Loans for Selected Countries during the Period 2005-2014
Sources: IFS and World Economic Outlook (IMF); and World Bank Data.

2.5 Chapter Summary

This chapter provides an economic overview in GCC countries, development in the banking sector in the Gulf region as a whole and in individual economies. The structure of the GCC banking sector, trends in credit growth of GCC banking sector, balance sheets of GCC banking sector: stylized facts, financial soundness indicators of GCC countries and the key weakness in the GCC banking sector have also been discussed. In the next chapter, theories of banking and financial intermediation and literature review relevant to the present study have been discussed.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The current chapter reviews the literature on the performance of commercial banks and discusses the conceptual framework used in the present study. This chapter presents the theories relating to banking and financial intermediation is presented in Section 3.2. Section 3.3 reviews the relevant literature related to the independent variables. Section 3.4 shows the gap in the literature. Summary of the chapter is presented in the last section 3.5.

3.2 Underpinning Theories

3.2.1 Agency Theory in Financial Intermediation

The assumption of Ross (1973) is that the state independent von Nuemann-Morgenstern utility functions, U (.) and G (.) are possessed by both the principal and its agent respectively, to explore the possibility of maximizing their predicted utility. However, findings show that both the agent's direct and indirect compensation has an effect on the utility of the principal (Copeland & Weston, 1988). The effect caused by direct compensation can be traced to the influence of function of compensation on the actions taken by the manager, which later have an impact on the outcomes' distribution.

Jensen and Meckling (1976) stress that the assumption of agency theory is that there will be conflict of interest as well as moral hazard between the principal (lenders) and the agent (borrowers) since the fiduciary duty of the agent is to perform in the best interest of his principal that may be costly and sometimes not in the best interest of the agent. Hence, incentives are created by the principal for the agent in order to control their action and to act in the best interest of their principal so that the exposure of the principal to risk and information asymmetry can be avoided.

In addition, the theories of financial intermediation stress that banks lower costs of the transaction are achieved through economies of scale which give them the opportunity to get cheaper fund in comparison to individual borrower and lender. However, prior to the existence of deposit insurance, bank depositors or fund increase the monitoring activities to avoid adverse selection problems and reduce moral hazard.

The study of Demsetz, Saidenberg, and Strahan (1997) indicate that the bank risk-taking is a function of franchise value and the owner/manager agency problem. They argue that owner/manager agency problem is more intense in the case of banks with low insider holding and low franchise value. In such banks, the moral hazard problem is acute and the conflicts of interest about risk preference between manager and owner are strongest. They also indicate that with an increase in insider holding, resulting in a change in the structure of ownership, there is an increase in risk taken by banks and the hence the owner/manager agency problem gets resolved. Beck, Demirgüç-Kunt, and Merrouche (2013) argue that agency problem affects banks on both sides of balance sheet since the banks stand as principals on the assets side and, at the same time, stand as agent on the liabilities side.

3.2.2 Financial Intermediation Theory

Theory of financial intermediation deals with issues relating to moral hazard, adverse selection and asymmetric information in financial contracts (Allen & Santomero, 1998; Diamond, 1984). The basic role of banks as financial intermediaries is to serve as an intermediary between the lender and the borrower. Banks receive deposits from savers and provide loans to borrowers, and in return profits are made by the banks through the interest spreads of interest. Pagano (2001) argues that financial intermediation theory based on the idea that both internal and external factors influence bank performance. The author argues that the role of intermediary played by banks assists in capturing the value that is related to solving information asymmetries and reducing transactional costs between lenders and borrowers. However, it is noted by Ciancanelli and Gonzalez (2000) that banks may act selfishly by granting loans to borrowers that are risky so as to receive high returns. This problem is very common in banks that have high ownership concentration where the majority of the shareholders prefer involving in risky transactions so as to maximize their own separate returns at the cost of other shareholders (Pinteris, 2002).

Diamond (1984) argues that financial institutions play the role of delegated monitors in his financial intermediation theory under moral hazard. There is a problem of concealed information because of the unnoticed profitable activities of the firm by outsiders which are costly. Hence, the presence of financial intermediaries is justified by the amount of cost saving generated by them. This indicates that when monitoring cost is lower than the reduction in firm value as a result of inadequate monitoring or from direct monitoring cost from each separate lender, the value of financial intermediation increases. Therefore, in attaining this goal, there is a need for banks to conduct their transaction diligently and efficiently through using depositors' money in productive and profitable investments with satisfactory risk. The moral hazard that occurs in the financial market is described by Mishkin (2012) as the possible risk that a borrower may incur through undesirable transactions thereby lowering the possibilities of repayment. Bhattacharya (1993) stresses that the problems of moral hazard can be reduced as measures of regulation for improving stability through the implementation of the requirement of capital adequacy by the regulator. Pricing of deposit insurance will solve the problems of moral hazard and private information. The hypothesis of moral hazard is proposed by Berger and DeYoung (1997) indicating that there is a tendency for undercapitalized banks to increase their risk portfolio which then increases credit risk and NPLs.

Wolfson (1996) states that the cause of information asymmetry is due to incapability of the banks to distinguish between the "bad" (high-risk) borrowers and the "good" (low-risk) borrowers which consequently result into the adverse selection. According to MIshkin (1990), the presence of asymmetric information in a credit market gives a sound argument in favour of banks collecting deposits and lending it to the borrowers who provide the most reliable investment opportunities resulting in improved efficiency. The asymmetric information between lenders and borrowers also leads to problems of moral hazard, which influences the effectiveness of the financial markets. The theory of financial intermediation shows that banks play the role of delegated monitors by depositors. Therefore, all activities of the existing and potential borrowers are expected to be examined by the banks in order to protect the welfare of the shareholders and depositors. Adverse loan selections by banks and moral hazard activities engaged in by management increase bank risk.

3.2.3 Diversification Theory

Markowitz (1952) develops diversification theory. He proposes the rule of expected–variance that hypothesized that an investor wishes to diversify by choosing an effective portfolio that reduces risk and maximizes expected returns. Under this theory, Thygerson (1995) stresses that banks aim to diversify their sources of income to reduce risk. As the expected return from bank assets is mainly from loans it must not be correlated and must not move with it. A statistical measure like portfolio correlation should be used by the banks' while choosing a specific loan; management loans portfolio that shows zero covariance is preferable one, since the negative return on a loan is offset by the positive return from another one. This can only be achieved by diversifying into different kind of loans and in a different geographical area. Hayati and Arif (2007) argue that the bank loans portfolio must show that all the risk on the loans is diversified assumed. The covariance of the expected returns from each loan must have a correlation coefficient that is closer to zero for diversification of individual asset's risk.

Under this theory, it is generally believed that diversification by a bank reduces risk. However, Smith *et al.* (2003) argue that diversification does not necessarily translate into risk reduction because banks also tend to shift into riskier activities and hold less equity. Diversification in the sources of income (NIR and OBSs) depend on the bank's expertise and strategic objectives (Goddard *et al.*, 2004b).

3.2.4 Internalisation Theory

The exact application of the theory of internalization is the approach of defensive expansion in towards multinational banking. Initially, the approach is used by banks in the USA to overcome the restrictions imposed by domestic regulation by which banks are not allowed to expand its network beyond individual state boundary. This theory stresses that banks go along with their clients into the host foreign country's market so as to maintain and defend the bank-customer relationship. The failure of the bank to follow their client overseas can lead to the client forming a new relationship with another bank in the host country, and which can jeopardize their existing banking relationship with their client. Information relating to the bank-client are not available at a cost which is acceptable to the bank (Brimmer & Dahl, 1975; Grubel, 1977).

Rngman (1981) considers internalization of information to be mainly beneficial to the MNBs. The bank-client association entails flows of information. This information flows result into a public good in the firm that is best exploited through FDI (Buckley & Casson, 1991). According to Sturm and Williams (2008), the relationships of defensive expansion are best measured through direct investment relationships, since direct investment relationships lead to the MNBs requesting a physical presence in host countries so as to maintain its bank-customer relationship. The fundamental premise of the hypothesis of defensive expansion is it formed in the defense of the bank-customer relationship. The theory of internalization FDI proposes that MNCs emerge once it is more advantageous to these companies having these benefits to internalize instead of externalizing them by licensing (Rugman, 1980).

Rugman (1981) stresses that regulatory protection, market power, and scale economies increase internalization. Banks also profit from international investment through internalizing the benefits of portfolio diversification. Tschoegl (1987) also regards internalization as part of the scope of economies that banks exploit both locally and globally. Knowledge is a significant contribution to multinational retail banking, especially knowledge of domestic conditions. Another key determinant in multinational retail banking is the regulatory structure since it incorporates the locational factors of the theory of internalization. The non-banking existence of companies overseas is considered by Fieleke (1977) as a preliminary entry from where banks can acclimatize to host conditions. It is essential for banks to have a long-term bank-client association, thus the bank wish to modify the location synthesis of its branches so as to react to the moving locations of its client's operations.

3.2.5 The Structure–Conduct–Performance Theory

The structure–conduct–performance theory (SCP) argues that banks in the highly concentrated market have more market power and face less competition, which leads to collusion between the banks to generate unusual returns. The idea of this theory is based on the fact that in a highly concentrated market, few banks control the market, have greater market power and higher profits. In other words, this theory claims that profitability of banks is derived from market structure. Banks with higher shares of the market may be able to charge higher rates on loans, which boost their revenues and profitability. These indicate that there is a negative association between competition and bank profitability. However, Demsetz (1973) argues in his efficient structure that profitability depends on the efficiency of the bank, where banks with greater efficiency are more able to enhance their SIZE and market share, which leads to increase in profits.

Furthermore, the SCP hypothesis stresses that banks in the less competitive market (higher HHI and higher Lerner index) tend to have more power in the market, which results in more profits

(Claessens & Laeven, 2004). However, competition-efficiency hypothesis argues that in a higher competitive market, banks managers have greater incentives to enhance their efficiency; increase in efficiency leads to decrease in cost and improve their profitability. Boone (2008) develops a new measure of bank competition called Boone indicator. The main idea of Boone indicator is that competition enhances the performance of efficient banks and decreases the performance of inefficient ones. The Boone indicator can be negative or positive. A larger negative Boone indicator suggests that the competition is higher, while a more positive value suggests that the competition is lower.

3.3 Related Empirical Studies

Previous studies related to this study can be divided into two main categories. The first comprise of literature that focuses on the determinants of banks' performance. The second consists of studies that comparative performance of foreign and domestic banks. In the following subsections, the study will discuss both of these categories separately.

3.3.1 Empirical Studies on the Determinants of Bank Performance

Many of the past studies have broadly focused on bank performance. The study of Bourke (1989) and Short (1979) are two of the early studies that have focused on bank performance, but afterward, other studies have focused on identifying main determining factors of bank performance. Moreover, most of these empirical studies are based on both a country-specific banking sector (e.g., Goddard *et al.*, 2008; Al-Omar & Al-Mutairi, 2008; García-Herrero *et al.*, 2009; Xu, 2011; Almazari, 2013; Al-Saidi & Al-Shammari, 2013; Almumani, 2014; Apergis, 2014) and on cross-countries (Pasiouras & Kosmidou, 2007; Ramanathan, 2007; Loghod, 2010;

Chen & Liao, 2011; Arouri *et al.*, 2014, 2011; Staikouras & Wood, 2011; Lee & Hsieh, 2013; Fu *et al.*, 2014; Saghi-Zedek & Tarazi, 2014; Tai, 2014; Khediri *et al.*, 2015). The study of Molyneux and Thornton (1992) is one of the first studies that analyze the determinants of banks performance on a cross-country basis.

Bank performance is analysed along three dimensions which are profitability, market-based assessment, and risk-taking behavior. The proxies for bank profitability are NIM, ROE, and ROA; the proxies for bank risk-taking behavior are SDROE and SDROA (Goddard, McKillop, & Wilson, 2008; Chen & Liao, 2011; Staikouras & Wood, 2011; Lee & Hsieh, 2013; Saghi-Zedek & Tarazi, 2014); and while the proxy for market-based performance is Tobin's Q (AL-Omar & AL-Mutairi, 2008; Fu *et al.*, 2014).

In view of the significance of bank performance to the health of the financial system, previous studies have primarily focused on the understanding of the major determining factors of bank performance. These determining factors are categorized into two major groups; internal and external determinants. Internal determinants encompass bank-specific features while external determinants encompass environmental features that influence both the performance of the financial institutions and all the firms in general. The remainder of this section is structured as follows. Section 3.3.1.1 describes the related literature on the determinants of bank-specific characteristics. Section 3.3.1.2 reviews the empirical relevant studies on the macroeconomic factors, followed by financial structure indicators in section 3.3.1.3. The related literature on the listed banks and financial crisis in this study will be shown in the sections 3.3.1.4 and 3.3.1.5 respectively.

3.3.1.1 Bank-specific characteristics

Previous studies indicate that bank-specific characteristics significantly affect bank performance in different ways. Present study uses the following bank-specific characteristics as determinants of bank performance: COST, NIR, OPC, LR, DMDEP, MR, NPLs, LLPs, CAR, LOAN, LNGRTH, SIZE, and OBSs. The potential influence of each of these listed bank-specific features on bank performance is explained below with reference previous related studies.

3.3.1.1.1 Cost to Income Ratio

One of the main internal determining factors of bank performance is the cost-to-income ratio (COST). It is used to measure the influence of operational efficiency or quality on bank performance (Dietrich & Wanzenried, 2014; Sangmi & Nazir, 2010). It is represented by dividing the total cost of operation (administrative costs, staff salaries, property costs, deducting losses caused by bad and non-performing loans) with total income (Pasiouras & Kosmidou, 2007; Saghi-Zedek & Tarazi, 2014).

Based on the findings of Maudos (2017), Sissy, Amidu, and Abor (2017), Ghosh (2016), Rashid and Jabeen (2016), Căpraru and Ihnatov (2014), Dietrich and Wanzenried (2011), Said and Tumin (2011), and Shah and Jan (2014), COST has a negative significant relationship with bank performance measured through NIM, ROA, and ROE. This indicates that higher COST will lead to lower bank efficiency with regard to the income generated. On the other hand, the findings of Athanasoglou *et al.* (2008) and Dietrich and Wanzenried (2014) show a negative relationship between COST and bank performance indicating that lower COST leads to higher bank efficiency in terms of profitability. This means that an efficient and effective management of cost is essential for the improvement of banks profitability. However, Dietrich and Wanzenried (2014) stress that the influence of COST on profitability varies among countries due to the difference in income level; it has higher influence on banks from low-income countries than that of high and middle-income countries where banks profitability cannot be easily influenced by gains from efficiency in these two income levels. According to Pasiouras and Kosmidou (2007), the determinant of foreign banks performance measured by ROA is the COST (coefficient of the operational efficiency). They show that increase (reduction) in banks profitability (bank performance) is influenced by the reduction (increase) in banks expenses. They also report that the causes of variance in the influence of COST on banks profitability among foreign and domestic banks may be due to diseconomies of operation and distance of the controlling authorities in the case of foreign banks. Some studies also stress that another major cause of poor profitability is poor management of expenses (Almumani, 2014; Almazari, 2013; Said & Tumin, 2011; Kosmidou *et al.*, 2005; Guru, Staunton, & Shanmugam, 2002).

Furthermore, Brighi and Venturelli (2016), Petria, Capraru, and Ihnatov (2015), Saghi-Zedek and Tarazi (2014), Barry *et al.* (2011), and Shehzad, de Haan, and Scholtens (2010) find that COST has a negative impact on the profitability of banks using ROA and ROE as proxies, and a positive impact on risk using SDROA and SDROE as proxies. This indicates that decrease in bank expenses increases bank efficiency and increase in bank profitability lowers the bank risks and vice versa, showing a positive (negative) association between risk (profitability) and operating expenses ratio. The study of Saghi-Zedek and Tarazi, (2014) show that there is no difference in the impact of operating costs between the pre and post financial crisis of 2007-2008 because COST of the banks was lower during these periods which suggest that they are operating efficiently. Gerhardt and Vennet (2017) find that bad management enhances the probability of bailout involvement of banks.

In contrast, another argument stresses that COST may have a positive effect on bank performance. Almazari (2013) stresses that despite the straightforward relationship between COST and bank profitability (the lower the COST the higher the profitability and vice versa), this assertion may not be the case when increase in expenses is correlated with increase in the volume of banking services and activities, which then increases the bank's profitability. Thus, studies in Kenya (Ongore & Kusa, 2013), China (Tan, 2016), and European Union (Titko, Skvarciany, & Jurevicien, 2016) have found that there is a positive relationship between management efficiency measured by COST and bank performance. The study of Karim and Alam (2013) also find that operational efficiency is positive and significantly related with bank' ROA and Tobin's Q.

Similarly, the findings of Abreu and Mendes (2001) show that operating costs explain banking institutions that achieve high NIM. Banks that incur high operating expenses transfer it to their customers by charging a higher interest rate on loans and providing lower interest rate on deposits in order to increase in the banks' NIM. Banking institutions also use the imposition of higher NIM to protect themselves from the local markets high-interest rates volatility. In addition, banks discover that inefficiency in the management of their assets will lead to high-cost of liabilities and lower profitability. Thus, banks that incur high implicit levels of interest payment will fix a higher NIM since this variable indicates additional expense.

However, some studies also find that bank performance is not influenced by COST. For example, the study of Djalilov and Piesse (2016), Terraza (2015), and Alkhatib and Harsheh (2012) find that COST did not influence bank profitability. Similar results are found by Chen and Liao (2011) with ROE. Previous studies that focus on the association between COST and the performance of banks are summarized in Table 3.1.

Table 3.1
Summary of Cost-to-Income Ratio (COST) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Gerhardt and Vennet (2017)	Europe	2007-2013	Logit regression	The COST is significantly positively related to the probability of the bank bailout.
Maudos (2017)	Europe	2002-2012	Fixed effects	Less efficient banks have a lower probability of insolvency and higher profitability.
Sissy *et al.* (2017)	29 African economoneis	2002-2013	Fixed effects and GMM	Efficiency decrease bank performance.
Brighi and Venturelli (2016)	Italy	2006-2012	Fixed effects	High COST decreases bank' profitability and stability.
Djalilov and Piesse (2016)	CEE countries	2000-2013	GMM	COST is not significantly related to ROA.
Ekpu and Paloni (2016)	UK	2005-2009	Fixed effect	COST has a negative significant effect on ROE.
Ghosh (2016)	169 nations	1998-2013	Fixed effect and GMM	A higher COST reduces bank profits.
Mirzaei and Moore (2016)	Qatar	2000-2006	Fixed effects	The impact of banks' COST on the growth of 42 industries is negative.
Titko *et al.* (2016)	European Union	2008-2014	OLS	A significant positive association between COST and bank' ROA and ROE.
Tan (2016)	China	2003-2011	GMM	COST is highly significant and positively related to bank profitability ROE and NIM.
Albulescu (2015)	USA	2005-2013	Fixed effects	Bank efficiency negatively affects the profitability level.
Petria *et al.* (2015)	EU 27	2004-2011	Fixed effects	A negative relationship is found between bank efficiency and ROA and ROE.
Terraza (2015)	European countries	2005-2012	Fixed effect and GMM	No real evidence of a positive association between bank profitability and higher efficiency.
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM	COST is negatively affected on bank' ROA, ROE, and NIM.

CEE = Central and Eastern European Countries

Table 3.1 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled OLS	COST is negatively significant on bank performance (ROA, ROE, and NIM).
Saghi-Zedek and Tarazi (2014)	Europe	2002-2010	GLS	COST is more significantly negative (positively) effect on bank profitability (risk).
Trinugroho *et al.* (2014)	Indonesia	2001-2009	Pooled OLs, GLS and GMM	COST has a negative impact on NIM using all methods.
Shah and Jan (2014)	Pakistan	2006-2010	Pooled OLS	Operational efficiency is negatively related with the ROA and NIM.
Almumani (2014)	Saudi Arabia	2007-2011	Pooled OLS	ROA and ROE have a negative significant association with COST.
Almazari (2013)	Saudi Arabia	2007-2011	ANOVA	COST is negatively affected to bank profitability.
Alkhatib and Harsheh (2012)	Palestine	2005-2010	OLS	COST is an insignificant affected on ROA and Tobin's Q.
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse model and random	NIM and ROA are correlated significantly and negatively with operating cost. However, the correlation with ROE is insignificant.
Barry *et al.* (2011)	Europe	1999-2005	OLS regressions.	COST are negatively (positively) and significant related to bank profitability (risk).
Said and Tumin (2011)	Malaysia and China	2001-2007	Pooled OLS	There is a strong negative relationship between COST and bank' ROE and ROA.
Dietrich and Wanzenried (2011)	Switzerland	1999-2009	GMM	COST is associated with negative bank' ROA, ROE, and NIM.
Shehzad *et al.* (2010)	50 countries	2005-2007	Random effects	Bank risk is positively related to the COST.
Athanasoglou *et al.* (2008)	Greek	1985-2001	GMM	COST appears to be an important determinant of profitability (a higher negatively).
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects	COST is negatively associated with ROA for both domestic and foreign banks.
Caprio *et al.* (2007)	44 countries	2000-2001	OLS	COST has a negative effect Tobin's Q.
Kosmidou *et al* (2005)	UK	1995-2002	Fixed effects	COST has a negative and significant association with bank' ROA and NIM.
Guru *et al.* (2002)	Malaysia	1985-1998	Pooled OLS	ROA and ROE are negative related to COST.
Abreu and Mendes (2001)	Europe	1986-1999	Fixed effects	NIM reacts positively to operating costs, but pre-tax profits do not.

3.3.1.1.2 Non-Interest Revenues

Non-interest revenue (NIR) is used to measure non-traditional activities of the bank. It is an internal variable that reveals the strategic choices and business opportunities of the bank that can be used to examine the non-interest activity and bank performance relationship (Stiroh, 2004). Mixed results have been shown from recent studies on the influence of NIR on bank performance. The study of Osuagwu (2014) stresses that there may be a positive or negative relationship between total operating revenue and NIR which depend on the strategic goal, skills, and experience of the banks. A positive relationship shows that there is technical capability of the banks to achieve NIR through product lines i.e. through fee established activities that enable the bank to obtain a higher efficiency level of its resources (particularly human capital), meanwhile, a negative relationship shows that human capital resources and expertise of the bank concentrate more on commercial and industrial lending activities. The study of Saghi-Zedek and Tarazi (2014) indicate that NIR significantly determines bank profitability.

Maudos (2017), Brighi and Venturelli (2016), Ghosh (2016), Saghi-zedek (2016), Tan (2016), Chen and Liao (2011), Calmès and Théoret (2010), and Lin and Zhang (2009) find NIR to have a negative significant association with bank performance. This shows that income and other operation activities decreased due to NIR. Maudos and Solís (2009) and Smith, Staikouras, and Wood (2003) stress that the coefficient of the NIR indicates that lower intermediation margin (NIM) is generated by more diversified banks. Mercieca, Schaeck, and Wolfe (2007) also argue that this negative significant association indicates an increase in NIR is related with lower ROE and ROA levels. It also suggests that a lower bank performance is due to banks diversification into NIR activity such as involvement of underperforming institutions in risky and uncertain trading activities.

Recent studies show that NIR has a different influence on small and large banks. For small banks, the risk is higher if there is an increase in the income from commissions and fee activities (Lepetit *et al.*, 2008), but lower risk can also be of benefit for them through the effect of portfolio diversification in order to achieve higher shares in trading activities. On the side of large banks, their risk is not affected by any increase from the share of NIR, either through commission and fee or trading activities. Hahm (2008) stresses that despite the high unit costs, smaller banks still able to achieve higher margins by charging higher interest rates because of their borrowers' higher switching costs as well as paying lower interest rates because of the base of their loyal customer. In this case, larger banks imperatively needed NIR than smaller banks. Goddard *et al.* (2008) stress that diversification should be avoided by smaller banks and should focus on operating as a normal savings and loans institutions; while larger banks are encouraged to explore new product prospects that are around their main expertise. The study of Demsetz and Strahan (1997) show that larger banks grant more risky loans, they are better diversified and achieve better profitable lending than smaller banks.

Williams (2016), Stiroh and Rumble (2006), and Stiroh (2004) find that there is a high volatility in NIR and it highly influences bank performance. Through this, they find that too much dependence on NIR will lead to an increase in risk and a decrease in risk-adjusted profits. Bitar *et al.* (2016) also find that higher diversity leads to increased bank risk but it enhances bank profits and decreases bank inefficiency. In regards to the study of Stiroh and Rumble (2006) and

Stiroh (2004) mention above, the cause of higher influence of NIR on bank performance may be probably traced to the attitude of customers buying all the different products. DeYoung and Rice (2004) reveal that the expansion of efficient and effective banks into NIR is a gradual process and higher NIR level is related to the trade-off of poorer risk-return. DeYoung and Roland (2001) also reveal that there is a relationship between banks' non-traditional activities and both the higher total leverage and higher revenue volatility. Three reasons for this relationship are suggested by DeYoung and Roland (2001) include; highly competitive NIR activities, correlation of fixed costs with fee-based activities as well as the absence of regulation pertaining to NIR activities.

Moreover, Williams (2003) finds that foreign banks performance and NIR is positively and significantly related due to their ability to provide many product lines for NIR. Using market-to-book valuations as a dependent variable, Edirisuriya, Gunasekarage, and Dempsey (2015) find similar results for listed banks in four South Asian economies. Ashraf, Ramady, and Albinali (2016) and Chen, Liu, Opong, and Zhou (2016) find that banks which are more engaged in fee-based activities are more stable compared to banks that mostly generate their revenues from traditional intermediation activities. Bedendo and Bruno (2012) reveal that bank-risk measured by SDROA and NIR are insignificant and negatively related in the case of larger banks. They argue that this can be traced to the huge users of credit risk transfer caused by an increase in leverage ratios instead of high volatile asset returns. Sissy *et al.* (2017) find similar results with bank profitability. The relationship between NIR and bank performance are summarized in Table 3.2.

Table 3.2
Summary of Non-Interest Revenue (NIR) Ratio and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Maudos (2017)	Europe	2002-2012	Fixed effects	An increase in the share of NIR has a negative (positive) impact on bank profitability (risk).
Sissy *et al.* (2017)	29African Countries	2002-2013	Fixed effects and GMM	There is no link between high exposures to NIR and bank profitability.
Ashraf *et al.* (2016)	GCC	2000-2011	Random effects	Banks engage in non-traditional activities are more financially stable.
Bitar *et al.* (2016)	MENA	1999-2013	OLS	The income diversity ratio increases bank risk but reduces bank inefficiency and enhances bank profits.
Brighi and Venturelli (2016)	Italy	2006-2012	Fixed effects	Higher diversification decreases bank risk and increases risk-adjusted profitability.
Chen *et al.* (2016)	USA	2002-2012	OLS, Heckman and 2SLS	A higher level of diversification decreases bank risk.
Hoffmann (2016)	Latin America	1995-2012	GMM	NIR impact negatively on the bank performance.
Saghi-zedek (2016)	Europe	2002-2010	GMM	High diversification is associated higher risk-taking and higher default risk
Ghosh (2016)	169 nations	1998-2013	Fixed effects and GMM	Increases in diversification reduce bank profits.
Tan (2016)	China	2003-2011	GMM	Higher level of diversified business precedes a decline in bank profitability
Williams (2016)	Australia	2002-2008	GLS	Increased NIR results in increased bank risk.
Edirisuriya *et al.* (2015)	4 South Asian Countries	1999-2012	Pooled OLS	Banks with more diversify from interest income have higher market-to-book valuations.
Saghi-Zedek and Tarazi (2014)	Europe	2002-2010	GLS	NIR has a positive effect on profitability and risk.
Osuagwu (2014)	Nigeria	1980-2010	Fixed and Random effects	NIR is significant and associated a positive relationship with LnROA.

Table 3.2 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Bedendo and Bruno (2012)	U.S.A	2007-2009	GMM	Insignificant correlation between NIR and SDROA.
Chen and Liao (2011)	70 countries	1992-2006	Random effect	NIR are significantly negative with bank performance.
Calmès and Théoret (2010)	Canada	1988-2007	OLS and ARCH-M estimation	NIR impacts banks returns (ROA and ROE) negatively.
Lin and Zhang (2009)	China	1997-2004	Fixed effects	There is a strong negative relationship between NIR and bank profit and risk.
Maudos and Solís (2009)	Mexico	1993-2005	Fixed effects	The coefficient of NIR shows that more diversified banks have lower NIM.
Lepetit *et al.* (2008)	Europe	1996-2002	OLS	The risk is mainly positively related to NIR. This positive link is mostly accurate for small banks.
Goddard *et al.* (2008)	U.S.A	1993-2004	Pooled OLS	Profitability suggests that an increased reliance on NIR is associated with higher volatility of returns.
Hahm (2008)	OECD	1992-2006	OLS and Random effect	NIR is significantly positively associated with SDROA and ROA, while negative significant with NIM.
Mercieca *et al.* (2007)	Europe	1997-2003	OLS and Fixed effects	NIR is strong negative effect on profitability (ROA and ROE) and positive effects on volatility (SDROA and SDROE).
Stiroh and Rumble (2006)	U.S.A	1997-2002	OLS and Fixed effects	A greater reliance on NIR tends to decrease risk-adjusted profits and increased risk.
Stiroh (2004)	U.S.A	1978-2001	pooled OLS	Higher NIR is associated with lower risk-adjusted profits and higher risk.
DeYoung and Rice (2004)	U.S.A	1989-2001	GLS	A negative relationship between NIR with profitability and risk is found.
Williams (2003)	Australia	1989-1993	OLS estimation	NIR is associated with positive significant ROA.
Smith *et al.* (2003)	Europe	1994-1998	Pooled OLS	There is a negative correlation between NIM and NIR.
DeYoung and Roland (2001)	U.S.A	1988-1995	OLS regressions	Non-traditional activities of banks are correlated with higher profit volatility.
Demsetz and Strahan (1997)	150 BHCs	1980-1993	Fixed effects	Large banks are more NIR than small banks (i.e., higher riskier loans and more profitable lending).

3.3.1.1.3 Opportunity Cost

Opportunity cost (OPC) represents the opportunity forgone for keeping reserves and is used as a measure for the bank benefits that should have been received for choosing an alternative action. The study of Chen and Liao (2011) indicate that OPC, measured using the ratio of liquid reserves divided by total assets, has a positive significant relationship with bank profitability proxied by NIM, ROA, and ROE, implying that increase in OPC will increase the profitability of the bank. The study of Naceur and Omran (2011) show that OPC is positively and significantly related to the profitability of the bank measured by NIM and ROA, indicating that increase in liquid reserves volume will lead to increasing in OPC, which will then increase profitability. The findings are also in conformity with the notion that bank performance is influenced positively by the OPC of holding reserves that are regarded as an implied tax. Commercial banks make effort to nullify this tax that weakens their profitability by passing it to their customers through increasing explicit margins. The study of Saunders and Schumacher (2000) stress that OPC for keeping reserves can be regarded as the average of ROA that is forgone for keeping deposits in the form of cash. Since the cost of funds is increased by OPC beyond the expected rate, banks achieve NIM to compensate these costs. Hoffmann (2016) finds similar results with Latin American banks' NIM.

On the other hand, the study of Osuagwu (2014) on commercial banks in Nigeria indicates that increase in OPC decrease banks profitability proxied by NIM, ROE, and ROA. This means that the profitability level of banks decline as banks held more reserves.

Table 3.3
Summary of Opportunity Costs Ratio(OPC) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Hoffmann (2016)	Latin America	1995-2012	GMM	A positive relationship between the OPC of reserve and the bank' NIM.
Osuagwu (2014)	Nigeria	1980-2010	Fixed effects Random effects	There is a strong negative relationship between OPC of reserve and bank performance (ROE, ROE, and NIM).
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse Random effect	Bank performance (ROA, ROE, and NIM) are positively significant related to OPC of reserve.
Naceur and Omran (2011)	MENA	1988–2005	GMM	OPC of reserves is associated with positive bank performance (ROA and NIM).
Maudos and Solis (2009)	Mexico	1993-2005	Fixed effect GMM	The coefficients of correlation between the OPC and NIM are not statistically significant.
Maudos and Guevara (2004)	Europe	1993-2000	Fixed effects	OPC has a positive but insignificant relationship with bank profitability (NIM).
Ho and Saunders (1981)	U.S.A	1976-1979	Cross-section regression models	The coefficients on the OPC of reserves are small and insignificantly.

On the contrary, some findings show that OPC of reserve ratio and bank performance have no statistically significant relationship. The study of Maudos and Solís (2009) find that OPC of keeping reserves does not have a significant influence on bank performance proxied by NIM. The study of Maudos and Guevara (2004) also show that there is a positive and non-significant influence of OPC of keeping reserves on European banks performance proxied by NIM. Further, Maudos and Guevara (2004) find that the only UK and Spain show significant OPC of keeping reserves. Ho and Saunders (1981) find that banks that incur high reserves level use high intermediation margin to transfer the cost to their borrowers. The summaries of previous studies related to the relationship between OPC of keeping reserves and bank performance are given in Table 3.3.

3.3.1.1.4 Liquidity Risk

This study uses loans-to-total deposits as a measure of liquidity risk (LR). Previous empirical studies show that there are mixed results with regard to the influence of LR on the performance of banks. The study of Trinugroho *et al.* (2014) and Chen *et al.* (2016) show that LR and bank performance is significant and positively related, implying that increase in the value of the ratio will reduce the liquidity of the bank, and increases profitability; because lower rates of return are always associated with liquid assets. Mamatzakis and Bermpei (2017) and Chen and Liao (2011) find that ROA, ROE, and NIM have a positive significant relationship, which means that the higher the LR ratio the higher the bank's profitability. In addition, the study of Akhtar *et al.* (2011) show that LR of Islamic banks has a positive significant relationship with bank profitability proxied by ROE and RO. This implies that the increase in profits will improve the Islamic banks' liquidity position. They stress that the reason for this is that any transaction in

Islamic bank is backed by asset instead of dealing with money. Srairi (2009) finds that the ratio of LR has a positive and statistically significant relationship with conventional banks profitability, implying a negative association between level of the liquid assets kept by the bank and bank profitability. The said ratio is negative and statistically significant for Islamic banks, implying that bank profitability and liquidity has a positive relationship. The study of Pasiouras and Kosmidou (2007) also show similar findings with ROE and ROA for both foreign and domestic banks in 15 countries in Europe.

Fu *et al.* (2014b) find that bank performance proxied by ROA and Tobin's Q and LR have a negative relationship. A similar finding is reported by Tai (2014) for conventional and Islamic banks using ROE and ROA as proxy for bank performance. He argues that Islamic banks are less liquid and profitable than conventional banks in the earlier years reviewed while conventional banks are less profitable than Islamic banks in the later years reviewed. Claessens *et al.* (2001) and Tran, Lin, and Nguyen (2016) conclude that liquidity, risks, and bank profitability levels are negatively correlated, implying that higher risks and profitability are caused by lower liquidity. Demirguc-Kunt and Huizinga (1999; 2000) report that liquidity and bank performance (proxied by ROE and ROA) are negatively related. Jara-Bertin *et al.* (2014) find that assets profitability is reduced by an increase in the liquid assets (bonds) due to immobilization of resource leading to a significant banking cost (Molyneux & Thornton, 1992). Bedendo and Bruno (2012) and Cebenoyan and Strahan (2004) find that LR and bank performance proxied by SDROA and SDROE are negatively associated, the huge liquid assets of large banks that involve in buying and selling of loans are reduced through involving in risky transactions.

Table 3.4

Summary of Liquidity Risk (loans to total Deposits Ratio) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Mamatzakis and Bermpei (2017)	USA	2007-2013	Fixed effects and GMM	LR has a positive association with bank performance.
Trad *et al.* (2017)	12 Islamic countries	2004-2013	GMM	A better liquidity position maximizes the gains of Islamic banks and minimizes their risk.
Chen *et al.* (2016)	USA	2002-2012	OLS, Heckman and 2SLS	A higher level of liquidity decreases bank risk.
Ekpu and Paloni (2016)	UK	2005-2009	Fixed effect	LR has no significant effect on ROE.
Ghosh (2016)	MENA	2000-2012	Fixed effect	Liquidity has no significant effect on bank profitability.
Levent (2016)	Turkey	2002-2012	Random and Fixed effects	LR has no significant effect on bank profitability.
Tran *et al.* (2016)	USA	1996-2013	GMM	Banks that create more liquidity and exhibit higher illiquidity risk have lower profitability.
Uhde (2016)	Europe	2000-2010	2SLS	Bank's liquidity position has a significantly positive impact on financial stability.
Petria *et al.* (2015)	EU 27	2004-2011	Fixed effects	The association between LR and bank profitability (ROA and ROE) is negative and significant.
Albulescu (2015)	USA	2005-2013	Fixed effects	Liquidity positively influences the profitability.
Trinugroho *et al.* (2014)	Indonesia	2001-2009	OLS, Random effect and GMM	Higher profits are driven by higher risk aversion and higher LR.
Jara-Bertin *et al.* (2014)	Latin America	1995-2010	GMM	Bank performance (ROA and NIM) is negatively related to LR.
Fu *et al.* (2014b)	14 Asia Pacific	2003-2010	GMM	High level of LR is associated with low bank performance (Tobin's Q and ROA).
Tai (2014)	GCC	2003-2011	OLS	LR is negatively related to Islamic and conventional banks' performance, but for Islamic banks is significant.

Table 3.4 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled OLS	The coefficients of correlation between LR and bank performance (ROA, ROE, and NIM) are insignificant.
Cheng *et al.* (2013)	U.S.A	2004-2009	OLS	LR is insignificantly related to abnormal returns of banks.
Ongore and Kusa (2013)	Kenya	2001-2010	Panel data model	LR has no statistically significant association with banks' performance (ROA, ROE, and NIM).
Bedendo and Bruno (2012)	U.S.A	2007-2009	GMM	LR is negatively associated with bank risk.
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse and Random effect	There is a strong positive relationship between LR and bank performance (ROE, ROE, and NIM).
Akhtar *et al.* (2011)	Pakistan	2007-2010	OLS	Bank' ROA and ROE is positively related with LR.
Alper and Anbar (2011)	Turkey	2002-2010	Fixed effects model	LR has no important effect on bank' ROA and ROE.
López-Espinosa *et al.* (2011)	15 Developed and emerging economies	1999-2008	Cross-sectional and Time-series	A higher level of liquidity is associated with decrease NIM.
Srairi (2009)	GCC	1999-2006	Fixed effects model	The relation between LR and bank performance (ROA) is negative only for Islamic banks.
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects model	A positive (negative) association is found between LR and bank performance for domestic (foreign) banks.
Cebenoyan and Strahan (2004)	U.S.A	1987-1993	Pooled regression	Bank performance (SDROE and SDROA) is negatively related to LR.
Claessens *et al.* (2001)	80 Countries	1988-1995	WLS	LR is negatively and significantly related to NIM and bank risk.
Demirguc-Kunt and Huizinga (2000)	44 Countries	1990-1997	Pooled regression	LR is negatively related to bank' ROA and NIM.
Demirguc-Kunt and Huizinga (1999)	80 Countries	1988-1995	WLS	LR is negatively and significantly related to bank' ROA and NIM.
Molyneux and Thornton (1992)	Europe	1986-1989	Cross-sectional regressions	A negative association between LR and bank profitability.

According to López-Espinosa, Moreno, and Gracia (2011), high liquid assets level rsults in decrease in NIM, while Trad, Trabelsi, and Goux (2017) find the opposite is true. Olson and Zoubi (2011) argue that reduction in bank profits are due to increase in liquidity, high provision for loan losses, and high dependence on debt.

On the other hand, Căpraru and Ihnatov (2014) find that bank performance (measured by NIM, ROA, and ROE) and LR in the CEE countries are not statistically related. Ongore and Kusa (2013) find that in Kenya LR ratio and commercial banks performance (using NIM, ROA, and ROE) are not statistically related. This indicates that performance of banks does not depend on the level of liquid assets. Similarly, Alper and Anbar (2011), Cheng, Shamsher, and Nassir (2013), Ekpu and Paloni (2016), Ghosh (2016), and Levent (2016) establish that the effect of LR on banks profitability is not important. The summary of prior studies on the association between banks performance and LR are shown in Table 3.4.

3.3.1.1.5 Demand Deposits

Demand-deposits-to-total-deposits ratio (DMDEP) is another measure of liquidity in the banking institution. Jara-Bertin *et al.* (2014) find that DMDEP and performance of banks in Latin America (using NIM and ROA) are positively and significantly related, implying that increase in DMDEP leads to increase in ROA and NIM. A similar result is found by Kashian, Tao, Kashian and Tao (2014) using ROE and ROA as a proxy for the performance of Denovo banks. This shows that banks depend more on deposit funding (total deposits to total assets) in order to achieve higher risk and higher profitability (Saghi-Zedek & Tarazi, 2014; Saghi-zedek, 2016). They stress that banks that achieve larger deposit base may achieve higher profit because this type of funds is cheaper particularly since there is deposit insurance, but they may also achieve less profitability because of the higher deposit costs from labor and fixed costs. According to Alper and Anbar (2011), deposits are the major low cost source of bank funds. Interest margin and profitability of banks will increase when more deposits are converted into loans, enhances banks profitability measured through ROE and ROA. Iannotta *et al.* (2007) stress that the average of DMDEP incurs lower interest cost which then leads to increase in bank profitability.

In addition, the conclusion of the study of Chen (2009) is that bank performance and DMDEP has a positive significant relationship, implying that this ratio is able to show that deposit mix influences bank profitability. The level of bank efficiency increases when a higher DMDEP level is achieved because banks can make use of this source of the fund without incurring huge interest cost. Chirwa (2003) and Smirlock (1985) find that the proxies of bank profitability and DMDEP coefficients are positively and significantly related. Their findings are in conformity with the notion that DMDEP is cheaper as a source of funds to the banking institution. They also stress that DMDEP is able to capture the comparative advantage of cost of funds between banks. Moreover, Gropp and Köhler (2010) find that DMDEP and long-term performance are positively and significantly related. This positive relationship implies that higher long-term performance is achieved by banks that maintain higher deposit base, while it is not achievable when deposit base is smaller. This is understandable because refinancing through deposits is reasonably cheaper than seeking for other sources for the fund, particularly since it is backed by deposit insurance and serves as a reliable source of fund, especially where there is poor functioning of the market.

Table 3.5

Summary of Demand Deposits to Total Deposits (DMDEP) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Jara-Bertin *et al.* (2014)	Latin America	1995-2010	GMM	The higher DMDEP participation in banks total assets is associated to a higher NIM and ROA.
Kashian *et al.* (2014)	De novo banks (FDIC)	1993-2010	Pooled regressions Fixed effects Mixed models	The relationship between DMDEP and bank performance (ROA and ROE) is positive.
Osuagwu (2014)	Nigeria	1980-2010	Fixed effects Random effects	DMDEP has a negative but insignificant association with banks performance (ROA, ROE, and NIM).
Alper and Anbar (2011)	Turkey	2002-2010	Fixed effects model	The coefficients of correlation between DMDEP and bank performance (ROA and ROE) are positive with a level of significance.
Gropp and Köhler (2010)	OECD Countries	2000-2006	2SLS	A positive association is found between short-term deposits and long-term performance (ROA).
Chirwa (2003)	Greek	1970-1994	Time-series	DMDEP are positively and significantly related to profitability (ROA and ROE).
Smirlock (1985)	U.S.A	1973-1978	Pooled regressions	There is a strong positive relationship between DMDEP and bank performance.

Furthermore, DMDEP is used as a measure for growth opportunities by some studies. Empirical studies show that bank performance is positively influenced by higher growth opportunities (Berger & Bonaccorsi, 2006; Berger, 1995a; Goddard *et al.*, 2004b). Though, Berger (1995b) states that DMDEP characterizes the main source of generated agency costs incurred through government protection. These types of costs can also have a negative effect on bank profitability. However, Maudos and Solís (2009) argue that the level of specialization in the banking sector can also be explained by DMDEP.

On the other hand, Osuagwu (2014) finds that the performance of commercial banks in Nigeria (proxy by NIM, ROA, and ROE) and DMDEP are negatively and insignificantly related. Summary of prior studies on the association between bank performance and DMDEP are listed in Table 3.5.

3.3.1.1.6 Market Risk

This study measures the market risk (MR) of banks using the total-security-investments to total assets ratio. Santomero (1997) states that MR cannot be completely diversified but can be evaded. Interest rates and comparative currency value is the two vital MR in the banking sector. The banking institutions are mainly concerned with these two MR because they impact their performance. Fiordelisi and Molyneux (2010) indicate that banks that are more into capital markets activities have a significant and negative relationship with their profits. They argue that banks that possess skills to exposure to MR may choose to increase their investment in securities to increase their profitability. Though, this decision will decrease the level of liquidity reserves or interest-bearing assets that may result in a rise in the OPC of capital. Similar results are found by Ekpu and Paloni (2016) for 83 UK' banks.

In addition, another study of Leunga *et al.* (2014) on MR indicates that in the time of crisis, MR has negative contribution to earnings as losses from investments in risky assets are realized but it has a positive contribution when there is no crisis. The said study also report that banks which generate more income through non-interest activities have less significant MR in the time of crisis. This indicates that banks' exposure to MR through diversification of sources of earnings is reduced by the earnings from non-interest sources of fund in normal periods, and increased by earnings from non-interest sources of fund during the period of crisis. Jones, Lee, and Yeager (2013) find similar result when they find that banks need higher rates of return for investments that are opaque which lead to increase in systematic risk when there is no crisis. Maudos and Solís (2009) find that MR and bank performance are positively and significantly related, in which NIM is increased by MR. Moreover, Fu *et al.* (2014b) find that MR exposure and bank shareholder value (Tobin's Q) and profitability (ROA) are positive and significantly related, indicating that a positive perspective can be taken by shareholder regarding their exposure of MR. However, Cheng and Nasir (2010) find that MR measured by standard deviation of market returns are negative but insignificant effect on China commercial banks' returns. Summary of prior studies on the association between bank performance and MR are listed below in Table 3.6.

Table 3.6
Summary of Market Risk (MR) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Ekpu and Paloni (2016)	UK	2005-2009	Fixed effect	A higher proportion of MR (securities in total assets) has been linked with a lower ROE.
Fu *et al.* (2014b)	14 Asia Pacific	2003-2010	GMM	MR is positively associated with banks' performance as measured by Tobin's Q and ROA.
Leunga *et al.* (2014)	U.S.A	2007-2009	Pooled WLS Fixed effects	There is a strong positive relationship between MR (total risk and residual risks) and profitability (NII) during the non-crisis period, while this relation is negative and significant during the crisis period.
Cheng *et al.* (2013)	U.S.A	2004-2009	OLS	The coefficient for share market risk is negatively and significantly related to abnormal returns of banks.
Jones *et al.* (2013)	U.S.A	2000-2006	Pooled WLS Random effects	A positive association is found between changes in systematic risk and banks' earning.
Cheng and Nasir (2010)	China	71-11 months	OLS	Market risk has insignificant impact on returns to- earnings relation.
Fiordelisi and Molyneux (2010)	Europe	1998-2005	GMM	MR exposures are negatively related to bank performance (net operating profits and EVA).
Maudos and Solís (2009)	Mexico	1993-2005	Fixed effect GMM	The coefficients of correlation between banks' performance as measured by NIM and systematic risk are positively significant.

3.3.1.1.7 Non-Performing Loans

The extent of the impact of credit risk in the loans portfolio of banks is reflected in the ratio of non-performing loans to total loans (NPLs). It is also used for measuring the level of the influence of environmental factors on the performance of banks. High NPLs ratio decreases bank generation revenue as well as profit (Osuagwu, 2014; Brighi & Venturelli, 2016; Ekpu & Paloni, 2016). It has been stressed that since the poor quality of asset limits bank's pool of loanable resources, it should also reduce their profitability. Though the evidence of this assertion has been ascertained frequently in developed countries but it is not frequent in developing and emerging countries. The study of Brock and Suarez (2000) on Latin American banks find that NPLs ratio and bank spreads are negatively related. They stress that the cause of this distortions is triggered by insufficient regulation which gives room to banks to report distorted loan losses. Higher NPLs reduces banks' income and correspondingly the spread of the bank will also reduce if there are no reserves for loan loss. This finding also indicates that banks that accrue high level of bad loans may possibly lower their spreads, increase deposit rates, and then lower their loan rates in order to curb their financial difficulties. The authors also argue that unwillingness of the banking authorities to close troubled banks with the greter proportion of bad loans may in effect encourage them to take higher risk to ameliorate their difficulties.

The suggestion of Dang (2011) is that the main risk affecting banks is the losses accrued through negligent loans; thus the main concern of all banks is to maintain the volume of NPLs to the lowest level. The reason behind this is that NPLs has an influence on the banks' profitability. The notion of Ongore and Kusa (2013) and Mamatzakis and Bermpei (2017) is that commercial banks performance strongly depends on the value of the loan portfolio. Their findings show that the NPLs ratio and the indicators of bank performance (NIM, ROA, and NIM) are negatively and significantly related. The implication of this is that high NPLs ratio or poor asset quality leads to poor performance of the bank. This is because loans constitute the largest proportion of the earnings assets in the balance sheet of banks.

Maudos and Solís (2009) also show that credit risk and interest rate risk have a significant and negative relationship with bank performance. This indicates that the higher the interest rate volatility the higher default risk exposure and the lower is the influence on NIM. They stress that the cause of this may be traced to the availability of unlimited deposit insurance that resulted in high credit risk levels to the banks, and, therefore, escalated the difficulties of moral hazard. Similar findings are reported by Chaibi and Ftiti (2015), Petria *et al.* (2015), Albulescu (2015), Apergis (2014), Căpraru and Ihnatov (2014), Daly and Zhang (2014), Trinugroho *et al.* (2014), Cheng *et al.* (2013), and García-Herrero *et al.* (2009).

In addition, Boudriga, Taktak, and Jellouli (2009) in their study of 59 countries find that the relationship between risk and performance holds at the level of bank and not at the aggregate level. They argue that one of the possible reasons behind this is that the large variation in the performance of banks at the individual level gets masked at the aggregate level. This, however, is not true in the case of NPLs where the variations across banks are less. The second possible reason behind a low relationship between NPLs and performance at the aggregate level may be due to the fact the sample in their study include countries with different level of bank performance.

Table 3.7
Summary of Credit Risk (NPLs Ratio to Total Loans) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Gerhardt and Vennet (2017)	Europe	2007-2013	Logit regression	A higher NPLs ratio is associated with a higher probability of bank bailout.
Mamatzakis and Bermpei (2017)	USA	2007-2013	Fixed effects and GMM	NPLs ratio has a negative association with bank performance.
Brighi and Venturelli (2016)	Italy	2006-2012	Fixed effects	High NPLs ratio decreases bank' profitability and stability.
Chen *et al.* (2016)	USA	2002-2012	OLS and 2SLS	Higher NPLs increase bank risk.
Ekpu and Paloni (2016)	UK	2005-2009	Fixed effect	NPLs have a negative effect on banks' ROE.
Albulescu (2015)	USA	2005-2013	Fixed effects	NPLs have a negative impact on banks' profitability.
Chaibi and Ftiti (2015)	France and Germany	2005-2011	GMM	A negative significant relationship between the NPLs and ROE.
Petria *et al.* (2015)	EU 27	2004-2011	Fixed effects	A negative association is shown between NPLs with ROA and ROE.
Apergis (2014)	U.S.A	2000-2013	Fully modified OLS	The relationship between NPLs and banks' ROA is negative significant.
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled OLS	NPLs ratio has a negative impact on ROE and ROA, and NIM.
Trinugroho *et al.* (2014)	Indonesia	2001-2009	Pooled OLS, Random effect and GMM	A negative association is found between NPLs ratio and bank performance as measured by NIM.
Daly and Zhang (2014)	China	2004-2010	Linear model	A negative relationship exists between NPLs and bank' ROA and ROE.
Fah and Nasir (2014)	4 Asia Pacific countries	2000-2008	OLS	Higher the bank credit risk leads to a higher provision for default.
Cheng *et al.* (2013)	U.S.A	2004-2009	OLS	NPLs ratio is negatively related to abnormal returns of banks.
Ongore and Kusa (2013)	Kenya	2001-2010	Panel data model	High NPLs is related to poor bank' ROA, ROE, and NIM.
Bedendo and Bruno (2012)	U.S.A	2007-2009	GMM	NPLs ratio is associated with positive bank defaults.
Garcia-Herrero *et al.* (2009)	China	1997-2004	GMM	NPLs ratio is negative and significantly related to bank' ROA.
Maudos and Solis (2009)	Mexico	1993-2005	Fixed effect and GMM	The greater the exposure to default risk, the less the effect on NIM.
Brock and Suarez (2000)	Latin America	1990-1995	2SLS	NPLs are associated with bank spreads.

Bedendo and Bruno (2012), Fah and Nasir (2014), and Gerhardt and Vennet (2017) find a positive relationship between NPLs and bank defaults. This implies that increase in NPLs ratio will lead to an increase in risk. These studies also perceive that banks that are involved in loan sales and securitization have a greater level of NPLs on their balance sheets. This indication can be found as significant in both large and medium banks, as well as during expansion and recession period. Maghyereh and Awartani (2014a) also find a positive relationship between NPLs ratio and the chance of banks' distress among GCC countries. Maudos and Guevara (2004) note that interest margin increases when banks that incurred higher credit risk charged higher risk premium on loans. On the other hand, Fungáčová and Poghosyan (2011) argue that depositors may want higher interest rates on deposits since they assume that banks are highly risky, and this may lead to lower interest margin. Therefore, credit risk has an ambiguous expected sign. Summaries of past researches on the association between bank performance and NPLs ratio is in Table 3.7.

3.3.1.1.8 Loan Loss Provisions

The ratio of loan loss provisions to total loans (LLPs) is a measure of credit allocation and credit quality of banks. Demirguc-Kunt and Huizinga (1999) stress that LLPs ratio stands as a direct proxy for the variance in credit quality in all countries, and also reveals variance in regulations governing provisions. In France, the Nordic countries and Eastern Europe countries, banks are required to maintain high LLPs. According to Cooper, Jackson, and Patterson (2003), differences in the LLPs ratio may show the strength of the loan portfolio of the bank, which may influence the bank performance. This led to the argument on loan quality. Duca and Mclaughlin (1990) and some other studies establish that the difference in bank profitability is caused by the difference in LLPs ratio because the increase in LLPs ratio will lead to a decrease in firm profitability. This argument is only based on the quality of the loans granted and not the volume. In the same way, Miller and Noulas (1997) stress that the influence of LLPs ratio on profitability is negative. The plausible reason for this result is that the increases in exposure to high-risk loans by the financial institution will lead to higher unpaid loans, which results in generates lower returns to the banks. Similar results are found by Djalilov and Piesse (2016) in transition countries.

In addition, the observation of Lancaster, Hatfield, and Anderson (1993) is that LLPs ratio exerts negative influence on shareholder value when it increases above the projected annual loan loss reserves (LLRs). Likewise, Docking, Hirschey, and Jones (1997) find that LLPs announcement day effect is negative on shareholder value and also led to dividend reductions and decrease in profitability. Wahlen (1994) evaluates the LLPs, loan charge-offs, and NPLs information content and reveals that the three variables are essential in explaining future cash flows and expected returns. In order to lay more emphasis on the value of this information content, Kim and Santomero (1993) argue on the significance of providing unbiased estimations of banks' LLP. Although the management of banking institution has substantial discretion on the size and the timing of the change in reserve, decrease (increase) in LLPs can offer new information on the improvement (deterioration) of the banks' loan portfolio. Therefore, Musumeci and Sinkey (1990) and Strong and Meyer (1987) suggest that shareholders should use the information provided by LLPs to review their future bank's performance expectations. It is stressed that banks quarterly percentage measure that show the difference in LLPs as a percentage of the banks' total loans, is measured applying the LLRs.

Furthermore, the study of Athanasoglou, Athanasoglou, and Staikouras (2006) show that the LLPs and profitability of the South East European banks are negatively and significantly related, indicating that these banks should put more effort into their credit risk management. The cause of the severe banking difficulties is due to the failure of the banks to ascertain the weak assets and make appropriate provisions. They argue for greater transparency in the financial system in South East Europe to ensure effective evaluation of credit risk by banks to avoid such large loan losses. Athanasoglou *et al.* (2008), Said, Nor, and Low (2008), and Ekpu and Paloni (2016) also show that LLPs and bank profitability are significantly and negatively related. This implies that in order for managers of Greek banks to maximize their profits, they adopt a risk-averse strategy, primarily by involving in policies that will improve the screening and the monitoring of credit risk. The suggestion of Brighi and Venturelli (2016) and Calmès and Théoret (2010) is that LLPs ratio is the most important and significant variable in their research, where they find that the LLPs ratio and bank profitability (proxy by ROE and ROA) have a significant negative relationship. It is stressed that LLPs ratio rises sharply during recessions that attenuate the pro-cyclicality of ROA and ROE following the engagement of banks more in OBSs related activities.

Moreover, the conclusion of Dietrich and Wanzenried (2014) is that LLPs has a robust and negative significant influence on the profitability of all the commercial banks in all countries of the world. How to control credit quality is still one of the main issues affecting banks especially in the period of the economic meltdown. They also stress that those countries with high-income move on with the stronger competition and higher capital allocation efficiency (proxy by LLPs ratio), but also generate lower profitability. Thus, these banks must be highly efficient so as to improve the lower margins and the pressure of higher efficiency. Fu *et al.* (2014b) conclude that

LLPs, bank shareholder wealth (proxy by Tobin's Q), and bank' ROA are significantly and negatively related, implying that investors may view the banks' exposure to credit risk as negative. Caprio *et al.* (2007) also find similar results by using Tobin's Q to measure bank performance. Other researchers recommend that banks that achieve lower LLPs are more healthy and such advantage can lead to higher profitability (using ROE and ROA) (Jara-Bertin *et al.*, 2014; Lee & Hsieh, 2013; Raza *et al.*, 2012; Said & Tumin, 2011; Staikouras & Wood, 2011). It is stressed that the risk-adverse strategy of banks results in lower profitability due to two main reason which are; first, based on accounting principles, the LLPs are provided from banks' annual earnings; second, banks achieve high profitability when they involve in more loaning activities, if the bank level of provision is high then its ability to grant loan will reduce and it will therefore significantly depresses the ROA of the bank (Vong & Chan, 2009). Al-tamimi (2014) and Khediri *et al.* (2015) find in a separate study that the LLPs and performance of banks in GCC Islamic are insignificant but negatively related. They also find that the credit risk (LLPs) of Islamic banks is lower than that of conventional banks.

On the other hand, the study of Kosmidou, Tanna, and Pasiouras (2005), Jara-Bertin *et al.* (2014), and Hoffmann (2016) find that LLPs is positively and significantly related with NIM, implying that higher risk leads to higher margins. Meanwhile, Lee and Hsieh (2013) find that LLPs and bank profitability (NIM) and risk measured by the variance of ROA (VROA) and variance of ROE (VROE) are positively and significantly related. The explanation behind this is that the anticipation of banks from Islamic countries towards higher risk makes them create large provisions to deal with the expected losses that may result from their higher risk taking.

Table 3.8

Summary of Ratio of Loan Loss Provisions to Total Loans (LLPs) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Trad *et al.* (2017)	12 Islamic countries	2004-2013	GMM	LLPs ratio has a positive (negative) and significant effect on profitability (risk).
Psillaki and Mamatzakis (2017)	CEE countries	2004-2009	Fixed effect	The insignificant relationship between LLPs and bank efficiency.
Gerhardt and Vennet (2017)	Europe	2007-2013	Logit regression	A higher LLPs ratio is associated with a higher probability of bank bailout.
Brighi and Venturelli (2016)	Italy	2006-2012	Fixed effects	More LLPs ratio decreases the profitability and bank stability.
Djalilov and Piesse (2016)	CEE countries	2000-2013	GMM	The impact of LLPs on bank profitability is positive in early transition countries but negative in late transition countries.
Ekpu and Paloni (2016)	UK	2005-2009	Fixed effect	LLPs have a negative effect on banks' ROE.
Hoffmann (2016)	Latin America	1995-2012	GMM	LLPs impact significantly positively on bank' NIM.
Meles *et al.* (2016)	USA	2005-2012	OLS	LLPs have a positive significant (insignificant) effect on ROA (ROE).
Tan (2016)	China	2003-2011	GMM	LLPs have not significant effect on banks profitability.
Khediri *et al.* (2015)	GCC	2003-2010	Logistic regression	The negative coefficient on LLRs indicates that Islamic banks have lower credit risk than conventional banks.
Al-tamimi (2014)	GCC	2000-2012	OLS regressions	The relationship between the GCC Islamic banks' performance (ROA and ROE) and LLPs is negative but insignificant.
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM	LLPs have negatively effect on bank performance (ROA, ROE, and NIM).
Jara-Bertin *et al.* (2014)	Latin America	1995-2010	GMM	LLPs are negatively (positively) and significant related to ROA (NIM).
Fu *et al.* (2014b)	14 Asia Pacific	2003-2010	GMM	LLPs are negatively associated with banks' performance as measured by Tobin's Q.
Lee and Hsieh (2013)	Asia Countries	1994-2008	GMM	The coefficients of the ratio of LLRs are significantly negative on ROA and ROE, but the same coefficients are positive on NIM, VROA, and VDROE.

Table 3.8 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Raza *et al.* (2012)	Pakistan	2001–2009	OLS regressions	The less level of LLPs is associated with higher profitability.
Said and Tumin (2011)	Malaysia and China	2001-2007	Pooled OLS	Credit risk or LLPs are negatively related to ROA and ROE.
Dietrich and Wanzenried (2011)	Switzerland	1999-2009	GMM	LLPs have an insignificant (significant) effect on bank profitability before (during) the crisis.
Staikouras and Wood (2011)	Europe	1994-1998	OLS and fixed effects	The higher banks' profitability is negatively associated with LLPs.
Calmès and Théoret (2010)	Canada	1997–2007	OLS and ARCH-M	The coefficient of the ratio of LLPs is significantly negative with ROA and ROE.
Vong and Chan (2009)	Macao	1993-2007	Fixed effect and GLS	LLPs have a significant negative impact on banks' profitability (ROA)
Athanasoglou *et al.* (2008)	Greek	1985-2001	GMM	LLPs affect negatively to bank profitability as measured by ROA and ROE.
Said *et al.* (2008)	Malaysia	1998-2004	DEA and Fixed effect	LLPs have a negative impact on ROE.
Caprio *et al.* (2007)	44 countries	2000-2001	OLS Regressions	LLPs indicate to have a statistical significant negative association with Tobin's Q.
Kosmidou *et al.* (2007)	Greek	1995-2001	Multinational and Integrated model	The non-significant relationship between LLPs and bank profitability (ROA).
Athanasoglou *et al.* (2006)	SEE countries	1998-2002	Random effects	LLPs are negatively and significantly related to bank' ROA and ROE.
Kosmidou *et al* (2005)	UK	1995-2002	Fixed effects	LLPs have a positive impact on NIM (ROA) and are significant (insignificant).
Maudos and Guevara (2004)	Europe	1993-2000	Fixed effects	There is a strong positive relationship between LLPs and bank' NIM.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS Regressions	LLPs are positively related to bank performance as measured by NIM.
Miller and Noulas (1997)	U.S.A	1980-1980	Time-series	The effect of LLP on profitability (ROA) appears strong negative.
Wahlen (1994)	U.S.A	1989-1990	2SLS	LLPs and NPLs are important for explaining returns and future cash flows.
Lancaster *et al.* (1993)	U.S.A	1980-1986	Event study	LLPs have negative effects on shareholder wealth.
Duca and Mclaughlin (1990)	U.S.A	1985-1989	Cross-section	LLP is normally connected with the decrease of the firm profitability.
Ho and Saunders (1981)	U.S.A	1976-1979	Cross-section	There is no significant relationship between LLPs and bank' ROA and NIM.

Also, Valverde and Fernández (2007) and Trad *et al.* (2017) show that LLPs significantly increases the relationship between net profit margin and bank credit. Similar results have been found by other studies (Demirguc-Kunt & Huizinga, 1999; Maudos & Guevara, 2004). The finding of Dietrich and Wanzenried (2011) show that LLPs does not significantly influence bank profitability prior to the crisis but significantly increases throughout the crisis. Ho and Saunders (1981) and Kosmidou *et al.* (2007) find that the association between LLPs and bank profitability (proxy by ROA) is insignificant and generally low. Meles, Porzio, Sampagnaro, and Verdoliva (2016) and Tan (2016) find similar results with ROE. The summary of prior studies that evaluate the association between LLPs ratio and bank performance is depicted in Table 3.8.

3.3.1.1.9 Capital Adequacy Ratio

Capital adequacy ratio (CAR) is referred to as the ratio of total equity to total assets. It is considered as the main plank to ascertain the financial strength of the banks. There are many reasons to expect that profitability of banks will be higher with a higher degree of capitalization. Firstly, capital may be regarded as a cushion for rising share for risky assets, for instance, loans. If market situations make banks provide further loans with a positive risk/return profile, this will lead to higher profitability. Secondly, banks that have a high franchise value, measured in terms of its capitalization, would have sufficient incentives to remain better capitalized and involve injudicious lending. Thirdly, though capital is regarded as the most costly bank liability based on anticipated return, maintaining a comparatively large base of share capital is a significant indication of its creditworthiness. When market discipline is enforced by depositors, banks that are highly capitalized must be capable of lowering their costs of funding. Lastly, a highly capitalized bank has to involve in less borrowing so as to maintain a certain assets level. This may be essential in emerging countries where banks face sudden break in borrowing. Beforehand, Buser, Chen, and Kane (1981) have evaluated the theoretical association between bank capitalization and bank profitability. Their finding shows that banks usually have an internal ratio of optimal capitalization since deposit insurance is present. In general, a new entry in countries having banks with high franchise value is costly. This acts an incentive to banks to remain well-capitalized banks and also pursue sound lending behavior (Stiglitz, 1996). Berger (1995b) findings show that CAR ratio is positively related with ROE. He stresses that banks fund cost (both price and quantity of fund) should be reduced when CAR ratio is higher, which then lead to improving in banks' profitability and net interest income.

The suggestion of Maudos (2017), Bougatef and Mgadmi (2016), Ghosh (2016), and Jara-Bertin *et al.* (2014) is that increase in CAR leads to increase in profitability when the increase in capital decreases risk-related obstacles to expansion or entry into more lucrative product lines. This implies that a bank that increases capital and reduces its risks may be well capable of benefiting from opportunities to provide OBSs guarantees, for instance, letters of credit and loan commitments. Safe banks are also capable of borrowing uninsured funds more effortlessly to acquire high-income on-balance-sheet investment when the opportunities arrived. The study of Căpraru and Ihnatov (2014) and Sissy *et al.* (2017) show that CAR ratio and bank profitability are positively and significantly related. Banks with higher CAR and the consequent cost aims for higher margin. This is in line with the understanding that capital is regarded as a signpost of the solvency of banks. This may lessen the cost deposit of the highly capitalized banks resulting into higher income margins. Some other studies find similar effects (Mili, Sahut, Trimeche, & Teulon, 2016; Albulescu, 2015, Beltratti & Paladino, 2015; Terraza, 2015; Apergis, 2014; Lee &

Hsieh, 2013; Aebi, Sabato, & Schmid, 2012; Ayadi & Boujelbene, 2012; Staikouras & Wood, 2011; Athanasoglou *et al.*, 2008; Pasiouras & Kosmidou, 2007; Valverde & Fernández. 2007; Kosmidou *et al.*, 2005; Lensink & Hermes, 2004; Demirguc-Kunt & Huizinga, 2000, 1999).

In addition, Trad *et al.* (2017), Bitar *et al.* (2016), Fratzscher, König, and Lambert (2016), Jamil, Said, and Nor (2015), Fu and Heffernan (2009), García-Herrero *et al.* (2009), and Liang *et al.* (2013) show that banks that maintain high equity level to their total assets have the best performance. These authors clarify this relationship when they observe that banks with a higher ratio of CAR tend to face lower costs of funding because of the lower prospect of bankruptcy costs. In the same way, Khediri *et al.* (2015) find that the capitalization of the Islamic banks in GCC is better than that of the conventional banks in GCC. Demand for higher margin by banks with higher capital is aimed at compensating them for their higher average cost of capital. As identified by Goddard *et al.* (2008), Lepetit, Nys, Rous, and Tarazi (2008), Barry *et al.* (2011), Saghi-Zedek and Tarazi (2014), Saghi-zedek (2016), and Williams (2016) a positive relationship between CAR ratio and bank risk as proxy by SDROE and SDROA, may be caused by bankruptcy cost avoidance, the unpremeditated influence of minimum capital requirements, risk aversion through bank managers, or regulatory costs. Altunbas, Carbo, Gardener, and Molyneux (2007) also regard the positive correlation between CAR ratio and credit risk as a 'regulatory hypothesis', which means that regulators inspire banks to upsurge their capital commensurate with the level of risk taken.

On the other hand, some authors note that CAR ratio and total revenue are negatively related, as a decrease in capital ratios will result to increase in bank revenues. Based on conventional banking wisdom, an increase in CAR ratio will lead to a decrease in profitability. An increase in CAR ratio will reduce equity risk and this, in turn, reduces the expected level of return by investors on bank stock at equilibrium. Furthermore, an increase in CAR ratio reduces earnings after tax through a reduction of the tax shield generated by deducting interest payments. In addition, the reduction of risk through an increase in CAR ratio can reduce earnings by depressing the level of accessibility to deposit insurance. Goddard *et al.* (2008) show that CAR ratio negatively and significantly influence bank profitability, implying that bank profitability is affected by higher CAR ratio. Dietrich and Wanzenried (2011) conclude that CAR ratio does not significantly influence bank profitability prior to the crisis, but negatively and significantly influences bank profitability during the period of the crisis in 2007-2009. One of the major causes of this correlation is because safer Switzerland banks attracted more saving deposits in the time of the crisis. However, they have not been able to convert the considerable increase in the level of deposits to increase their income earnings because the demand for a loan is lower during this period. Despite the slight increase in the banks' total earnings during the crisis, their profitability decreases since they could not find investment opportunities that are attractive enough to deploy the additional fund.

Al-tamimi (2014) finds that the performance (ROE and ROA) and CAR ratio of Islamic banks in GCC have a significant and negative relationship. Gerhardt and Vennet (2017), Brighi and Venturelli (2016), and Lee and Hsieh (2013) also find that CAR and risk (SDROE and SDROE) have a negative relationship. Demirgüç and Kane (2002) refer this negative relationship as a 'moral hazard hypotheses' where undercapitalized banks take on excessive risk to exploit existing flat deposit insurance arrangements. It is also found that the largest and positive influence of capital on ROE is attained by banks that are based in Middle Eastern countries. The banks in Asia have the largest negative capital influence on LLRs and VROE while the lowest VROA value is found among banks based in the Middle Eastern countries. Because of the historical origin of Islam in Middle East countries, banks there are at the lowest risk level. According to Islamic principles, banks cannot accept interest without reason, and cannot invest in uncertainty and gambling. Therefore, the amount of risk-taking behavior is guided by the principles of religion in the Middle East. It is worth noting that banks in the Middle East countries persistence for both highest risk and high profit and as a result enjoy dominant competition.

Almazari (2013) finds that CAR indicates an insignificant association with ROA, implying that highly capitalized banks achieve negative returns. The finding is apparently not in line with the banking reality. Low level of operational efficiency of banks in the usage of their asset may result in a negative association with CAR. Related effects are shown by Alper and Anbar (2011), Kosmidou *et al.* (2007), and Williams (2003). The finding of Dietrich and Wanzenried (2014) also indicate that CAR ratio is higher in low-income countries than that of high-income countries. Though, bank's level of capital does not have influenced on the profitability in middle and low-income-countries, the profitability of banks from high-income countries is significantly and positively influenced by the CAR ratio. The summary of prior research on the association between CAR ratio and bank performance are depicted in Table 3.9.

Table 3.9
Summary of Capital Adequacy Ratio (CAR) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Mamatzakis and Bermpei (2017)	USA	2007-2013	Fixed effects and GMM	CAR has a positive association with banks' ROA, ROE, and NIM.
Maudos (2017)	Europe	2002-2012	Fixed effects	Bank profitability (risk) is positively (negatively) associated with capitalization level.
Psillaki and Mamatzakis (2017)	CEE countries	2004-2009	Fixed effect	A positive relationship between CAR and bank efficiency.
Saif-Alyousfi *et al.* (2017a)	Saudi Arabia	2000-2014	OLS and Fixed effects	Banks with higher capital are more profitable.
Saif-Alyousfi *et al.* (2017b)	Saudi Arabia	2000-2015	OLS and Random effects	Higher CAR lead to a decline in shareholders' value of the conventional banks.
Sissy *et al.* (2017)	29 African countries	2002-2013	Fixed effects and GMM	Higher capitalizations increase the stability of banks.
Trad *et al.* (2017)	12 Islamic countries	2004-2013	GMM	Bank capitalization has a positive (negative) and significant effect on profitability (credit risk).
Gerhardt and Vennet (2017)	Europe	2007-2013	Logit regression	A higher CAR is associated with a lower probability of bank bailout.
Bitar *et al.* (2016)	MENA	1999-2013	OLS	Higher capital ratios ameliorate bank efficiency and profitability.
Brighi and Venturelli (2016)	Italy	2006-2012	Fixed effects	Higher capitalization decreases the risk and enhances bank stability.
Bougatef and Mgadmi (2016)	MENA	2004-2012	Fixed effect and 2SLS	Bank profitability is positively associated with capitalization level.
Chang and Chen (2016)	USA	2008	Geometric Brownian model	Government capital injection is found to increase the bank profitability and reduce default risk.
Djalilov and Piesse (2016)	CEE countries	2000-2013	GMM	Better capitalized banks are more profitable in early transition countries.
Ekpu and Paloni (2016)	UK	2005-2009	Fixed effect	An increase in equity reduces the ROE.
Fratzscher *et al.* (2016)	50 Developed countries	2002-2013	Fixed effect	Higher capital buffers improved aggregate bank stability after the CRISIS.

Table 3.9 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Saghi-zedek (2016)	Europe	2002-2010	GMM	Better capitalized banks are more profitable and less vulnerable but more risky.
Ghosh (2016)	169 Nations	1998-2013	Fixed effect and GMM	High capitalization of banks is beneficial for bank profitability.
Ghosh (2016)	MENA	2000-2012	Fixed effect	Higher capitalized banks are more profitable and stable.
Levent (2016)	Turkey	2002-2012	Random and Fixed effects	More capitalization increases bank profitability.
Mili *et al.* (2016)	Developed and developing countries		OLS	Foreign banks' profitability increases their capital through retained earnings.
Tan (2016)	China	2003-2011	GMM	CAR has not significant effect on banks profitability.
Tran *et al.* (2016)	USA	1996-2013	GMM	Regulatory capital is negatively related to bank profitability for higher capitalized banks but positively related to profitability for lower capitalized banks.
Williams (2016)	Australia	2002-2008	GLS	Increased CAR results in increased bank risk.
Albulescu (2015)	USA	2005-2013	Fixed effects	Bank capitalization positively influences the profitability.
Beltratti and Paladino (2015)	44 countries	2005-2011	GMM	A significant positive link between the CAR and profitability.
Jamil *et al.* (2015)	Malaysia	2000-2012	OLS	CAR has positively effect on bank stability.
Khediri *et al.* (2015)	GCC	2003-2010	Logistic regression	Islamic banks are better capitalized than conventional banks.
Terraza (2015)	Europe	2005-2012	Fixed effect and GMM	Capitalization levels increase bank profitability.
Al-tamimi (2014)	GCC	2000-2012	OLS Regressions	CAR is significantly and negatively related to Islamic banks' ROA and ROE.
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM	A bank's CAR level does not affect bank' ROA, ROE and NIM in low- and middle-income countries, while the CAR in high-income countries has a positive and significant effect on bank profitability.

Table 3.9 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Jara-Bertin *et al.* (2014)	Latin America	1995-2010	GMM	CAR levels have a positive and statistically significant relation with bank' ROA and NIM.
Apergis (2014)	U.S.A	2000-2013	Fully modified OLS	There is a positive significant correlation between banks' ROA and NIM with CAR.
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled ols	The CAR ratio has a statistically significant positive impact on bank profitability.
Saghi-Zedek and Tarazi (2014)	Europe	2002-2010	GLS	A positive link between CAR and risk as measured by SDROA and SDROE.
Trinugroho *et al.* (2014)	Indonesia	2001-2009	OLS, Random effect GMM	The CAR has a positive and significant coefficient with NIM.
Almazari (2013)	Saudi Arabia	2007-2011	Linear regression	CAR shows an insignificant relationship with ROA.
Lee and Hsieh (2013)	Asia Countries	1994-2008	GMM	CAR has a positive (negative) significant effect on bank profitability (risk).
Liang *et al.* (2013)	China	2003-2011	GMM	Banks with a higher degree of capitalization perform better.
Aebi *et al.* (2012)	U.S.A	2007-2008	OLS regressions	ROE is positively related to CAR ratio.
Ayadi and Boujelbene (2012)	Tunisia	1995-2005	GLS	CAR is negatively effect on bank performance (ROA).
Staikouras and Wood (2011)	Europe	1994-1998	OLS and fixed effects	CAR is associated with positive bank performance (ROA and ROE).
Alper and Anbar (2011)	Turkey	2002-2010	Fixed effects	CAR has not important effect on bank profitability (ROA and ROE).
Barry *et al.* (2011)	Europe	1999-2005	OLS regressions.	The higher level of CAR has a positive impact on profitability and risk.
Dietrich and Wanzenried (2011)	Switzerland	1999-2009	GMM	CAR has a negative and significant (insignificant) impact on bank profitability during (before) the CRISIS.
Fu and Heffernan (2009)	China	1985-2002	OLS regressions	The higher bank performance is positively related to CAR ratio.
García-Herrero *et al.* (2009)	China	1997-2004	GMM	Banks with higher CAR tend to have a higher ROA.

Table 3.9 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Athanasoglou *et al.* (2008)	Greek	1985-2001	GMM	The coefficient of the CAR is positive and significant on bank' ROA and ROE.
Lepetit *et al.* (2008)	Europe	1996-2002	OLS regressions	CAR has a positive impact on risk.
Goddard *et al.* (2008)	U.S.A	1993-2004	Pooled regressions	CAR is negatively (positively) and significantly related to profitability (risk).
Altunbas *et al.* (2007)	Europe	1992-2000	SUR simultaneous	The risk is positively related to the CAR.
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects	CAR is positively related to both performances of domestic and foreign banks.
Valverde and Fernández (2007)	Europe	1994-2001	GMM	CAR is associated with positive bank' ROA, ROE, and NIM.
Kosmidou *et al.* (2007)	Greek	1995-2001	Multinational and Integrated model	There is no significant relationship between CAR and bank' ROA.
Kosmidou *et al* (2005)	UK	1995-2002	Fixed effects	CAR has positive affect bank performance.
Lensink and Hermes (2004)	Host country	1990-1996	Fixed effects model	CAR is significantly positive with bank performance.
Williams (2003)	Australia	1989-1993	OLS estimation	CAR has an insignificant effect on bank performance.
Demirguc-Kunt and Huizinga (2000)	44 Countries	1990-1997	Pooled regression	CAR is positively significant on bank performance.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS Regressions	There is a strong positive relationship between CAR and banks' ROA and NIM.
Berger (1995b)	U.S.A	1983-1989	Pooled regression	That higher CAR is positively related to higher ROE.

3.3.1.1.10 Loans to Total Assets

Most studies on bank margins and performance use the loans to total assets ratio (LOAN) to measure the LR of banks, the source of income of banks, loaning specialization or to measure credit risk (Kosmidou *et al.*, 2007; Fu & Heffernan, 2009). Based on the study of Abreu and Mendes (2001), Mamatzakis and Bermpei (2017), and Maudos (2017) the ratio of LOAN positively influences bank performance. This indicates that banks carefully select and monitor the lending process and keep a low level of NPLs which help the banks to increase in margins and profitability. Naceur and Omran (2011), Bitar *et al.* (2016), and Tan (2016) find that LOAN and bank performance are positively related. They explain the positive influence of credit risk on NIM and bank efficiency may be due to the fact that banks cover their greater exposure to risk by increasing their margins and they also cover their cost of origination of loans which are to be serviced and monitored. Olson and Zoubi (2011) find that loan specialization ratio (proxied by LOAN) increases profitability due to higher returns generated by loans than other types of assets. Demirguc-Kunt and Huizinga (1999) show that an increase in loan ratio will lead to increase in interest margins, implying that risk-averse shareholders demanded higher earnings to compensate them for taking higher credit risk. Srairi (2009) finds that LOAN ratio significantly influences ROA in all the cases but with reverse signs for Islamic and conventional banks. He also argues that the variation in the influence of credit risk on bank profitability may be traced to the amount of provisions possible loan losses that are lower in Islamic banks than in conventional banks.

Similar to Duca and Mclaughlin (1990) and Molyneux and Thornton (1992) reveal that risk level and performance is negatively and significantly related. This finding indicates that financial institutions that are exposed to highly risky loans also accumulate higher unpaid loans. Their credit risk exposure reduces the expected returns of the involved banks and contributes to the decrease in bank profitability. Maudos and Solís (2009) and Miller and Noulas (1997) suggest that credit risk and bank profitability have a negative relationship since banks` exposure to bad loans is influenced by higher LOAN, which then reduces bank profit margins. Hassan and Bashir (2003), Saghi-Zedek and Tarazi (2014), and Saghi-zedek (2016) also find that banks that acquire a higher level of LOAN have high risk and low and profitability. Meanwhile, Staikouras and Wood (2011) recommend that the ratio of LOAN is inversely correlated with ROA of banks. This indicates that banks that possess high non-loan earning assets achieve better profitability than those that highly depends on loan assets. Alper and Anbar (2011) and Osuagwu (2014) find similar results when they find that weak asset quality and credit portfolio volume negatively influence bank profitability.

Lee and Hsieh (2013) find that LOAN ratio significantly and negatively impacts ROE and ROA but positively influence NIM, SDROE, and SDROA. Similarly, Kasman and Kasman (2015) indicate that banks with higher LOAN are less stable and higher NPLs. Fu and Heffernan (2009) stress that lower LOAN ratio significantly and positively influences ROA but negatively influences ROE as a proxy for bank performance. The opposite results are found by Meles *et al.* (2016). Staikouras, Mamatzakis, and Koutsomanoli-Filippaki (2008) find that LOAN ratio has a positive relationship with profitability; however if there is too much investment in securities, the association could be negative. The study of Trad *et al.* (2017) and Goddard *et al.* (2008) shows that LOAN coefficient is negative and insignificant in the regression analysis for ROE and ROA, but it positively and significantly influences bank risk in the regression analysis. They conclude that lower specialization seems to be related to an increase in risk-adjusted profit.

Table 3.10

Summary of Loan to Assets Ratio (LOAN) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Mamatzakis and Bermpei (2017)	USA	2007-2013	Fixed effects and GMM	LOAN has a positive association with bank performance.
Maudos (2017)	Europe	2002-2012	Fixed effects	Banks with a bigger share of loans in their assets are more profitable.
Psillaki and Mamatzakis (2017)	CEE countries	2004-2009	Fixed effect	The effect of LOAN on bank efficiency is negative.
Trad *et al.* (2017)	12 Islamic countries	2004-2013	GMM	LOAN has a negative (positive) and significant effect on profitability (credit risk).
Bitar *et al.* (2016)	MENA	1999-2013	OLS	Higher proportions of LOAN reduce bank risk and improve bank efficiency and profits.
Bougatef and Mgadmi (2016)	MENA	2004-2012	Fixed effect and 2SLS	Liquidity (lower LOAN) is positively insignificant related to risk.
Meles *et al.* (2016)	USA	2005-2012	OLS	LOAN has a significant positive (negative) effect on ROE (ROA).
Saghi-zedek (2016)	Europe	2002-2010	GMM	Banks more reliant on lending activities are less risky.
Tan (2016)	China	2003-2011	GMM	A higher degree of loan exposure (lower liquidity) leads to an increase in bank profitability.
Khediri *et al.* (2015)	GCC	2003-2010	Logistic regression	There are no significant differences between Islamic and conventional banks during and after the CRISIS.
Kasman and Kasman (2015)	Turkey	2002-2012	GMM	Higher LOAN ratio decreases (increases) bank stability (NPLs)
García-Meca *et al.* (2014)	Nine countries	2004-2010	GMM	The relationship between LOAN ratios and bank' ROA and Tobin's Q are not significant.
Saghi-Zedek and Tarazi (2014)	Europe	2002-2010	GLS	A higher share of LOAN is less risky and profitability.
Osuagwu (2014)	Nigeria	1980-2010	Fixed and random effects	LOAN ratio impacts negatively on banks' profitability.
Lee and Hsieh (2013)	Asia Countries	1994-2008	GMM	LOAN ratio is significantly negatively (positively) on ROA and ROE (NIM, VROA, and VROE).
Alper and Anbar (2011)	Turkey	2002-2010	Fixed effects	LOAN ratio impacts banks' ROA and ROE negatively.

Table 3.10 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Naceur and Omran (2011)	MENA	1988–2005	GMM	LOAN ratio is positively significant on bank' NIM.
Olson and Zoubi (2011)	MENA	2000-2008	Random effects	High level of LOAN is associated with high bank' ROE and ROA.
Staikouras and Wood (2011)	Europe	1994-1998	OLS and fixed effects	LOAN ratio appears to be inversely related to banks' ROA.
Cheng and Nasir (2010)	China	71-11 months	OLS	LOAN has a negative sign with banks returns.
Fu and Heffernan (2009)	China	1985-2002	OLS regressions	LOAN ratio has a significant positive (negative) effect on ROA (ROE).
Maudos and Solis (2009)	Mexico	1993-2005	Fixed effect GMM	There is a strong negative relationship between LOAN ratio and bank' NIM.
Srairi (2009)	GCC	1999-2006	Fixed effects model	LOAN ratio has a significant impact on ROA but with opposite signs for conventional and Islamic banks.
Goddard *et al.* (2008)	U.S.A	1993-2004	Pooled regressions	The coefficients on LOAN are negative but insignificant (positive and significant) with profitability (risk).
Staikouras *et al.* (2008)	Europe	1993-2003	Stochastic frontier approach (SFA)	LOAN ratio is positively (negatively) related to profitability.
Kosmidou *et al.* (2007)	Greek	1995-2001	Multinational and Integrated model	LOAN ratio is negative but insignificant on ROA.
Hassan and Bashir (2003)	21 Countries	1994-2001	GLS	LOAN ratio is negatively related to bank' ROA, ROE and NIM.
Abreu and Mendes (2001)	Europe	1986-1999	Fixed effects model	LOAN ratio is positively related to bank' ROA, ROE and NIM.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS Regressions	A positive association is found between LOAN ratio and NIM.
Miller and Noulas (1997)	U.S.A	1980-1980	Cross-section and time-series	There is a negative correlation between credit risk and bank profitability.
Molyneux and Thornton (1992)	Europe	1986-1989	Cross-sectional	LOAN is negatively related to bank profitability.
Duca and Mclaughlin (1990)	U.S.A	1985-1989	Cross-section	Higher LOAN is associated with decreased in bank profitability.

García-Meca *et al.*(2014) show that the association between the ratio of LOAN and performance of bank (proxied by Tobin's Q and ROA) is insignificant. Khediri *et al.* (2015) use the LOAN to measure asset quality, their conclusion is that there is no significant difference between GCC conventional and Islamic banks through and after the financial turmoil. The study of Kosmidou *et al.* (2007) also reveals that ratio of LOAN has negatively but insignificant in influence on ROA. Bougatef and Mgadmi (2016) find similar results with bank risk. The summary of prior studies on the association between LOAN ratio and bank performance is presented in Table 3.10.

3.3.1.1.11 Loan Growth

Loan growth (LNGRTH) is a vital contributing factor to bank performance. Foos, Norden, and Weber (2010) empirically prove the direct association between risk and LNGRTH. They use a large and varied sample of more than 10,000 banks in 14 developed countries from 1997 to 2005. The study shows robust evidence that LNGRTH resulted to higher LLPs and leads to a lower risk-adjusted interest income. It indicates that bank risk and LNGRTH have a strong positive relationship, but the negative influence of the risk occurs with a lag of three years. Moreover, the findings show that banks in developed markets granted loans at the cost of lower margins though the new customers are perhaps more risky compared to the old customer.

Köhler (2012) finds that one of the most important risk determinants in banking is the growth in the loan portfolio. This implies that banks lessen their collateral requirements and standards of lending so as to achieve LNGRTH. In addition, banks that achieve significantly higher LNGRTH level than their rivals may entice clients that have not been granted loan by some other banks due to their demand for too low loan rates or have provided insufficient collateral relative to the quality of their credit (Foos *et al.*, 2010).

Keeton (1999) stresses that a fast rate of LNGRTH will result into greater loan losses. If banks are eager to agent to provide a loan, they will reduce their rates and lessen their credit standards. If larger loans are requested by more borrowers, the total volume of lending will increase and longer would be the period before loan losses emerge because bad loans do not always face the problem of repayment within the first year. When banking lending increases due to high credit demand, banks will raise the rates of the loan and increase credit standards; hence the total level of bank lending will not increase as fast as it would have been otherwise. As a result, there will be an improvement in the average credit quality of borrowers and reduced possibilities of future loan losses.

Additionally, Naceur (2003) and Hoffmann (2016) reveal that the relationship between bank LNGRTH and bank performance (proxy by NIM) is significant and positive. Bedendo and Bruno (2012) and Williams (2016) find a positive significant relationship between LNGRTH and bank defaults risk. A similar result is reported by Caprio *et al.* (2007) when they applied Tobin's Q as a proxy for bank performance.

On the other hand, some other studies have revealed that LNGRTH has a negative influence on bank performance (proxy by ROA and ROE) (Said et al., 2008; García-Herrero et al., 2009; Ghosh, 2016). Rapid credit growth in relation to market may lead to a reduction in credit quality and also bank performance (Dietrich & Wanzenried, 2011). The summary of previous research on the LNGRTH and bank performance relationship is shown below in Table 3.11.

Table 3.11
Summary of Loan Growth (LNGRTH) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Ghosh (2016)	169 nations	1998-2013	Fixed effect and GMM	A higher share of LNGRTH significantly reduces bank profitability.
Hoffmann (2016)	Latin America	1995-2012	GMM	There is a positive and statistically significant association between bank LNGRTH and NIM.
Williams (2016)	Australia	2002-2008	GLS	Higher LNGRTH increases the risk of largest and median concentrated banks; however, it has no effect on the risk of least concentrated banks.
Bedendo and Bruno (2012)	U.S.A	2007-2009	GMM	A positive and significant association is found between LNGRTH and bank defaults risk.
Köhler (2012)	15 European countries	2002-2009	GMM	Banks' LNGRTH is an important determinant of risk-taking in the EU banking sector. The higher rates of LNGRTH are more risky (Z-Score).
Foos *et al.* (2010)	14 major western countries	1997-2005	OLS regressions	LNGRTH has a positive and significant influence on bank risk.
García-Herrero *et al.* (2009)	China	1997-2004	GMM	The coefficients of correlations between LNGRTH and bank profitability (ROA) are negative and significant.
Said *et al.* (2008)	Malaysia	1998-2004	DEA and Fixed effect	LNGRTH has a negative impact on ROE.
Caprio *et al.* (2007)	44 countries	2000-2001	OLS regressions	There is a strong positive relationship between market based-banks performance (Tobin's Q) and LNGRTH.
Naceur (2003)	Tunisia	1980-2000	GLS	LNGRTH is positively and significantly related to profitability as measured by NIM.
Keeton (1999)	60 Large Banks	1967-1996	SLO Survey	The high levels of banks' LNGRTH lead to higher loan losses.

Note: SLO = Senior Loan Office conducted by the Federal Reserve

3.3.1.1.12 Bank Size

The measurement for bank size (SIZE) is log-of-total-asset. Trad *et al.* (2017), Mamatzakis and Bermpei (2017), Maudos (2017), Sissy *et al.* (2017), Pasiouras and Kosmidou (2007), and Smirlock (1985) reveal that SIZE and bank profitability are significantly and positively related. This is due to the fact that larger banks probably have a better and higher level of loan diversification and product compared to smaller banks, so as to take advantage of economies of scale. Almazari (2013) also find that SIZE and ROA are significantly and positively related. It indicates that higher ROA is achieved by larger banks. Similar results are found by other studies like Alper and Anbar (2011), Guillén, Rengifo, and Ozsoz (2014), Liang *et al.* (2013), Kasman and Kasman (2015), Chen *et al.* (2016), and Brighi and Venturelli (2016). The finding of Short and Keasey (1999) suggest that funds for investments can easily be generated by large banking firms and they creates entry barriers that result in performance. This means that higher profits can be achieved by larger banks. In contrast, this type of success cannot be achieved by small banks in a short period of time. Other studies conclude that increase in SIZE can lead to an increase in savings especially in developed markets (Athanasoglou *et al.*, 2006; Ayadi & Boujelbene, 2012). Eichengreen and Gibson (2001) also state that the growth in SIZE can positively influence bank profitability up to a certain limit.

Berger, Hanweck, and Humphrey (1987) find that increase in SIZE marginally decrease costs and scale inefficiencies are encountered by larger banks. The study of Micco, Panizza, and Yañez (2007) shows that there is a positive but insignificant relationship between SIZE and bank profitability (ROA). Fu *et al.* (2014b) also find a significant positive association between Tobin's Q and level of assets and negative association with 1-year lag asset size of the bank. This indicates that investors may, in the short-run focus on the synergy of increased asset size but in the long run, this may have a negative effect on shareholders' value. Fiordelisi and Molyneux (2010) find also that shareholder value and asset size are significantly positive related.

Bedendo and Bruno (2012), Saghi-zedek (2016), and Ashraf *et al.* (2016) show that larger banks are exposed to a higher credit risk portfolio during the time of recession since they are activity involved in securitization and selling of loans, which leads to decreases in quality of their asset portfolio. Haq and Heaney (2012) show that bigger banks tend to engage in risky transactions as they enjoy the 'safety-net' provided by the government under the "too big to fail" policy; due to this, larger banks increase their involvement in OBSs transactions in order to boost their fee income, which in turn increases their credit risk. Authors find a direct association of OBSs transactions and a shortage of liquidity which trigger losses. Goddard *et al.* (2008) state that fast-growing banks achieve higher returns with little volatility. Wilcox (2006) also suggests that larger banks tend to provide better rates to borrowers and savers compared to smaller banks in order to achieve higher ROA, since; relatively speaking they incur lower operating expenses than interest expenses.

However, SIZE may have a negative influence on profitability beyond a certain point. Hassan and Bashir (2003) show that SIZE and profitability of Islamic banks are significant and negative. They argue that this may be the result of a possible linkage between optimal size and maximization of margin. Kosmidou *et al.* (2005) find that SIZE and NIM are statistically significant and negative, implying that larger banks are likely to earn lower margins. This is in line with the researchers that find that smaller banks achieve economies of scale while larger banks achieve diseconomies of scale. In the same way, Claeys and Vennet (2008) and Naceur and Goaied (2008) find that SIZE and NIM are statistically significant and negatively related.

Almumani (2014) and Psillaki and Mamatzakis (2017) states that increase in assets (SIZE) lead to decrease in the performance of the banks. Al-Saidi and Al-Shammari (2013) find that the relationship that exists between the SIZE and performance of bank (measured by Tobin's Q) is negative. However, the relationship is positive when performance is measured using ROA. Therefore, larger banks achieved better performance when measured with ROA compared to smaller banks. Authors find that banks in Kuwait benefit from not only providing loans but also from offering services too. Caprio *et al.* (2007), Chaibi and Ftiti (2015), Tan (2016), and Gerhardt and Vennet (2017) also support the view too big to fail. Chen and Liao (2011) reveal that SIZE and profitability bear a negative relationship. This negative coefficient implies that larger banks face diseconomies of scale and scope. Căpraru and Ihnatov (2014) also conclude that SIZE has negative impact on profitability ratios (NIM, ROA, and ROE), indicating the higher the SIZE the lower the NIM ratio.

Table 3.12
Summary of Bank Size (SIZE) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Gerhardt and Vennet (2017)	Europe	2007-2013	Logit regression	Support the view that argues that too-big-to-fail and too-systemic-to-fail argument.
Mamatzakis and Bermpei (2017)	USA	2007-2013	Fixed effects and GMM	SIZE has a positive association with bank ROA, ROE, and NIM.
Maudos (2017)	Europe	2002-2012	Fixed effects	Larger banks are able to achieve higher profits.
Psillaki and Mamatzakis (2017)	CEE countries	2004-2009	Fixed effect	The effect of SIZE on bank efficiency is negative.
Sissy *et al.* (2017)	29 African	2002-2013	Fixed effects and GMM	SIZE has a positive and significant effect on bank stability.
Trad *et al.* (2017)	12 Islamic	2004-2013	GMM	Increasing SIZE leads to higher profitability.
Ashraf *et al.* (2016)	GCC	2000-2011	Random effects	Higher financial fragility is related to the Islamic SIZE
Brighi and Venturelli (2016)	Italy	2006-2012	Fixed effects	SIZE has a positive impact on bank profitability and stability.
Bougatef and Mgadmi (2016)	MENA	2004-2012	Fixed effect and 2SLS	Larger banks are able to better manage their risk.
Chen *et al.* (2016)	USA	2002-2012	OLS, Heckman and 2SLS	Support the too- big-to-fail theory.
Djalilov and Piesse (2016)	CEE countries	2000-2013	GMM	SIZE is not stable across the models.
Ghosh (2016)	MENA	2000-2012	Fixed effect	SIZE has no significant effect on bank profitability.
Hoffmann (2016)	Latin America	1995-2012	GMM	SIZE has a positive association with the NIM.
Levent (2016)	Turkey	2002-2012	Random and fixed effects	Large size increases bank profitability.
Meles *et al.* (2016)	USA	2005-2012	OLS	SIZE leads to enhance banks' ROA and ROE.
Saghi-zedek (2016)	Europe	2002-2010	GMM	Large SIZE is more profitable than small banks but they also a higher probability of failure.

Table 3.12 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Tan (2016)	China	2003-2011	GMM	Support the view that too big to fail.
Titko *et al.* (2016)	European Union	2008-2014	OLS	SIZE has insignificant association on ROA and ROE.
Chaibi and Ftiti (2015)	France and Germany	2005-2011	GMM	Support the view that too big to fail.
Jamil *et al.* (2015)	Malaysia	2000-2012	OLS	SIZE has positively effect on bank stability.
Kasman and Kasman (2015)	Turkey	2002-2012	GMM	Larger banks are less risky.
Terraza (2015)	Europe	2005-2012	Fixed effect and GMM	Positive and significant profitability persistence for only medium SIZE.
Almumani (2014)	Saudi Arabia	2007-2011	Pooled regression	Higher assets cause a decrease in bank's profitability.
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled OLS	SIZE is negatively significant on bank' ROA, ROE and NIM.
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM	No empirical evidence that larger commercial banks are more profitable than medium-sized and small-sized banks.
Fu *et al.* (2014b)	14 Asia Pacific	2003-2010	GMM	SIZE is positive/negative associated with Tobin's Q.
Guillén *et al.* (2014)	Latin America	1985-2005	DEA	Bank performance (ROE) is positively related to SIZE.
Almazari (2013)	Saudi Arabia	2007-2011	Linear regression	SIZE has a positive significant relation with bank' ROA and NIM.
Al-Saidi and Al-Shammari (2013)	Kuwait	2006-2010	OLS and 2SLS	SIZE is significant negative (positive) with Tobin's Q (ROA).
Liang *et al.* (2013)	China	2003-2011	GMM	SIZE is associated with positive bank' ROA and ROE.
Bedendo and Bruno (2012)	U.S.A	2007-2009	GMM	The larger banks are exposed to higher credit risk portfolio.
Haq and Heaney (2012)	Europe	1996-2010	GMM	A positive association between total risk and SIZE is observed.

Table 3.12 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Alper and Anbar (2011)	Turkey	2002-2010	Fixed effects	Large banks are associated with higher profitability (ROA and ROE).
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse model and Random effect	SIZE is associated with negative bank' ROA, ROE, and NIM.
Dietrich and Wanzenried (2011)	Switzerland	1999-2009	GMM	The large banks are less profitable than small and medium-sized.
Fiordelisi and Molyneux (2010)	Europe	1998-2005	GMM	A significantly positive link between SIZE and shareholder value.
Claeys and Vennet (2008)	CEE countries	1994-2001	GLS	SIZE has a negative effect on bank' NIM.
Goddard *et al.* (2008)	U.S.A	1993-2004	Pooled OLS	The larger credit unions tend to deliver higher returns with less volatility.
Caprio *et al.* (2007)	44 countries	2000-2001	OLS Regressions	SIZE has a significant negative association with Tobin's Q.
Micco *et al.* (2007)	179 countries	1995-2002	Baseline Regressions	SIZE are positively and significant with profitability.
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects	SIZE has a significant positive impact on bank' ROA, ROE and NIM.
Athanasoglou *et al.* (2006)	SEE countries	1998-2002	Random effects	The study finds larger banks are the most profitable.
Wilcox (2006)	U.S.A	1995-2004	Panel data	The large credits unions tend to generate higher profitability.
Kosmidou *et al* (2005)	UK	1995-2002	Fixed effects	There is an inverse relationship between SIZE and bank' NIM.
Hassan and Bashir (2003)	21 Countries	1994-2001	GLS	SIZE is negatively related to bank' ROA, ROE and NIM.
Smirlock (1985)	U.S.A	1973-1978	Pooled regressions	There is a positive significant correlation between SIZE and bank' ROA and NIM.

Dietrich and Wanzenried (2014) show that there is no statistical indication that the profitability of larger commercial banks is higher than that of small-sized and medium-sized banks across countries in various income groups. It is only in a high-income economy that medium-sized banks appear to be marginally less profitable compared to smaller banks. The authors argue that larger banks are not able to take advantage of the opportunities of loan diversification and higher product, and also economies of scale. Dietrich and Wanzenried (2011) stress that smaller and medium-sized Swiss banks are more profitable compared to larger banks after three years of financial meltdown. The major causes of their result can be traced to the higher LLPs provided by larger Switzerland banks during the crisis, and also because larger banks achieve significantly lower NIM during the crisis compared to the smaller banks. This can also be the result of some reputaional difficulties that mostly larger Swiss banks encountered during the period of the recent financial crisis. Terraza (2015) finds evidence that profitability is significantly and positively persistence for only the medium sized bank. The summarization of prior research on the association between the SIZE and performance of banks is shown in Table 3.12.

3.3.1.1.13 Off-Balance Sheet Activities

Off-Balance Sheet activities (OBSs) are measured by dividing total OBSs activities with total assets. Based on the study of Mokni and Rachdi (2014) OBSs activities is positively related with ROE but the association is weakly significant for the whole sample but it is issignificant at one percent level under conventional banks. Thus, OBSs activities increase the profitability of conventional banks. The justification for this result is that the involvement of commercial banks in OBSs activities improves their operational scope and ensures diversification in the sources of their earnings of earnings and product lines. Similarly, Tafri, Hamid, Meera, and Omar (2009) conclude that activities improve bank profitability by providing room for expansion of investments with alibeit an increase in risk exposure. This is why Demirgüç-Kunt and Huizinga (2010) find that the expansion of fee income (OBSs) improves the level of ROA and provide benefits for some diversification of risk. The suggestion of Karim and Chan (2007) is that OBSs assist a bank in covering up its long-term financial assets as well as increasing its profitability which allows the bank to expand its leverage and maximizes its investment returns. Their finding also shows that OBSs and market risk are significantly and positively related. The reason for this is because OBSs activities do not serve as the major source of the bank funds since the application of OBSs items is still developing.

Recent studies find a positive relationship between OBSs activities and bank risk (Fraser, Madura, & Weigand, 2002; Angbazo, 1997; Wagster, 1996). The result of Haq and Heaney (2012) indicate that OBSs activities and measures of risk (total risk, interest rate risk, systematic risk, idiosyncratic risk and credit risk) are positively related. Therefore, bank risk increases when the OBSs activities level increases. This outcome has significant policy implications and strongly justifies the disclosure of such information in the financial reports of the bank to increase the transparency in banking activities. The risk of OBSs activities can also serve as a concern on the part of bank regulators because if it is not properly managed it could severely impair the liquidity position of banks and can result into unexpected losses. Though the Basel Accord I and II accords also regard OBSs activities as risky and they include it in the calculations of risk-weighted assets for the computation of bank capital ratio of banks.

Aktan, Chan, and Evrim-Mandaci (2013) find that OBSs activities and all risk factors (such as market risk, short-term interest rate risk, foreign exchange rate risk, unsystematic and total risk) are positively related. OBSs influences exchange rate risk at 10 percent significance level, suggesting that foreign exchange exposure of the banks increase with the engagement of the banks in OBSs. They stress that this positive correlation can be a sign of warning to the banks' speculative motive in using OBSs in the financial market. Allayammis and Ofek (2001) also point out that the positive association between OBSs and bank exposures may be caused by the speculative motive of the banks to generate higher earnings by using transactions from OBSs in the financial market. The application of OBSs products in the market will indirectly lead to higher risk. Choi and Elyasiani (1997) find that the activities of OBSs highly influence exposure of foreign exchange risk of commercial banks in the U.S.A than interest rate risk.

On the other hand, the study of Chen and Liao (2011) shows that the association between OBSs activities and bank profitability (NIM, ROA, and ROE) is significantly negative, meaning that increase in bank OBSs activities will lead to a decrease in bank profitability. Rogers and Sinkey (1999) also find that non-traditional activities and NIM have a significant and negative relationship. Moreover, they stress that most large banks concentrate on non-traditional activities. Aktan *et al.* (2013) also find that OBSs activities negatively influence ROE. This negative relationship may be traced to the expectation of the shareholders that return will fall if activities of OBSs significantly reduce banks' risk exposure. Klein and Saidenberg (1998) show that on the average banks that involve in diversification through OBS activities generate low profitability.

Hassan (1993) shows that OBSs activities and bank returns, equity risk and systematic risks are negatively related. He stresses that banks risk increases with the OBSs activities such as guarantees because of the obligation of the bank to make future payments under some conditions that may affect the bank. Meanwhile, Bennett (1986) stresses that the activities of OBSs may lead to increase in credit risk since these activities provide opportunity to banks to increase their leverage without commensurate regulatory requirements for capital. Lynge and Lee (1987) concentrate on the commercial banks in the U.S.A, and they find that OBSs items have a negative impact on total risk, implying that OBSs items decrease the total risk of the banks. Delis and Kouretas (2011) suggest that higher OBSs items level do not increase the level of difficult loans. Their finding also shows that the negative association is robust for banks that are highly engaged in non-commercial banking transactions. Mokni and Rachdi (2014) show that the influence of OBSs activities on Islamic banks is negative and strongly significant at a confidence level of 1 percent. It implies that the involvement in OBSs transactions reduces the stock return of the banks. Khediri *et al.* (2015) reveal that the negative influence of OBSs activities on assets ratio shows that Islamic banks involved less in OBSs activities compared to conventional banks.

Goddard *et al.* (2004) study the performance banks in across six European banks. Except for UK banks, all banks in other countries show negative or neutral relationship because some banks with high OBSs activities faces the problem of sustaining their profitability. Mirzaei *et al.* (2013) conclude that OBSs activities are negatively and statistically significant in the banking systems in developed markets since it is related to lower returns. They argue that the staitistically insignificant relationship of OBS activities of banks in emerging markets with profitability may be due to the fact that the scale of OBS activities is low there. Rachdi (2013) shows that OBSs activities and ROE have a negative insignificant relationship, but OBSs activities and ROA have a positive significant relationship prior to financial crisis. Though, throughout the financial crisis, the first difference in results indicates a positive insignificance of OBSs activities to ROA and a negative insignificance of OBSs activities to ROE.

The study of Amin, Sanusi, Kusairi, and Abdallah (2014) shows that OBSs activities negatively influence ROA but positively influence ROE. The implication of this is that OBSs transactions increase banks activities which lead to increase in ROE but a result-in decrease in ROA as OBSs activities increases profitability but lead to more increase in assets also results in adding more risk-adjusted assets due to credit conversion factors than profitability which leads to a reduction in ROA. Meanwhile, ROE increases because capital is not influenced for the reason that it becomes another source of generating funds. Finally, the study of Boyd and Graham (1986) shows an insignificant association between non-bank activities and bank risk. They stress that the relationship level between non-bank activities and risk of failure increases if the regulations on non-bank transactions are not strict. Therefore, the positive association between the two factors vanishes when the regulations are stricter. The summary of prior research on the association between the OBSs activities and performance of banks are shown in Table 3.13.

Table 3.13
Summary of Off-Balance-Sheet Activities (OBS) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Khediri *et al.* (2015)	GCC	2003-2010	Logistic regression	Islamic banks are less involved in OBS than conventional banks.
Amin *et al.* (2014)	Tanzania	2003-2012	OLS	OBSs have a negative (positive) and significant effect on ROA (ROE).
Mokni and Rachdi (2014)	MENA	2002-2009	GMM	OBSs are positive (negative) and significant with conventional (Islamic) banks' ROA and ROE.
Aktan *et al.* (2013)	Turkey	2002-2007	Random effects	OBSs are positively (negatively) related to systematic risk (profitability).
Mirzaei *et al.* (2013)	40 economies	1999-2008	Panel data model	OBSs are significant (insignificant) for the advanced (emerging) markets banking returns with a negative sign.
Rachdi (2013)	Tunisia	2000-2010	GMM	OBSs are negatively insignificant to ROE before and during the CRISIS, while positively significant (insignificance) to ROA before (during) CRISIS.
Haq and Heaney (2012)	Europe	1996-2010	GMM	A positive association between risk and OBSs activities is observed.
Delis and Kouretas (2011)	Europe	2001-2008	GLS and 2SLS.	Higher OBSs items do not seem to increase the level of problem loans.
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse model and Random effect	OBSs are associated with negative bank' ROA, ROE, and NIM.
Demirgüç-Kunt and Huizinga (2010)	101 countries	1995-2007	Fixed effects	The higher of fee income (OBSs) is associated with increases bank ROA.
Tafri *et al.* (2009)	Malaysia	1996-2005	GLS	OBSs activities are positively associated with banks' ROA and ROE.
Karim and Chan (2007)	Malaysia	1995-2003	Fixed effects	ROE is significantly positively related to OBS activities.

Table 3.13 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Goddard *et al.* (2004)	Europe	1992-1998	OLS and cross-sectional model	A significantly positive relationship between OBSs and bank' ROA and ROE in the UK, while either neutral or negative for other countries.
Fraser *et al.* (2002)	Cross banks	1991-1996	OLS and WLS	A significantly positive link between OBSs and interest rate risk.
Allayammis and Ofek (2001)	U.S.A	1991-1995	OLS and WLS	OBSs are positively correlated with the market, short-term interest rate, foreign exchange rate, unsystematic and total risk.
Rogers and Sinkey (1999)	U.S.A	1989-1993	Random effects	A negative and significant relationship between NIM and OBSs.
Klein and Saidenberg (1998)	MBHCs	1990-1994	Multifactor model	Diversified banks are less profitable on average.
Angbazo (1997)	U.S.A	1989-1993	GLS	The risk is positively related to the OBSs.
Choi and Elyasiani (1997)	U.S.A	1975-1992	Multifactor model	OBSs are more prominent in affecting foreign exchange risk exposure compared to the interest rate risk.
Wagster (1996)	7 countries	1986-1988	Multivariate Model	OBSs activities have a statistically significant positive impact on bank risk portfolio.
Hassan (1993)	U.S.A	1984-1988	GLS	OBSs are negatively associated with bank systematic risks, equity risk and returns.
Lynge and Lee (1987)	U.S.A	1981-1985	Pooled regression	The effect of the OBSs items on total risk is negative.
Boyd and Graham (1986)	U.S.A	1971-1983	Linear regressions	No significant relationship between non-bank activities and risk.

Cross banks = all banks in Compustat database. MBHCs= Multi-bank bank holding companies.

3.3.1.2 Macroeconomic Indicators

The second category of independent variables under the conceptual framework of this research is the macroeconomic indicators. The performance of banks is sensitive to macroeconomic conditions in spite of the tendency of the industry towards achieving better geographic diversification and better usage of innovative instruments to hedge the risk that is related to the predictions of the economic cycle (Ayadi & Boujelbene, 2012). A number of researchers evaluate the association between macroeconomic factors and banks performance. The following variables are used as macroeconomic factors that influence bank performance in this study: GDP, INF, RIR, FDI inflow, and OIL. The relevant studies on the macroeconomic factors are represented by the following sub-points which discuss their potential influence on bank performance.

3.3.1.2.1 GDP Growth Rate

Economic growth reveals the condition of a country's economic activities as well as output generated which is represented by GDP growth rate. The suggestion of Sissy *et al.* (2017), Ghosh (2016), Trad *et al.* (2017), Petria *et al.* (2015), Dietrich and Wanzenried (2011), and Kosmidou *et al.* (2005) is that bank's profitability increases when economic growth increases, which implies a positive relationship between bank profitability and economic growth (measured by GDP). It is pointed out by Guillén *et al.* (2014) that banks wish to loan more and aims for higher margin in the time of higher economic growth when the quality of assets have also improved. The study of Dietrich and Wanzenried (2014) shows that GDP of middle and high-income countries influences bank profitability significantly and positively, indicating that the profitability of these banks increases during the booming economic period. Their findings also show that the GDP per capita is mainly significant in low-income countries banks. The findings of Lee and Hsieh (2013) show that bank profitability and economic growth are positively related. They argue that the possibility of having a default risk is reasonably lesser in a healthy economic condition which will lead to rapid increase in both interest and non-interest activities, and then increases the bank's profitability due to the increase in demand. In the same way, Demirguc-Kunt and Huizinga (1999), Hassan and Bashir (2003), Marcucci and Quagliariello (2009), Flamini *et al.* (2009), Srairi (2009), Khediri and Khedhiri (2009), Büyükkarabacak and Valev (2010), Houston *et al.* (2010), and Nouaili, Abaoub, and Ochi (2015) also establish that higher profitability can be attained through conducive economic conditions.

On the contrary, Staikouras and Wood (2011), Rashid and Jabeen (2016), Mamatzakis and Bermpei (2017), and Psillaki and Mamatzakis (2017) find that economic growth and bank profitability are negatively related. They argue that as an economy expands and become wealthier, there is an increase in demand for financial services. However, when banks encounter volatile economic growth, they face a low demand for financial services and there is also rise in NPLs. The study of Chen and Liao (2011) shows a negative significant coefficient of GDP, signifying that the NIM of foreign banks is lesser than that of domestic banks in a host country that achieve higher GDP. Lensink and Hermes (2004) find that with the increase in economic development, the coefficient of foreign bank entry decreases. They also propose that the level of economic development is a significant determinant for the entry of foreign banks into an economy. Lee and Hsieh (2013) and Soedarmono *et al.* (2013) suggest that increase in economic performance proxied by GDP reduces bank risk. Meanwhile, Jakubík (2007) and Chaibi and Ftiti (2015) stress that increase in GDP result in lower credit risk and in line with the economic theory, and weakening in economic growth lead to unemployment and increases credit risk (Castro, 2013). However, Kasman and Kasman (2015) and Levent (2016) indicate that higher economic growth lead to increase the NPLs and decrease the stability of banks due to the higher competition.

Ashraf *et al.* (2016), Saghi-zedek (2016), Saghi-Zedek and Tarazi (2014), Kosmidou (2008), and Pasiouras and Kosmidou (2007) find that for domestic banks a higher GDP is related to both lower risk and higher profitability. However, foreign banks performance and GDP are negatively related. They also stress that this difference has two likely explanations. Firstly, banks that operate in countries that achieve higher GDP usually function in more established environments leading to more profit margins and competitive interest. Secondly, as it is expected that GDP influences various factors that are associated with supply and demand of deposits and loans, the negative coefficient can be traced to the fact that domestic and foreign banks usually cater to different clientele group that may provide different reaction under similar macroeconomic conditions.

Alper and Anbar (2011), Djalilov and Piesse (2016), and Aydemir and Ovenc (2016) propose that rate of GDP has no significant impact bank profitability. Ayadi and Boujelbene (2012) show that the association of GDP and bank profitability is insignificant and negative related. Moreover, banks wish to serve clients from various sectors who respond differently to similar macroeconomic conditions. The findings of Naceur (2003) indicate that the growth of the economy does not play any role on the performance in the banking sector. The summary of prior studies on the association between bank performance and GDP is shown in Table 3.14.

Table 3.14
Summary of GDP Growth (GDP) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Mamatzakis and Bermpei (2017)	USA	2007-2013	Fixed effects and GMM	GDP has a negative association with bank performance.
Psillaki and Mamatzakis (2017)	CEE countries	2004-2009	Fixed effect	The level economic development is not necessarily an indicator of bank efficiency.
Sissy *et al.* (2017)	29 African	2002-2013	Fixed effects and GMM	GDP has a positive and significant effect on bank performance and stability.
Trad *et al.* (2017)	12 Islamic countries	2004-2013	GMM	GDP tends to influence positively and significantly credit and insolvency risks.
Aydemir and Ovenc (2016)	Turkey	2002-2014	GMM	GDP has no effect on banks' NIM and ROA.
Ashraf *et al.* (2016)	GCC	2000-2011	Random effects	Banks are less vulnerable for countries facing economic expansion.
Djalilov and Piesse (2016)	CEE countries	2000-2013	GMM	GDP has no effect on ROA.
Ghosh (2016)	169 nations	1998-2013	Fixed effect and GMM	GDP improves bank profit.
Hoffmann (2016)	Latin America	1995-2012	GMM	GDP impacts negatively on the bank' NIM.
Levent (2016)	Turkey	2002-2012	Random and Fixed effects	The increase in GDP reduces bank profitability.
Meles *et al.* (2016)	USA	2005-2012	OLS	GDP leads to enhance banks' ROA and ROE.
Rashid and Jabeen (2016)	Pakistan	2006-2012	GLS	The impact of GDP on the performance of conventional and Islamic banks is negative.
Saghi-zedek (2016)	Europe	2002-2010	GMM	GDP is positively related to profitability and negatively to risk.
Tan (2016)	China	2003-2011	GMM	GDP has a positive impact on banks' NIM.
Uhde (2016)	Europe	2000-2010	2SLS	GDP has no impact on bank stability.

Table 3.14 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Chaibi and Ftiti (2015)	France and Germany	2005-2011	GMM	NPL is negatively influenced by a slowdown in economic growth.
Kasman and Kasman (2015)	Turkey	2002-2012	GMM	GDP has a negative (positive) impact on bank stability (NPLs).
Nouaili *et al.* (2015)	Tunisia	1997-2012	Fixed effects	Higher level of the economy tends to increase the level of bank margins.
Petria *et al.* (2015)	EU 27	2004-2011	Fixed effects	A positive association is shown between GDP and ROA and ROE.
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled OLS	The effect of GDP on bank' ROA, ROE and NIM is not significant.
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM	GDP positively significant related to bank profitability in middle and high-income countries
Guillén *et al.* (2014)	Latin America	1989-2005	DEA technique	Bank tends to lend more and charge higher margin during higher economic growth.
Saghi-Zedek and Tarazi (2014)	Europe	2002-2010	GLS	A positive (negative) correlation between GDP and bank profitability (risk).
Lee and Hsieh (2013)	Asia Countries	1994-2008	GMM	GDP has a significant, positive (negative) effect on profitability (risk).
Soedarmono *et al.* (2013)	Asia	1994-2009	OLS, 2SLS	The high levels of GDP reduce bank risk.
Ayadi and Boujelbene (2012)	Tunisia	1995-2005	GLS	Report that GDP growth has no effect on profitability.
Alper and Anbar (2011)	Turkey	2002-2010	Fixed effects	GDP has not important effect on bank profitability (ROA and ROE).
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse and Random effect model	There is a strong negative relationship between GDP and bank performance (ROE, ROE, and NIM).
Dietrich and Wanzenried (2011)	Switzerland	1999-2009	GMM	GDP is associated with higher profitability (ROA, ROE, and NIM).
Staikouras and Wood (2011)	Europe	1994-1998	OLS and fixed effects	The higher banks' ROA is negatively associated with GDP.

Table 3.14 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Büyükkarabacak and Valev (2010)	37 countries	1990-2007	Logit probability model	GDP has a positive impact on bank risk and is significant.
Houston *et al.* (2010)	69 countries	1996-2007	Fixed effects	GDP is associated with positive significant risk.
Flamini *et al.* (2009)	42 countries	1999-2006	Random effects	The higher of GDP is associated with higher bank profitability.
Khediri and Khedhiri (2009)	MENA	1999-2006	Pooled OLS	Bank performance is positively and significantly associated with GDP.
Marcucci and Quagliariello (2009)	Italia	1992-2004	Threshold regression	There is a positive correlation between bank risk and GDP.
Srairi (2009)	GCC	1999-2006	Fixed effects	GDP rate has a positive impact on bank profitability.
Kosmidou (2008)	Europe	1990-2002	Pooled time series	GDP is positively (negatively) related to financial sector performance (foreign banks ROA).
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects	GDP is positively (negatively) related to the performance of domestic (foreign) banks.
Kosmidou *et al* (2005)	UK	1995-2002	Fixed effects	There is positive relationship between GDP and bank profitability.
Lensink and Hermes (2004)	Host country	1990-1996	Fixed effects	GDP is significantly negative with foreign bank' NIM.
Hassan and Bashir (2003)	21 Countries	1994-2001	GLS	GDP is positively related to bank' ROA, ROE and NIM.
Naceur (2003)	Tunisia	1980-2000	GLS	GDP is insignificant in both spread and profit regressions.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS Regressions	A positive association is found between GDP and bank profits.

3.3.1.2.2 Inflation Rate

One of the significant determining factors of banks' profitability is the level of inflation (INF) in the country. Perry (1992) confirms that the influence of INF on bank performance depends on whether the INF has been anticipated or not. In other words, there is an ambiguous association between profitability and INF. If the INF is wholly anticipated by the bank management, banks can suitably amend the interest rates in order to increase the bank's products than the costs so as to gain higher profitability. Trad *et al.* (2017), Hoffmann (2016), Tan (2016), Apergis (2014), Căpraru and Ihnatov (2014), and Molyneux and Thornton (1992) also test this hypothesis empirically and they find that there is a positive association when the INF is anticipated indicating that higher INF will lead to higher costs and higher income. Athanasoglou *et al.* (2008) also show that the anticipated INF, as estimated through the prior period's actual INF, significantly and positively influences profitability. They stress that this probably because of the capability of the management of Greek banks to satisfactorily predict future INF, indicating that interest rates have been suitably amended by Greek banks to attain higher profits. This can also be caused by the failure of the banks' customers (in compare to the managers of banks) to fully predict INF, indicating that exceeding normal profit can be achieved through information asymmetric. Dietrich and Wanzenried (2014) find similar results by analyzing the low and middle-income earning countries. They find that profitability of banks in high-income countries is not affected by INF. Adjustment of interest rates appears to be challenging for bank managers in these competitive markets because INF is considerably lower compared to developing countries.

Furthermore, Flamini *et al.* (2009) and Olson and Zoubi (2011) provide a different explanation of the relationship between INF and bank profits, they stress that banks anticipate future fluctuation in INF promptly enough and correctly to amend margins and interest rates. In other words, due to the cross product term, the implication of INF on interest rates on deposits and loans is not neutralized, indicating that there is a positive influence of INF on the spread of interest rate. Supposing that a major determinant of bank returns is NIM, this implies that bank returns are positively influenced by INF in the absence of the adjustment of interest rates towards INF shocks. Psillaki and Mamatzakis (2017), Hoffmann (2016), Levent (2016), García-Herrero *et al.* (2009) and Jara-Bertin *et al.* (2014) also find that higher banks' interest rate is caused by the higher INF, which then lead to increase in the interest earnings of banks and enhance their performance. Demirguc-Kunt and Huizinga (1999, 2000) propose that banks attain more profits during the period of INF. INF brings about higher costs with more transactions with more extensive branch networks and higher income through the bank float. It is also found by Chen and Liao (2011) that INF has a positive significant coefficient in the regression, indicating that a host country that achieves high levels of INF would mainly enlarge margins of foreign banks.

On the other hand, unexpected INF can result in an improper change in the interest rates and thus to the probability that costs can increase quicker compared to products and then decrease profitability. It is confirmed by Ayadi and Boujelbene (2012), Kanwal and Nadeem (2013), and Mamatzakis and Bermpei (2017) that there is a negative relationship between bank performance and INF, implying that when INF is unexpected, the cost incurred will surpass the revenues generated, which then decrease the profitability. In addition, Afanasieff, Lhacer, and Nakane (2002), Naceur and Kandil (2009), Lee and Hsieh (2013), Nouaili *et al.* (2015), and Ghosh

(2016) find that INF negatively influences the performance of banks. This association may be elucidated through the fact that uncertainty about the future is increased by INF; hence, the credit application will be reduced by INF. Since the major activity of the banks is to grant credit, a fall in credit demand due to uncertainties created by INF, which then lead to a decrease the performance. Castro (2013) and Soedarmono *et al.* (2013) find that high INF could lead to easier debt servicing through a reduction in the real value of outstanding loans. It may weaken the ability of the borrowers to service debt through decreasing their real income.

The study of Pasiouras and Kosmidou (2007) shows a mixed outcome when it shows that INF has a significant influence on ROA but different signs for both foreign and domestic banks. INF has a positive relationship with domestic banks, indicating that for the period under their review domestic banks anticipate INF levels. This provides them the chance to amend the interest rates consequently and accordingly to achieve higher profitability. On the other hand, INF brought higher costs to foreign banks than their revenues and hence the negative relationship. These contradictory findings can be related to the different degrees of knowledge of country's macroeconomic situations and anticipations regarding the rate of INF between foreign and domestic banks. In contrast, Srairi (2009) finds that INF is insignificant to both the profitability of conventional and Islamic banks in GCC countries. This is due to the largely moderate INF during the years under review in GCC countries; it may also be caused by high-interest margins earned by the banks. Sissy *et al.* (2017), Djalilov and Piesse (2016), Petria *et al.* (2015), Alper and Anbar (2011), and Claessens *et al.* (2001) also find similar results. The previous research on the association between banks' performance and the INF is summarized in Table 3.15.

Table 3.15
Summary of Inflation Rate (INF) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Mamatzakis and Bermpei (2017)	USA	2007-2013	Fixed effects and GMM	INF has a negative association with bank performance.
Psillaki and Mamatzakis (2017)	CEE countries	2004-2009	Fixed effect	INF is significant and positively related to bank efficiency.
Sissy *et al.* (2017)	29 African	2002-2013	Fixed effects and GMM	INF has an insignificant effect on bank performance and stability.
Trad *et al.* (2017)	12 countries	2004-2013	GMM	INF rate tends to influence positively and significantly.
Djalilov and Piesse (2016)	CEE countries	2000-2013	GMM	INF has no effect on ROA.
Ghosh (2016)	169 nations	1998-2013	Fixed effect and GMM	INF decrease bank profit.
Hoffmann (2016)	Latin America	1995-2012	GMM	INF impacts positively on the bank' NIM.
Levent (2016)	Turkey	2002-2012	Random and Fixed effects	Rises in INF lead to increases in non-lending activities and NIM.
Tan (2016)	China	2003-2011	GMM	INF is significantly and positively related to bank profitability.
Nouaili *et al.* (2015)	Tunisia	1997-2012	Fixed effects	A higher level of INF tends to reduce the level of banks performance.
Petria *et al.* (2015)	EU 27	2004-2011	Fixed effects	The association between INF and bank profitability is insignificant.
Apergis (2014)	U.S.A	2000-2013	Fully modified OLS	The relationship between INF and banks' ROA is positive significant.
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled OLS	The effect of INF on bank performance is positive and significant.
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM	INF is positively significantly related to bank profitability in low- and middle-income countries, while in high-income countries it is not significant.
Jara-Bertin *et al.* (2014)	Latin America	1995-2010	GMM	INF haS a positive and significant relation with bank performance.
Castro (2013)	GIPSI*	1997–2011	OLS, Fixed effect and GMM	High INF is negatively associated with banks credit risk.
Kanwal and Nadeem (2013)	Pakistan	2001-2011	OLS	Levels of INF are negatively related to banks' ROA and ROE.

Note: GIPSI = Greece, Ireland, Portugal, Spain and Italy.

Table 3.15 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Lee and Hsieh (2013)	Asia Countries	1994-2008	GMM	INF has a negative significant effect on bank performance.
Soedarmono *et al.* (2013)	Asia	1994-2009	OLS, 2SLS and Fixed effects	The high levels of INF reduce bank risk.
Ayadi and Boujelbene (2012)	Tunisia	1995-2005	GLS	The banks' performance is negatively associated with INF.
Alper and Anbar (2011)	Turkey	2002-2010	Fixed effects model	INF has no effect on bank' ROA and ROE.
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse and Random effect	There is a strong positive relationship between INF and bank performance (ROE, ROE, and NIM).
Olson and Zoubi (2011)	MENA	2000-2008	Random effects	INF is associated with higher profitability (ROA and ROE).
Flamini *et al.* (2009)	42 countries	1999-2006	Random effects	The higher of INF is associated with higher bank ROA.
Garcia-Herrero *et al.* (2009)	China	1997-2004	GMM	INF has a positive and significant effect on banks ROA.
Naceur and Kandil (2009)	Egypt	1989-2004	Panel data and GMM	INF has a negative effect on bank ROA and ROE.
Srairi (2009)	GCC	1999-2006	Fixed effects	INF has an insignificant impact on both GCC Islamic and conventional banks' profitability.
Athanasoglou *et al.* (2008)	Greek	1985-2001	GMM	The coefficient of the INF is a positive impact and highly significant on bank performance.
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects model	INF is positively (negatively) related to domestic (foreign) banks performance.
Afanasieff *et al.*, 2002)	Brazil	1997-2000	Panel data	INF is negatively related to bank performance.
Claessens *et al.* (2001)	80 countries	1988-1995	WLS	The effect of INF on bank performance is insignificant.
Demirguc-Kunt and Huizinga (2000)	44 countries	1990-1997	Pooled regression	INF is positively significant on bank performance.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS Regressions	A positive association is found between INF and banks performance.
Molyneux and Thornton (1992)	Europe	1986-1989	Cross-sectional	INF is positively related to bank performance.

3.3.1.2.3 Real Interest Rate

Another vital macroeconomic variable that influence banks performance is the real interest rate (RIR). The first study to examine the determinants of profitability of bank in cross-country setting is Molyneux and Thornton (1992). After using a panel data of 18 countries in Europe from 1986-1989, they find that RIR level and ROE are significantly related in each country. In addition, Demirguc-Kunt and Huizinga (1999) reveal that ROA and NIM are positively related. They also find that increase in RIR does not really increase spread in developed countries, maybe due to the fact that deposit rate ceilings do not tie down their deposit rates as RIR increase. Ghosh (2016), Levent (2016), Alper and Anbar (2011), and Obamuyi (2013) establish that profitability of banks increases when there is an increase in RIR. This is reasonable because most of the times many banks charge high-interest rate on loans and advances due to their apparent risk of undertaking business activity in the country. As no other source of borrowing is available to borrowers to fund their investments, the only option will be the availability policy instead of the cost policy. This means obtaining loans from the bank at any cost and their decision base on the availability of the loans. Banks benefit from higher RIR, but this is at the cost of economic of the whole country growth. Aburime (2008) and Riaz (2013) also find similar results.

Bolt *et al.* (2012) suggest that the real economy growth rate will determine the extent of the positive influence of long-term interest rates on the profitability of banks. Similarly, the influence of economic growth and RIR to banks profitability depends on the structure of particular balance sheet. Their findings imply that a long run significant and positive relationship exist between long-term interest rate and NIM. On the other word, NIM and short-term interest rate are negatively related. Similar results are found by Aydemir and Ovenc (2016) for Turkey banks' NIM, ROA, and ROE. The study of Chen and Liao (2011) shows that the influence of RIR on the performance of all and local banks in 70 countries is positively significant. However, foreign banks performance and the coefficients of RIR are negatively significant, signifying that foreign banks that operate in a host country that have higher RIR will achieve lower NIM than the domestic banks. Claessens *et al.* (2001) also stress that performance of foreign banks is influenced by the higher RIR.

Staikouras and Wood (2011) reveal that RIR level is negatively related with large banks but positively related to small banks. Their findings support earlier findings which state that there exist diseconomies of scale beyond a certain size. Banks that are growing will be faced with diminishing marginal returns, therefore average profits decline with the level of size. The gains in enforcement power due to size and information advantage are both significant for small banks. Alternatively, Lee and Hsieh (2013) find that bank profitability (NIM and ROE) and bank risk (SDROE and SDROA) with RIR significantly and negatively related. This indicates that higher RIR level reduces the profitability as well as the risk of banks. Rashid and Jabeen (2016) also find that the association between the financial performance of conventional and Islamic banks with RIR is negative but not significant.

Related to risk, Unite and Sullivan (2003) find that risk level and RIR level are positively related. They find that the quality of banks' loan improves with the rise in RIR, but weaken as the economy contracts. Moore and Craigwell (2003) confirm that small loans attract higher RIR because large loans are usually granted to more establish and bigger corporate customers that are well known and have a continuous relationship with the banks.

Table 3.16
Summary of Real Interest Rate (RIR) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Aydemir and Ovenc (2016)	Turkey	2002-2014	GMM	NIM, ROA, and ROE have positive (negative) significant relation with long-term (short-term) RIR.
Ghosh (2016)	169 nations	1998-2013	Fixed effect and GMM	Higher RIR raises bank profit.
Levent (2016)	Turkey	2002-2012	Random and Fixed effects	Rises in RIR lead to increases in non-lending activities and NIM.
Rashid and Jabeen (2016)	Pakistan	2006-2012	GLS	RIR does not have any significant effect on the performance of conventional and Islamic banks.
Chaibi and Ftiti (2015)	France and Germany	2005-2011	GMM	A positive significant relationship is found between RIR and bank NPLs.
Lee and Hsieh (2013)	Asia Countries	1994-2008	GMM	RIR has a negative significant effect on bank profitability and risk.
Obamuyi (2013)	Nigeria	2006-2012	Fixed effects	RIR is a positive impact and highly significant on bank performance.
Riaz (2013)	Pakistan	2006-2010	OLS	RIR has a significant influence on the banks' ROA and ROE.
Bolt *et al.* (2012)	17 countries	1990-2007	GLS, OLS and Fixed effects	NIM has a positive (negative) significant relation with long-term (short-term) RIR.
Alper and Anbar (2011)	Turkey	2002-2010	Fixed effects	RIR has a positive effect on bank performance (ROA and ROE).
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse and Random effect	RIR is positively (negatively) related to the performance of whole and domestic (foreign) banks.
Staikouras and Wood (2011)	Europe	1994-1998	OLS and fixed effects	RIR has a negative impact on large banks and positive on small banks.

Table 3.16 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Aburime (2008)	Nigeria	2000-2004	Panel data	RIR is a positively related to banks performance (ROA).
Quagliariello (2007)	Italia	1985-2002	Fixed effect and GMM	RIR has a positively significant effect on bank risk (LLP).
Moore and Craigwell (2003)	Small open economy	1986-1998	Fixed effect	A positive and significant relationship between loan risk and the difference between RIR on large loans and small loans.
Unite and Sullivan (2003)	Philippine	1990-1998	Random-effects	The level of risk is positively associated with the level of RIR.
Claessens *et al.* (2001)	80 countries	1988-1995	WLS	Higher RIR tend to improve the foreign bank performance (ROA)
Cebula (1999)	U.S.A	1963-1991	OLS	A significant and negative relationship between RIR and bank failure.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS regressions	A positive association is found between RIR and banks ROA and NIM.
Molyneux and Thornton (1992)	Europe	1986-1989	Cross-sectional	A significant positive association between ROE and RIR in each country.

Their findings indicate a significant positive association between the difference in RIR on small loans and large loans and loan risk. This implies that the interest on loans increases in order to compensate the increase in loans risk. A similar association is revealed by Quagliariello (2007) while examining the association between the RIR of ten years Italian Treasury bond and risk of banks proxy by LLP. This is consistent with the notion that the commitment of the borrowers increases due to RIR and which then increases the risk of the banks. In contrast, Cebula (1999) find that RIR has a significant negative relationship with bank failure, suggesting that increase in RIR result in the increased cost of deposits of banks that lead to decrease in banks' profitability. The summary of past studies on the association between banks' performance and RIR is shown in Table 3.16.

3.3.1.2.4 Foreign Direct Investment

A couple of empirical measures have been used in the literature to measure defensive expansion effects. According to Williams (2002), the defensive expansion effect can be categorized into two groups namely: (i) those considering direct investment from the home country to the host country; (ii) those considering trading relationships. The application of various empirical measures in the studies is because it has not been clarified by the defensive expansion theory which customer's actions lead to multinational banking. There is mixed empirical evidence for this hypothesis. Sabi (1988) argues that the existence of MNCs from the home country and the economic growth level are significant determining factors of the development of MNBs in the least developed countries. Foreign direct investment (FDI) through foreign nations is vital for improving the firm-specific abilities of beneficiary companies in host countries (Pojar, 2012; Lee and Rugman, 2009).

Different origins of FDI can create different influence on firm-specific benefits and as a result, it may have a considerable impact on the indigenous MNEs performance in the world markets. Lecraw (1993) stresses that FDI motivations differ base on the geographical origin of the investors. Tan and Meyer (2011) find that the shared socio-cultural backgrounds under similar country of origin assist in developing trust, reduce economic exchanges uncertainty, and improve the legality on the side of foreign investors directing FDI in host countries. Makino and Tsang (2011) reveal that historical relations that may be articulated within a geographical region must be regarded as an extra factor when evaluating FDI decisions. Lee and Rugman (2012) find that when the MNEs in Korea received inward FDI through their close home region nations, they may exploit the firm-specific advantages (FSAs) more advantageously than receiving inward FDI through distant nations in the non-home regions, because of the home region-specific benefits (HRSAs) that decrease transaction costs for FDI getting MNEs in Korea.

There is a huge body of literature on the association between economic performance and FDI and a fairly considerable amount of empirical research on European and emerging countries (Meyer & Sinani, 2009; Havranek & Irsova, 2010, 2011; Ahmed, 2012; Belloumi, 2014; Kudina & Pitelis, 2014; Silajdzic & Mehic, 2015). Some theoretical studies envisage favorable direct or indirect impact of FDI on the host nation. MNCs attract new capital to the economy and thus directly enhance the inputs in the function of production. Similarly, FDI can generate positive externalities to domestic companies by facilitating productivity of firms and eventually nationwide economic development. FDI can offer direct financing for acquiring new equipment and plant and be a vital substance in restructuring the economy. It may also transfer technology directly to foreign partners, and indirectly diffuse into domestic economies. Therefore, the influence may be indirectly on fully domestic firms or directly on the foreign subsidiary. In the former scenario, the indirect influence can be vertical (i.e inter-industry) effect or horizontal (intra-industry) effect. In conclusion, the vertical effect is divided into backward linkages (upstream domestic suppliers) and forward linkages (downstream domestic customers).

As much as the direct effect of FDI is regarded (i.e. when FDI come along with capital to the host nation) there is adequate empirical to prove the positive influence on the firms in host countries (Blomström & Kokko, 1998; Benacek, Gronicki, Dawn, & Magdolna, 2000; Branstetter, 2006; Waldkirch, 2010; Laborda Castillo, Sotelsek Salem, & Moreno, 2014; Zhang, Guo, & Wang, 2014). On the other hand, the investigation on the existence of an indirect influence (externalities or spillovers) on host nations' companies has provided a less conclusive result. This is in view of the fact that externalities and spillover effects also depend on the level of development of the host nation, its environmental standards, the potential of technology transfer to indigenous firm and employment condition which are all idiosyncratic in nature. Actually, the indirect influence of FDI on host nations has been mostly researched from the viewpoint of economic development and growth in countries with low income (Bruno & Campos, 2013) and in European countries (Bruno & Cipollina, 2014), working and employment conditions (in terms of labor mobility), business environment, as well as the transfer of technology from foreign to domestic companies. It is extensively acknowledged that the inflows of FDI have the possibility to improve the skills, technological capabilities, and level of competitiveness of reputable domestic companies in the host nations when it makes positive externalities.

Earlier research that study MNBs concentrate on Japanese FDI in Australia. An instance is Williams (1998a) that reveals that following clients as a proxy by exports and capital flow increases the profitability of foreign banks in Australia though the significance on the economy is minimal. Williams (1998b) finds that there is little backing for the defensive expansion influence of Australia foreign banks (applying exports and capital flows). Exports positively influence ROA in 1987 only. Meanwhile, Williams (1996) shows no proof of following clients influence profitability of Japanese banks in Australia. Williams (2003) also tests the defensive expansion hypothesis applying capital flow as a proxy for banks following their customers. This proxy is found to be insignificant.

In Korea and Japan, Ursacki and Vertinsky (1992) suggest that the FDI level from its home nation are significant and negatively influence the total assets of the foreign banks in Korean, and negatively insignificant to foreign banks in Japan. Arguing that Korea has little FDI and more than 80 percent of the FDI they have been since 1986, it came from only two nations, the USA, and Japan. They also stress that numerous banks of other countries operate in Korea in spite of levels of negligible FDI by their customers, while there is a small number of Japanese and USA banks attracted to such a small market (in spite of the irresistible domination of investment from those nations in terms of percentage) may have caused these findings as a statistical object. Kosmidou *et al.* (2007) find in Greece that the location-specific multinational factors (exports and the variance between the level of GDP growth of Greece and the host country) are insignificant. Therefore, there is no evidence for the defensive expansion theory, implying that Greek banks follow customers out of the country.

Table 3.17
Summary of Defensive Expansion or FDI and its Impact on MNBs Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Kosmidou *et al.* (2007)	Greek	1995-2001	Multinational and Integrated model	Defense expansion as measured by exports and the difference between the percentages GDP growth rates of the host country and Greece are insignificant effect on ROA.
Williams (2003)	Australia	1989-1993	OLS estimation	Capital flow is positively but insignificant associated with ROA.
Minh To and Tripe (2002)	New Zealand	1991-2000	Pooled cross-sectional time series regressions.	Bilateral trade has a consistently positive affect on the foreign-owned banks' profitability (ROA).
Williams (1998a)	Australia	1987-1993	Unbalanced pooled data	Defense expansion as measured by USD capital flow positively related to ROA.
Williams (1998b)	Australia	1987-1993 By year	Pooled data	Limited evidence is found to support the defense expansion as measured by capital flow and exports. ROA has a positive relationship with exports in 1987 but not in any other years.
Williams (1996)	Australia	1997-1992	Pooled OLS	Japanese FDI, in millions of Australian dollars, is not significant effect on ROA.
Ursacki and Vertinsky (1992)	Japan and Korea	1979-1986	Multinomial logit and regression	The level of FDI from its home country, are significant (insignificant) and negatively effect on total assets of Korean (Japan's) branches.
Sabi (1988)	Lesser developed countries	1975-1982	Pooled data	FDI in USD million has a positively significant effect on MNBs assets growth.

Lastly, on smaller developed countries, Sabi (1988) concentrates on the determinants that have added to the development of USA banks in emerging countries. Sabi (1988) establishes that FDI in USD million is statistically and positively significant at one percent level. This simply validates the assumption of the theoretical studies and offers a robust evidence for the "Follow-the-Client" hypothesis in the situation smaller developed nations. They also recommend that MNBs theories are similar to the general eclectic theories of FDI. Meanwhile, banks follow their clients and pursue local market prospects in order to maintain their locational specific and ownership-specific benefit. Minh To and Tripe (2002) also reveal related findings for New Zealand (applying bilateral trade). Previous studies on the influence of different proxies of defensive expansion or FDI on MNBs performance is shown in Table 3.17.

3.3.1.2.5 Oil Price Shocks

The literature on oil price shocks (OIL) impacts can be broadly divided into macroeconomic impacts, impacts on firm performance, impacts on stock market returns, and impacts on efficiency and performance of banks.

The impacts of OIL on the macroeconomic conditions have been widely studied in different countries such as (Bekiros, Gupta, & Paccagnini, 2015; Cologni & Manera, 2005; Cunado & Gracia, 2005; Hamilton, 2009; Kilian & Vigfusson, 2011; Melichar, 2016; Yazdan, Ehsan, & Hossein, 2012). Hamilton (2009) suggests that oil prices are an important contributing factor to the economic recession in the USA that began in 2007. Hamilton notes that OIL rose in 2007 and 2008 due to a number of factors, including the decline the output of the mature oil fields in the North Sea and Mexico, political instabilities in Nigeria, and the decline of Saudi Arabian oil production by about 850,000 barrels per day between 2005 and 2007. MacLaury (1978), Hamilton (1983), Melick and Thomas (1997), Ederington and Guan (2010), and Narayan and Sharma (2011) document that OIL has a negative effect on the macroeconomy. In the other words, if a rise in OIL reduces the GDP, it will reduce earnings of those firms for which oil is either a direct or an indirect factor in its cost of production. In this case, an increase in the OIL will reduce firm earnings, which will, in turn, lead to a fall in the stock price (effectively a fall in returns). If the stock market is inefficient, the effect of OIL on returns will occur with a lag.

Wattanatorn and Kanchanapoom (2012) investigate the impact of crude OIL on the profitability of all sectors except banking sector in Thailand Stock Exchange during the period 2001 to 2010 using the random effect model. Their study finds that crude OIL is positively significant impact on the ROA of only the energy and food sectors. Dayanandan and Donker (2011) discovers that the increasing crude OIL has significant positive impact on ROE for oil and gas firms while it affects negatively in crisis periods (Asian crisis, 9/11, and US financial crisis 2008). Zaabouti, Mohamed, and Bouri (2016), using a stochastic frontier approach for 19 industrial Tunisian firms listed on the Tunis Stock Exchange between 2007 and 2011, find that changes of OIL can largely explain distortions in the value of firms is empirically demonstrated.

The effect of OIL on stock returns has also been examined in the literature. Henriques and Sadorsky (2008) show that the overall impact of increasing OIL on stock prices of alternative energy companies is positive because of substitution effects towards other energy sources. Driesprong, Jacobsen, and Maat (2008) find significant relationships between OIL and stock returns in both developed and emerging markets. Similar results are found in the USA by Hong, Torous, and Valkanov (2007), Sadorsky (1999), and Narayan and Sharma (2011). Nandha and Faff (2008) find that OIL increases have a negative effect on market returns for all sectors except mining, and oil and gas industries. Jones and Kaul (1996) use a time series regression model to examine the effect of real OIL on real stock returns based on quarterly data for four developed countries, namely USA (1947–1991), Canada (1960–1991), Japan (1970–1991), and the UK (1962–1991). They find that OIL has a negative effect on aggregate real returns for all USA, Canda, Japan and UK.

Using VAR models and cointegration tests, Hammoudeh and Aleisa (2004) show that there is a bidirectional relationship between Saudi stock returns and OIL changes. The findings also suggest that the other GCC stock markets are not directly linked to OIL and are less dependent on oil exports and are more influenced by domestic factors. Zarour (2006) uses VAR model analysis to study the effect of OIL changes on GCC stock markets and shows that only the Saudi and Omani markets have predictive power of OIL increase. More recently, Hammoudeh and Choi (2006) examine the long-term relationship of the GCC stock markets and their linkage to the OIL, the USA S&P 500 index, and the US T-bills rate. They find that the T-bill rate has a direct impact on these markets while OIL and the S&P 500 have indirect effects. Arouri and Rault (2012) stress that there is evidence for cointegration between OIL and stock markets in GCC countries while their results indicate that OIL increases have a positive impact on stock prices, except in Saudi Arabia.

In literature, there is limited evidence of the effects of OIL on bank performance of the financial sector. Said (2015) investigates the influence of the OIL on the Islamic banking efficiencies scores during the CRISIS of 2008-2009. The study shows that there is no a direct relationship between the OIL and the efficiencies scores of Islamic banks in the MENA area. Lee, Dennis, and Simlai (2015) examine the link between oil production and bank deposits in North Dakota's Bakken oil formation. They find that oil production is positively related to bank deposits, which indicates a strong relationship between oil production and bank deposits. Nevertheless, there is only one study which investigates the impact of the OIL shock on the profitability of banks. Poghosyan and Hesse (2009) study the relationship between OIL shock and bank profitability (ROA) using GMM and data from 145 banks in 11 oil-exporting MENA countries for 1994–2008. They find that OIL shock influence performance of banks in general and the impact of OIL are most evident for investment banks while there is less evidence supporting that commercial and Islamic banks are affected to the same extent. Summary of prior studies that examine the association between banks performance and the OIL shocks is shown in Table 3.18.

Table 3.18
Summary of Oil Price Shocks and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Said (2015)	MENA countries	2008-2009	DEA	There is no direct relationship between the oil price and the efficiencies scores of Islamic banks.
Lee, Dennis and Simlai (2015)	North Dakota's Bakken	1995-2009	GMM	There is a strong positive relationship between oil production and bank deposits.
Poghosyan and Hesse (2009)	11 oil-exporting MENA countries	1994–2008	GMM	The shocks of oil price have an impact on bank profitability measured by ROA however that investment banks are the most affected ones compared to commercial and Islamic banks.

3.3.1.3 Financial Structure Indicators

The third group of independent variables in the conceptual framework of this research is financial structure indicators. There are a quite a number of studies that have examined the relationship between financial structure indicators and banks performance. This study uses the following variables as financial structure factors that influence bank performance: HHI, MARKE_CAP, and DCPS. The next sub-points characterize the connected studies on indicators of financial development mentioned above and deliberate their possible influence on the performance of banks.

3.3.1.3.1 Herfindahl–Hirschman Index

This study uses a square of market share as a proxy for HHI. HHI of market concentration is another important determinant of bank performance. Past studies on the financial structure concentrate on performance and competition in the banking institution. This comprises of both structural as well as the non-structural methods (Berger, Demirgüç-Kunt, Levine, & Haubrich, 2004). The structural approaches apply both the relative market power hypothesis (RMP) and the X-efficiency hypotheses (ESX). The RMP hypothesis, which is also regarded as the SCP hypothesis, states that increase in market power leads to monopoly profits. As a specific instance, the RMP hypothesis suggests that only companies with well-differentiated products and large market shares are capable of exercising market power and earning non-competitive profits. Similarly, the ESX hypothesis proposes that increase in scale and managerial efficiency result into higher concentration and then higher profitability. This is also proven by Apergis (2014) and Jara-Bertin *et al.* (2014). These hypotheses try to show that maybe a highly concentrated market leads to collusive behavior amongst the major banks leading to a superior market performance and in addition, the efficiency of the major banks raises their performance. The non-structural approach which emanated from studies in the new empirical industrial organization, evaluate market strength while analyzing the competitive behavior of banks. However, the SCP hypothesis, that is partly supported theoretically by Bikker and Bos (2005) in the case of studies on new empirical industrial organization (NEIO), stress that banks can achieve monopolistic rents in concentrated markets due to their capability to offer reduced deposits guarantee and amend the increase borrowing rates by virtue of the conspiracy or other non-competitive behavior. When the concentration on the market increases the level of competition will decrease and as a result, there will be convergence in the price of output. This structure is akin to the monopolistic situation.

Furthermore, Maudos (2017), Psillaki and Mamatzakis (2017), Beck, Jonghe,and Schepens (2013), Dietrich and Wanzenried (2011), and Molyneux and Thornton (1992) find that banks performance and HHI are significantly and positively related, which is in line with the traditional SCP paradigm and the empirical findings of Demirguc-Kunt and Huizinga (1999), Hassan and Bashir (2003), Demirgiiu-Kunt, Laeven, and Levine (2003), Demirgüç-Kunt *et al.* (2004), Goddard, Molyneux, and Wilson (2004a), Martinez Peria and Mody (2004), Kosmidou *et al.* (2005), Athanasoglou *et al.* (2006), Srairi (2009), Tregenna (2009), Sufian (2011), Sastrosuwito and Suzuki (2012), Karimzadeh, Akhtar, and Karimzadeh (2013), Perera, Skully, and Chaudrey (2013), Rachdi (2013), Trujillo-Ponce (2013), Ayaydin and Karakaya (2014), and Phan, Daly, and Akhter (2016). The positive influence of HHI on bank profitability is because of the index value and the market competition level move in the reverse direction, indicating that decrease in market competition increases bank profitability. Therefore, banks would achieve more profitability either when they become bigger or when they expand their realm of activities. Assessment by Claeys and Vennet (2008) and Horvath, Seidler, and Weill (2016) supports the SCP hypothesis in their sample as a whole. The coefficient of the concentration ratio in their result is highly significant and positive of all variables in case of some particular banks together with the effect of countries and time. Therefore, any increase in market concentration will positively influence the bank margins which indicate complicity. Fu and Heffernan (2009) also find evidence favorable to the SCP paradigm for banks in China. Floerkemeier and Dabla-Norris (2007) find that high concentrations in deposit and loan markets have a positive influence on both NIM and interest spreads. Bourke (1989) proposes that profits increase with improve concentration since overhead expenses reduce with concentration. According to Short (1979), a reasonably large decrease in concentration is essential to bring about a one percent point decrease in rates of profit.

In contrast, Ashraf *et al.* (2016), Yang and Shao (2016), Kasman and Kasman (2015), Chronopoulos, Liu, McMillan, and Wilson (2015), Petria *et al.* (2015), and Fu *et al.* (2014a) establish that HHI has negative significant association with bank performance, signifying that higher concentration decreases profitability and stability and enhances risk. Similar findings have been shown by other results (Ameur & Mhiri, 2013; Tan & Floros, 2012; Kanas, Vasiliou, & Eriotis, 2012; Ramadan, Kilani, & Kaddumi, 2011; Liu & Wilson, 2010). Ramadan *et al.* (2011) suggest that the negative relationship is because of aggressive non-price competition, as well as the managers' behavior as a risk-averse investor. Naceur and Goaied (2008) and Naceur (2003) reveal that concentration significantly and negatively influences NIM. This implies that concentration is less advantageous to Tunisian commercial banks than competition. It also indicates that big banks' monopoly is a problem to profitability. Hence, they recommend that focus should be given on the development of competition in the banking system. Park and Weber (2006) show a negative and significant influence of market concentration on bank profitability. They stress that the policy of restructuring has pursued by governments after the CRISIS, encourage mergers and acquisitions (M&As) or purchases and assumptions (P&As) result in increased concentration. For the period 1997-2000, the relationship is a negative because of the CRISIS and high NPLs. Williams (2003) reveals that concentration decreases the profitability of the foreign competitors and serve as a real obstacle to entry. Liang *et al.* (2013) contend that negative relationship is a result of expropriation influence of controlling shareholders.

Mixed results are found for the middle, high and low-income countries. Dietrich and Wanzenried (2014) find that market concentration positively and significantly influences the performance of banks in low-income nations, while in middle or high-income nations the relationship is negative. The findings for developing countries are in accordance with the SCP hypothesis, which asserts that increase in market power results in monopoly profits. Ghosh (2016), Flamini *et al.* (2009) and Hsieh and Lee (2010) find that low-income level countries may reinforce the positive association between profit and concentration. Banks in developing countries enjoy the market power to be in a position capable of passing costs to customers and adjusting spreads in reaction to negative changes in the macroeconomic environment, leaving returns unaffected. Pasiouras and Kosmidou (2007) establish that the influence of concentration on ROA varies between domestic and foreign banks. They find a negative insignificant association between domestic banks profitability and concentration but find positive and significant influence in the case of foreign banks. They maintain that a plausible reason is that many of the foreign banks in the sample came from a small number of countries in which foreign banks control the market or hold a substantial amount of banking sector's assets.

On the other hand, Căpraru and Ihnatov (2014) and Aydemir and Ovenc (2016) find that market concentration is insignificant with banks performance proxy NIM, ROE, and ROA. Osuagwu (2014) also reveals that market concentration does not consistently change bank profitability, implying that their exist no collusion among banks to realize excessive profitability in an oligopolistic market structure in the banking sector. Banks are completely independent in making decision. None of the individual banks has an absolute effect on the market. Tai (2014) also finds that HHI has insignificant influence on both GCC conventional and Islamic bank performance. Berger (1995a), Mamatzakis and Remoundos (2003), Athanasoglou *et al.* (2008), and Kosmidou *et al.* (2007) find no proof to support the SCP hypothesis or defensive expansion, which propose that banks pursue clients overseas. Others studies find that insignificant relationship is Al-Jafari and Alchami (2014), Turgutlu (2014), Ayadi and Boujelbene (2012), Olson and Zoubi (2011), Staikouras and Wood (2011), Vong and Chan (2009), and Goddard *et al.* (2008). The finding of Chumacero and Langoni (2001) does not establish a relationship between risk and concentration in their Chilean bank's sample. Table 3.19 shows the summary of earlier research on the association between HHI of market concentration and performance of banks.

Table 3.19
Summary of HHI of Market Concentration and its Impact on Banks Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Psillaki and Mamatzakis (2017)	CEE countries	2004-2009	Fixed effect	HHI are associated with the higher efficient bank.
Maudos (2017)	Europe	2002-2012	Fixed effects	Banks with greater market power are more profitable.
Aydemir and Ovenc (2016)	Turkey	2002-2014	GMM	HHI has no impact on NIM, ROA, and ROE.
Ashraf *et al.* (2016)	GCC	2000-2011	Random effects	Higher concentration of ownership is associated with higher insolvency risk.
Djalilov and Piesse (2016)	CEE countries	2000-2013	GMM	HHI is not stable across the models.
Ghosh (2016)	169 nations	1998-2013	Fixed effect and GMM	Greater HHI increases bank profits.
Hoffmann (2016)	Latin America	1995-2012	GMM	Higher HHI increases bank' NIM.
Horvath *et al.* (2016)	Czech	2002-2010	GMM	Higher competition (less HHI) increases banks' financial fragility.
Mirzaei and Moore (2016)	Qatar	2000-2006	Fixed effect	Banks with more HHI affect negatively on the growth of 42 industries.
Tan (2016)	China	2003-2011	GMM	HHI has a positive impact on bank profitability.
Phan et al. (2016)	Six Asian nations	2005-2012	Tobit and 2SLS	HHI (competition) has a positive (negative) effect on bank efficiency.
Yang and Shao (2016)	China	2003-2014	GMM	Banks with less market power (Lerner index) or higher competition tend to increase loan growth and are less sensitive to monetary policy shocks.
Chronopoulos *et al.* (2015)	U.S.A	1984-2010	GMM	Higher concentration leads to decrease profitability.
Kasman and Kasman (2015)	Turkey	2002-2012	GMM	Greater concentration (more competition) has a positive (negative) impact on the NPL and negative (positive) impact on the Z-score.
Petria *et al.* (2015)	EU 27	2004-2011	Fixed effects	A negative significant association is found between HHI and bank profitability.

Table 3.19 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Al-Jafari and Alchami (2014)	Syria	2004-2011	GMM	Concentration ratio has no impact on bank' ROA.
Apergis (2014)	U.S.A	2000-2013	Fully modified OLS	HHI is positively related on and banks' performance.
Ayaydin and Karakaya (2014)	Turkey	2003-2011	GMM	A positive effect of HHI on bank profitability.
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled OLS	HHI insignificantly effect on banks' ROA, ROE, and NIM.
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM	HHI is positively (negatively) and significantly related to bank profitability in low- income (middl and high-income) countries.
Fu *et al.* (2014a)	14 Asia Pacific	2003-2010	GMM	Higher HHI fosters financial fragility of banks.
Jara-Bertin *et al.* (2014)	Latin America	1995-2010	GMM	ROA and NIM are positively related to HHI.
Osuagwu (2014)	Nigeria	1980-2010	Fixed effects	HHI does not proportionally change ROA, ROE, and NIM.
Tai (2014)	GCC	2003-2011	OLS	HHI has not effect on Islamic and conventional bank performance.
Turgutlu (2014)	Turkey	2006-2012	GMM	The relationship between bank profits and HHI is insignificant.
Ameur and Mbiri (2013)	Tunisia	1998-2011	GMM	HHI are negatively and significant related to banks performance.
Liang *et al.* (2013)	China	2003-2011	GMM	Banks with a higher degree of market concentration perform less.
Perera et al. (2013)	South Asian	1992-2007	GMM	High levels of HHI still allow 'large' banks to earn higher profits.
Rachdi (2013)	Tunisia	2000-2010	GMM	A positive association between HHI and bank performance.
Trujillo-Ponce (2013)	Spain	1999-2009	GMM	The effect of HHI on banks performance is positively significant.
Ayadi and Boujelbene (2012)	Tunisia	1995-2005	GLS	Market concentration is insignificant on banks performance.
Kanas *et al.* (2012)	U.S.A	1988-2011	Semi-parametric model	The higher the HHI the lower the bank profitability.
Al-Jafari and Alchami (2014)	Syria	2004-2011	GMM	Concentration ratio has no impact on bank' ROA.

Table 3.19 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Tan and Floros (2012)	China	2003-2009	GMM	HHI has a significant negative impact on bank performance.
Dietrich and Wanzenried (2011)	Switzerland	1999-2009	GMM	HHI has a positive effect on bank' ROA, ROE, and NIM.
Olson and Zoubi (2011)	MENA	2000-2008	Random effects	There is no relationship between bank performance and HHI.
Staikouras and Wood (2011)	Europe	1994-1998	OLS and Fixed effects	The effect of HHI on banks performance is insignificant.
Sufian (2011)	Korea	1992-2003	Fixed effect	High level of HHI is associated with high bank performance.
Hsieh and Lee (2010)	61 countries	1992-2006	GMM	HHI is positively (negatively) associated with banks profitability in low-income (high and medium income) countries.
Liu and Wilson (2010)	Japan	2000-2007	GMM	The effect of HHI is negative on banks performance.
Flamini *et al.* (2009)	42 countries	1999-2006	Random Effects	HHI is related to higher bank profitability in low-income countries.
Fu and Heffernan (2009)	China	1985-2002	OLS and	HHI has a significant positive effect on ROA and ROE.
Srairi (2009)	GCC	1999-2006	Fixed effects	HHI has a positive and significant impact on ROA for both conventional and Islamic banks.
Tregenna (2009)	U.S.A	1994-2005	GMM	HHI and are positively related to bank performance.
Vong and Chan (2009)	Macao	1993-2007	Fixed effect and GLS	HHI have an insignificant impact on banks ROA.
Athanasoglou et al. (2008)	Greek	1985-2001	GMM	No evidence to support the SCP hypothesis.
Claeys and Vennet (2008)	CEE countries	1994-2001	GLS	HHI is positively effected on bank NIM.
Goddard et al. (2008)	U.S.A	1993-2004	Pooled OLS	There is no relation between HHI and banks performance.
Floerkemeier and Dabla-Norris (2007)	Armenia	2002-2006	OLS	High HHI in loan and deposit have a positive effect on NIM.
Kosmidou et al. (2007)	Greek	1995-2001	Multinational model	No relationship between HHI and banks performance.

Table 3.19 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects	HHI is negatively insignificantly (positively significantly) associated with domestic (foreign) bank performance.
Athanasoglou et al. (2006)	SEE countries	1998-2002	Random effects	A higher HHI leads to a higher profitability of banks.
Park and Weber (2006)	Korea	1992-2002	DEA	A negative relationship between HHI and bank performance.
Bikker and Bos (2005)	Europe	1990-1997	SCF model	The more the market is concentrated, the lower is the degree of competition and the higher the profitability.
Kosmidou *et al* (2005)	UK	1995-2002	Fixed effects	A positive relationship between HHI and bank profitability.
Martinez Peria and Mody (2004)	U.S.A	1995-2000	Pooled OLS	HHI is positive and significant on bank performance.
Goddard et al. (2004a)	Europe	1992-1998	Cross-sectional	A positive relationship between HHI and bank performance.
Demirgüç-Kunt et al. (2003)	72 countries	1995-1999	GLS	Higher HHI is positively associated with bank' NIM.
Hassan and Bashir (2003)	21 Countries	1994-2001	GLS	Market concentration is positively related to bank performance.
Mamatzakis and Remoundos (2003)	Greek	1989-2000	Fixed effects model	Market concentration is contradicted the SCP hypothesis.
Naceur (2003)	Tunisia	1980-2000	GLS	HHI is negatively significant with banks performance.
Williams (2003)	Australia	1989-1993	OLS estimation	A negative association between banks performance and HHI.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS Regressions	A positive association is found between HHI and bank' ROA.
Berger (1995a)	Cross	1980-1989	Panel data	Insignificant correlation among HHI and bank performance.
Molyneux and Thornton (1992)	Europe	1986-1989	Cross-sectional	A significant positive association between bank performance and HHI in each country.
Bourke (1989)	12 countries	1972-1981	Pooled time series	Profits rise with increased concentration.
Short (1979)	CWEJ	1973-1975	Pooled time series	A large reduction in concentration brings about a one percentage point reduction in profit rates.

Note: CWEJ = Canada, Western Europe, and Japan

3.3.1.3.2 Stock Market Capitalization

One of the financial structure indicators influencing the performance of banks is stock market capitalization to GDP ratio (MARKE_CAP). This measure is a measure of the level of the development of the stock market. Ayadi and Boujelbene (2012) and Levine (1997) suggest a complementary influence between MARKE_CAP and the growth of a country's banking system. An advanced equity market gives provide easier access to banks to raise capital. Higher capitalization and profitability are related. Similarly, there is more availability of company information in the advanced stock market. This allows banks to have an improved judgment on credit risk. Naceur and Omran (2011) suggest that banks operating in a more advanced stock market environment have numerous opportunity to achieve greater profitability. Demirguc-Kunt and Huizinga (1999) and Tan (2016) indicate that the MARKE_CAP has a positive relationship with profit margin; suggesting that better equity markets enable banks to achieve higher profit margins. This supports the hypothesis of complementarity between financing by debt and equity. Thus, as the stock market advances, improve accessibility to information upsurges the usual expectation of funds of the borrowers, in a manner that allows the banks to recognize and observe them thereby increase the business volume, and generating higher margins.

Furthermore, Demirguc-Kunt and Huizinga (2000) show that the growth of the stock market increases the bank margins even in the less-developed financial systems. Additionally, the accessible information need in the stock market enables the banks to well evaluate their credit risk. Therefore, the statistically significant and positive association between the banks' MARKE_CAP and stock market capitalization to total assets ratio indicates that improve the stock market, increases banks' profitability. These findings are also similar to the empirical findings of Naceur and Goaied (2008) who examine the banking sector in Tunisia. Authors observe that improvement in the development of stock market will improve the availability of information. This resulted in a rise in the number of potential customers that banks can identify and monitor closely. Hence, the increase in banks' activity contributes to the increase in banks' profitability. It is also confirmed by Pasiouras and Kosmidou (2007) that MARKE_CAP are positively related and statistically significant with both the ROA of foreign and domestic banks. Similar findings are found by Sufian (2011) and Tan and Floros (2012a). Growe, Debruine, Lee, and Tudón (2014) suggest that in the USA, a higher MARKE_CAP is a vital indicator of economic success that improves the profitability of banks.

On the other hand, the study of Dietrich and Wanzenried (2014) indicates that MARKE_CAP significantly and positively influence bank performance in low and medium-income countries, while it has negatively influence on banks performance in high-income countries. Countries that achieve high(er) MARKE_CAP values show a negative and highly significant influence on bank performance. It appears that banks operating in stock markets with a higher market capitalization confronted stronger competition and thus reduce profitability. Similarly, their findings confirm Liu and Wilson (2010) and Tan and Floros (2012b) work. The high value of the ratio reflects a vibrant stock market is related to the decisions of the firm to finance by using equity issues instead of bank loans. This will reduce business opportunities of the bank that leads to decrease in performance. However, no relationship between the variables is found in studies such as in Hoffmann (2016), Raza, Jawaid, and Shafqat (2013), Sufian and Chong (2008), and Sufian and Noor (2012). Table 3.20 shows a summary of prior studies that consider the relationship between MARKE_CAP and banks performance.

Table 3.20
Summary of Market Capitalization as % of GDP(MARKE_CAP) and its Impact on Banks Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Hoffmann (2016)	Latin America	1995-2012	GMM	MARKE_CAP increases. the bank performance lowers.
Tan (2016)	China	2003-2011	GMM	A positive relationship between MARKE_CAP and bank ROA.
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM	MARKE_CAP is positively (negatively) and significant related to bank profitability in low- and middle-income (high-income) countries.
Growe *et al.* (2014)	U.S.A	1994-2011	GMM	A positive relationship between MARKE_CAP and bank performance.
Raza *et al.* (2013)	Pakistan	2001-2010	Random effects	MARKE_CAP is negatively but insignificant related to profitability.
Ayadi and Boujelbene (2012)	Tunisia	1995-2005	GLS	MARKE_CAP has a positive effect on banks profitability.
Sufian and Noor (2012)	India	2000-2008	Fixed effects	No significant relationship between MARKE_CAP and bank performance.
Tan and Floros (2012a)	China	2003-2009	GMM	The effect of MARKE_CAP on bank performance is positively significant.
Tan and Floros (2012b)	China	2003-2009	GMM	A higher MARKE_CAP tends to reduce the level of banks performance.
Naceur and Omran (2011)	MENA	1988-2005	GMM	MARKE_CAP is positively significant related to bank performance.
Sufian (2011)	Korea	1992-2003	Fixed effect	High level of MARKE_CAP is related to higher bank performance.
Naceur and Goaied (2008)	Tunisia	1980-2000	Panel data	MARKE_CAP has a significant positive impact on bank profitability.
Sufian and Chong (2008)	Philippine	1990-2005	Fixed and random effects	The effect of MARKE_CAP on banks performance appears insignificant.
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects	MARKE_CAP is positively related to domestic and foreign bank' ROA.
Demirguc-Kunt and Huizinga (2000)	44 countries	1990-1997	Pooled OLS	There is a positively significant relationship between bank performance and MARKE_CAP.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS	A positive association is found between MARKE_CAP and margins bank.
Levine (1997)	77 countries	1960-1980	Pooled OLS	Higher capitalization is associated with increased profitability.

3.3.1.3.3 Credit to Private Sector

The measure of the importance of bank financing to the economy is measured by the domestic credit to private sector as a percentage of GDP ratio (DCPS). Findings of the study of Mirzaei *et al.* (2013) are different between developed and emerging economies. While developed economies show a positive significant association between DCPS and profitability, emerging economies show a negative relation. This implies that in the emerging economy, scarcity of fund turns out to be an important constraint to the development of competition. The higher is the availability of funds in the market, higher is the pressure on banks to offer competitive services.

In other words, increase the supply of DCPS leads to decrease in stability and profitability in emerging economies; this is however not true in the context of developed economies. This may be because banks in emerging economies would like to invest in risky investment or provide funds to a low-quality borrower with an absence of sufficient screening and monitoring methods. Lee and Hsieh (2013) find that DCPS and profitability (proxy by NIM, ROE, and ROA) are significantly negatively related; while positively related to risk (proxy by LLR and SDROE). This suggests that a higher DCPS tends to lower banks profitability and increase risks in emerging economies. Similar results are found by Ghosh (2016) and Hoffmann (2016) with bank profitability which may be due to the more developed banking sectors and higher competition.

Table 3.21
Summary of Credit to Private Sector as % of GD and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Ghosh (2016)	169 nations	1998-2013	Fixed effect and GMM	A higher DCPS significantly reduce bank profitability
Hoffmann (2016)	Latin America	1995-2012	GMM	DCPS impacts the performance of banks negatively.
Navjas and Thegeya (2013)	28 countries	2005-2012	Logit regressions	DCPS is significantly related to banks performance (ROA).
Lee and Hsieh (2013)	Asia countries	1994-2008	GMM	The coefficients of DCPS are significantly positive (negative) on bank performance in low (high and medium)-income countries.
Mirzaei *et al.* (2013)	40 emerging and advanced economies	1999-2008	Panel data model	DCPS is negatively (positively) and significantly associated with profitability in emerging (advanced) economies.
Naceur and Omran (2011)	MENA	1988–2005	GMM	DCPS is insignificant `on bank performance (ROA and NIM).
Wu *et al.* (2010)	35 emerging economies	1996-2003	OLS and fixed effects	There is no relationship between banks growth and DCPS.
Srairi (2009)	GCC	1999-2006	Fixed effects model	DCPS has a positive and insignificant impact on ROA for both conventional and Islamic banks.
Detragiache *et al.* (2008)	89 countries	1995-2002	OLS regressions	More foreign banks associated with lower DCPS.

A theoretical model of Detragiache, Tressel, and Gupta (2008) find an empirical proof in 89 less-developed countries to back the hypothesis that DCPS is lower in nations with more foreign bank involvement. Navjas and Thegeya (2013) find that DCPS is significantly associated with the performance of banks (proxied by ROE). Srairi (2009) indicates that banking development factor as a proxy of DCPS positively influences bank profitability, but this influence is insignificant for both Islamic and conventional banks in GCC countries. Related findings are shown by Naceur and Omran (2011) and Wu, Jeon, and Luca (2010). Summary of prior studies that examine the association between banks performance and the DCPS is presented in Table 3.21.

3.3.1.4 Listed Dummy

Some evidence is provided by Mokni and Rachdi (2014) that listed banks on the stock exchange are more profitable compared to non-listed banks. Their result is in line with the opinion that listed banks are required to adhere to stricter rules of corporate governance. In addition, listed banks increase their profitability through the competitive force from the stock market as well as the market discipline. Farazi *et al.* (2011) also find that the performance of listed banks is better than that of non-listed banks (measured through NIM, ROE or ROA). The authors find that the plausible reason is the stricter disclosure requirements and governance standards enforced on the listed banks. A similar result is found by Kobeissi and Sun (2010). According to the authors, due to higher interest income and lower interest expenses relative to total assets, listed banks achieve higher NIM. Lower costs of funding may result in lower risk premium because these banks are subjected to stringent disclosure requirements governance standard, as well as closer market monitoring.

Moreover, Barry *et al.* (2011) clarify that the increase in the profitability of listed banks may be because they can acquire more equity capital at a lower rate of transaction costs that enables them to grow larger through achieving faster equity and assets growth. These banks may also take advantage of economies of scale to achieve higher profit relative to risk compared to non-listed banks. Similarly, Saghi-Zedek and Tarazi (2014) find that public-listed banks have better profitability than non-listed banks. Meanwhile, Yao and Jian (2009) find that listed banks operate carefully in expanding their credit and investment portfolio; while Uchida and Satake (2009) find that listed banks significantly and positively influence cost inefficiency. This is not in line with the hypothesis of market discipline. They stress that these findings are not because listed banks are less efficient but it is due to their size and organizational complexity. Anandarajan, Hasan, and McCarthy (2007) also reveal that banks that are listed have more incentive to involve in earnings management in order to show sign of stability and accomplishment to shareholders because the stock market serves as a place to generate fund for them. In comparing LLPs across public and private banks in the USA during the period 1992 to 2002, Nichols, Wahlen, and Wieland (2009) suggest that listed intermediaries have higher incentives to engage in income smoothing practices that will reduce the variability of their earnings and the perception of bank risk in the financial markets.

Some prior studies report mixed findings. Dietrich and Wanzenried (2011) find that listed banks have less profitability than non-listed banks. However, their results also indicate that listed banks have better profitability in the period of CRISIS than non-listed banks. The result may be because of the general practice of the aim of some listed banks to maximize shareholder wealth, specifically the equity returns. Particularly, some banks listed in Switzerland may have reduced their equity capital effectively so as to improve their ROE. The conclusion of Jiang, Yao, and Feng (2013) is that the coefficient of listed bank dummy is negatively significant on interest income efficiency and profitability efficiency but positively significant with the efficiency of NIR. This implies that banks that are listed are more profitable, efficient, and achieve more interest income but they are inefficient in garnering NIR compared to non-listed banks, irrespective of the nature of ownership.

On the other hand, the suggestion of Agyei and Yeboah (2011) and Hou and Wang (2016) is that banks that are listed perform poorly than non-listed banks. This may be traced to the relaxed control of banks by shareholders after they are listed and the weak regulations of the stock exchange ensure investors get the worth of their money. Fonseca and González (2008) find that larger listed banks have lower incentives to smooth income as supervisors pay more attention to them than the non-listed banks, because of their systemic significance during bank crisis. The study of Curcio *et al.* (2014) also indicates that banks that are listed are less involved in the practices of income smoothing, which is consistent with their lower incentives and lower riskiness so as to engage in risk-taking behavior. Trinugroho et al. (2014) and Saghi-zedek (2016) find no significant evidence of a difference in the profitability and risk of non-listed and listed banks. The summary of prior research that compares the performance between listed and the non-listed bank is presented in table 3.22.

Table 3.22
Summary of Listed Banks Vs. Unlisted Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Hou and Wang (2016)	China	2003-2011	GMM	Listed banks are less stable than unlisted banks.
Saghi-zedek (2016)	Europe	2002-2010	GMM	No difference between Listed and unlisted banks' profitability and risk.
Curcio *et al.* (2014)	China	2007-2012	GLS and GMM	Listed banks are less involved in income smoothing compared to unlisted banks.
Mokni and Rachdi (2014)	MENA	2002-2009	GMM	Listed banks are more profitable than unlisted banks.
Saghi-Zedek and Tarazi (2014)	Europe	2002-2010	GLS	Listed banks have higher profitability and lower risk than unlisted banks.
Trinugroho et al. (2014)	Indonesia	2001-2009	OLS, Random effect and GMM	Little evidence of the difference regarding NIM between listed and unlisted banks.
Jiang et al. (2013)	China	1995-2010	SFA	Listed banks are significantly and negatively (positively) related to profit and interest income (NIR).
Agyei and Yeboah (2011)	Ghana	1999-2008	Random effects	Listed banks perform poorly as compared to unlisted banks.
Barry et al. (2011)	Europe	1999-2005	OLS	Profitability for listed banks is higher than unlisted banks.
Dietrich and Wanzenried (2011)	Switzerland	1999-2009	GMM	Listed banks are slightly less (more) profitable than unlisted banks during all years and pre- (during) CRISIS period.
Farazi et al. (2011)	MENA	2001-2008	OLS	Listed banks perform better than unlisted banks.
Kobeissi and Sun (2010)	MENA	2000-2007	OLS	Listed banks tend to generate higher NIM compared to unlisted banks.
García-Herrero et al. (2009)	China	1997-2004	GMM	Listed banks are insignificant compared to unlisted banks.
Nichols et al. (2009)	U.S.A	1992-2002	OLS	Listed banks have higher incentives to put in place income smoothing practices.
Uchida and Satake (2009)	Japan	2000-2005	OLS	Listed banks have a positive and significant impact on cost inefficiency.
Yao and Jian (2009)	China	1995-2005	SFA	Listed banks have positive and significant relationship compared to unlisted banks.
Fonseca and González (2008)	40 countries	1995-2002	GMM	Listed banks have lower incentives to smooth income compared to unlisted ones.
Anandarajan et al. (2007)	Australia	1991-2001	OLS	The relationship on listed banks is significant and positive.

3.3.1.5 Global Financial Crisis

The studies on drivers of profitability of banks during the recent global financial crisis (CRISIS) are relatively less in number. In their analysis of the Swiss market both before and during the CRISIS, Dietrich and Wanzenried (2011) provide an empirical proof that LLPs has a statistically insignificant influence on the profitability of bank before the CRISIS. They observe that LLPs increased significantly during the CRISIS. In addition, they show that, during the years of CRISIS, deposit growth has a negative and significant influence on bank profitability. Dietrich and Wanzenried (2014) establish that the influence of the CRISIS on profit of bank is negative and highly statistically significant in high-income nations. The CRISIS has harshly debilitated the banking sector, leading to lower profit. To the contrary, banks operating in the low-income country are more able to encounter the problems caused by the economic depression than in advanced economies. They also find that Middle-income nations are more susceptible compared to low-income nations, but on the whole, the effect of CRISIS on bank profitability is insignificant.

Maudos (2017) and Matousek, Rughoo, Sarantis, and Assaf (2015) show that the many of the Eurozone and EU15 countries have suffered from a drop in performance during the period of CRISIS. Furthermore, Fahlenbrach, Prilmeier, and Stulz (2012) reveal that poorly performed banks during the 1998 crisis also well performed poorly during the 2007/2008 CRISIS. Fu *et al* (2014b) find the CRISIS variable to be negatively and significantly influence proxy by Tobin's Q indicating that the shareholder value is lower during the period of financial depression. Related findings are shown by Căpraru and Ihnatov (2014) and Jara-Bertin *et al.* (2014) with bank profitability (ROA, ROE, and NIM). Zouari and Taktak (2014) also reveal that the performance of Islamic bank is influenced by the CRISIS, signifying that the performance of Islamic banks is negatively influenced by the stock market during the period of economic depression. Similarly, Hasan and Dridi (2010) reveal that the Islamic banks' profitability is higher compared to that of conventional banks before the CRISIS, however, these variations are not available during the CRISIS, implying that higher profitability of Islamic banks before the CRISIS is due to excessive risk-taking.

Beltratti and Stulz (2012) find that well-performing banks have lower returns and less leverage prior to the CRISIS. They also stress that during the CRISIS, differences in banking regulation across countries are usually unrelated to banks performance, but larger banks from countries with stricter regulation performed well. Due to lack of evidence that these banks had lower risk ex-ante, higher returns may be achieved by banks where their activities are restricted and are not given the chance to expand into activities that unpredictably performed below par during the CRISIS. Their proof challenges the findings of those studies which state that lack of governance in banks is the major driver of crisis. Beltratti and Stulz (2012) also show that banks that have less friendly shareholder boards performed better during the CRISIS than those with friendlier shareholder boards. Banks in the latter group are more risky and reduced their lending activities during the CRISIS.

Huang and Ratnovski (2011) stress that some banks that depend less on general funding survived the financial depression. The study of Demirgüç-Kunt and Huizinga (2010) also indicates that the risk of banks increases due to reliance on non-deposit funds. Haas and Lelyveld (2011) suggest that despite the fact that multinational banks may well contribute to financial stability in the period of the CRISIS, they also contribute to increasing risk and instability from overseas. This indicates that when the parent of multinational banks gives support to their subsidiaries, this support leads to a competitive advantage in the period of financial difficulties and will have a better stable lending than individual domestic banks. The suggestion of Anginer, Demirguc-Kunt, and Zhu (2014) is that both the systemic risk and bank risk of individual domestic banks are reduced in the period of the financial meltdown in countries that have coverage for deposit insurance. Maghyereh and Awartani (2014b) show that there is the negative significant influence of CRISIS on the banks in GCC countries. Similar results are found by Bhimjee Ramos, and Dias (2016) for 114 countries.

In contrary, the study of Rosman, Wahab, and Zainol (2014) shows that capitalization and profitability are the two general determinants that have positive and significant influence on the efficiency of Islamic banks in Asia and Middle East in the period of CRISIS. Latin America, Hoffmann (2016) find similar results with NIM. However, Kasman and Kasman (2015), Leunga *et al.* (2014), and Saghi-Zedek and Tarazi (2014) show that the CRISIS variable is significant and positively influence banks risk. Mokni and Rachdi (2014) find that the coefficients of the CRISIS for both Islamic and conventional banks are negatively insignificant. The plausible reason for this is because MENA banks are generally slightly affected due to their less exposure to the risk of the subprime loan. The analysis of Malhotra, Poteau, and Singh (2011) reveal that the banking sector of India stayed comparatively healthy in the period of the CRISIS and banks performance is not negatively and significantly influenced. Both the private and public owned banks show healthy CAR during the period under review. Other studies such as Curcio, Dyer, Gallo, Gianfrancesco, and Dyer (2014) and Doyran (2013) find similar results. The summary of prior research examining the influence of CRISIS on bank performance is depicted in table 3.23.

Table 3.23
Summary of the Global Financial Crisis (CRISIS) and its Impact on Bank Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Maudos (2017)	Europe	2002-2012	Fixed effects	The CRISIS is negatively related to bank profitability and stability.
Bhimjee *et al.* (2016)	114 countries	2007-2010	Regime-switching model	The CRISIS has affected negatively of the banking institutions.
Hoffmann (2016)	Latin America	1995-2012	GMM	The impact of the CRISIS on NIM is positive significant.
Olson and Zoubi (2016)	Middle East, Africa , and Southeast Asia	1996-2014	Fixed effects	Islamic banks initially weathered the onslaught of the CRISIS better than commercial banks.
Kasman and Kasman (2015)	Turkey	2002-2012	GMM	The CRISIS is positively (negatively) related to bank NPL (stability).
Matousek *et al.* (2015)	EU15 countries and Eurozone	2005-2012	convergence methodology	The CRISIS is negatively associated with bank performance.
Căpraru and Ihnatov (2014)	CEE countries	2004-2011	Pooled regression	The CRISIS is negatively significant affected bank performance.
Curcio *et al.* (2014)	China	2007-2012	GLS and GMM	The CRISIS has no impact on bank risk (LLPs).
Dietrich and Wanzenried (2014)	118 countries	1998-2012	GMM estimate	The CRISIS is a negative and significant effect on bank profitability in high-income countries.
Fu *et al.* (2014b)	14 Asia Pacific	2003-2010	GMM	The CRISIS is a negatively associated with Tobin's Q.
Jara-Bertin *et al.* (2014)	Latin America	1995-2010	GMM	ROA and NIM are negatively related to the CRISIS.
Leunga *et al.* (2014)	U.S.A	2007-2009	WLS and fixed effects	The CRISIS is significant and positive effect on bank risk.
Maghyereh and Awartani (2014b)	GCC	2000-2009	DEA	The impact of the CRISIS on bank efficiency is negatively significant.

Table 3.23 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Mokni and Rachdi (2014)	MENA	2002-2009	GMM	The CRISIS negatively insignificant effect on bank profitability.
Rosman *et al.* (2014)	Middle East and Asia Islamic banks	2007-2010	DEA	Profitability and capitalization have a significant positive effect on efficiency for both during the CRISIS.
Saghi-Zedek and Tarazi (2014)	Europe	2002-2010	GLS	The CRISIS is significantly positively affected on bank risk.
Zouari and Taktak (2014)	15 countries	2005-2009	Panel data	The CRISIS impacts negatively on Islamic bank performance.
Dietrich and Wanzenried (2011)	Switzerland	1999-2009	GMM	The CRISIS has a significant effect on ROA, ROE, and NIM.
Malhotra *et al.* (2011)	India	2005-2009	Fixed effect	Bank performance is not impacted negatively by CRISIS.
Hasan and Dridi (2010)	9 countries	2005-2009	OLS	The CRISIS has a negative effect on Islamic bank profitability.

3.3.2 Foreign Verues Domestic Banks

Literature review pertaining to the performance of foreign and domestic banks can be grouped into two broad sections. The first section compares foreign and domestic banks while the other section reviews the role of foreign banks.

3.3.2.1 Empirical Studies on Foreign Versus Domestic Banks

The performances of domestic and foreign banks have been compared by some empirical studies. The findings of 40 empirical studies on the domestic and foreign banks performance are summarized in Table 3.24. The findings of these studies are varied: 16 studies indicate that foreign banks have better performance in comparison with domestic banks using all measures of performance, 13 studies indicate the weaker performance of foreign banks and six studies indicate statistically insignificant variation across these groups using all measures of performance. The findings, however, are not clear in another set of studies: on a number of proxies of foreign banks show better performance in comparison with domestic banks. Variations in findings may be due to the variation in country coverage and sample periods as is shown in the Table 3.24.

Researches that focus on the USA indicate that the performance of foreign banks is significantly poorer than that of domestic banks (Chang, Hasan, & Hunter, 1998; Peek *et al.*, 1999). The conclusion of Mahajan *et al.* (1996) is that foreign banks operating in the USA have lesser cost efficiency in comparison with domestic banks. Molyneux and Seth (1998) suggest that capital strength is the most significant factor that influences the profitability of foreign banks in the USA. On the other hand, Meinster and Elyasiani (1988) find that foreign and domestic banks have equal performance in the USA. Researches that evaluate the Australian market, report similar findings. By applying DEA, Sathye (2001) and Dong, Firth, Hou, and Yang (2016) find that domestic banks perform better than foreign banks; while Williams (2003) finds a conflicting result that concentration in the Australian banking market reduces the profitability of foreign banks and act as an effective entry barrier. Other studies find that foreign banks have better performance in host countries (Sturm & Williams, 2004).

Berger, DeYoung, Genay, and Udell (2000) have reported that foreign banks are, on an average, less efficient compared to domestic banks. In EU countries, profit efficiency and cost efficiency are lesser for foreign banks than domestic banks in UK, Germany, and France but the variation is statistically insignificant. In the case of the USA, the findings indicate that foreign banks are less profit efficient than domestic banks, but foreign banks are on an average more cost efficient than domestic banks. Buch and Golder (2001) evaluate whether the activities of foreign and domestic banks show common features in Germany and in the USA. Their findings suggest that the relative advantage of domestic banks to deal with local clients and assessing credit risk are too much to overcome by foreign institutions.

Researches have also evaluated various European markets. Kosmidou, Pasiouras, Doumpos, and Zopounidis (2004) apply a multi-criteria decision aid methodology to find that higher performance is exhibited by domestic banks in the UK in comparison with their foreign competitors. Kosmidou, Pasiouras, Zopounidis, and Doumpos (2006) further examine the difference between domestic and foreign banks in the UK; they find that domestic banks have higher NIM, ROE, short-term funding and higher loans to the customer. Similar findings are shown by Pasiouras and Kosmidou (2007) as well as Yildirim and Philippatos (2007) in European countries and Khan *et al.* (2016) in Asian economies. To the contrary, the study of Bonin, Hasan, and Wachtel (2005) show that the foreign banks have better performance than domestic banks in eleven Transition countries. Foreign-owned banks, specifically in developing countries, may improve their quality of performance through the provision of various kinds of financial products and services. In European countries, Fries and Taci (2005) and Wu, Luca, and Jeon (2011), Havrylchyk and Jurzyk (2011) show that foreign banks perform better compared to domestic banks. Though research in ECE by Haas and Lelyveld (2006) indicate that the activities of both domestic and foreign banks are affected by the banking crises and business cycles, they report that during the periods of crisis, domestic banks are able to contract their credit base, but foreign banks are not able to do so.

In the study of foreign banks across developing and developed countries, some studies find that foreign banks perform better than domestic banks. The study of Hassan *et al.* (2013) shows that foreign banks operating in some countries have better performance in terms of NIR and NIM despite enjoying lower tax advantage in many of these countries. Furthermore, they also have a higher cost, and, therefore, their profits before taxes are similar to domestic banks. Domestic banks appear to achieve both higher net profits and cost advantage. This indicates that foreign Islamic banks apply aggressive financing strategy as their customer and base short-term funding is higher than that of the domestic Islamic banks. Chen and Liao (2011) reveal that foreign banks have better profitability in compared with domestic banks if the parent banks in the home country achieve high profitability, despite the fact they operate in a host country where banking institution is less competitive. In addition, foreign banks margins increase when they function in a host country with lower GDP, higher INF and RIR and stricter Basel risk weights compliance requirements. In contrary, Claessens and Horen (2011) show that foreign banks and domestic banks differ in terms of certain key items in their balance sheet: foreign banks have higher capital and better liquidity but generate lower profits. Cross-country study indicates that only in developing markets, the existence of foreign banks is negatively related to credit creation in the local market. They find that during the period of CRISIS foreign banks, if not dominant in the market of the host country, have decreased their credit portfolio more than domestic banks. Lensink, Meesters, and Naaborg (2008) also report a negative association between foreign ownership and bank performance.

Furthermore, studies that focus on the comparison between domestic and foreign banks performance in developing countries find varied results. Demirguc-Kunt and Huizinga (1999) and Claessens *et al.* (2001) find that the performance of foreign banks is poorer than domestic banks in advanced countries but not in developing countries. The findings of Claessens *et al.* (2001) show that the profitability, overhead expenses and NIM of foreign banks are lower in advanced countries and the reverse is true in the case of developing economies. The findings of Berger *et al.* (2000) indicate that foreign banks, irrespective of their original ownership, have less NPL, lower reserve and are more productive. Similarly, Claessens and van Horen (2012) find that foreign banks from high-income economies are likely to perform well if they the regulatory framework in the host country is weak. They also perform well if they are bigger in size and have large market share. They also find that foreign banks originating from home countries having similar regulation and the same language as the host country also produce better performance.

Pennathur and Vishwasrao (2014) find that foreign banks in emerging economy tend to provide a loan to export-oriented companies. As foreign banks concentrated more on well-performing companies and industries shows that in case of credit constraints caused by financial depression, they can get involve in cream-skimming, leaving domestic banks with only companies that are less profitable. San, Theng, and Heng (2011) have applied DEA to report that domestic banks in Malaysia have more management competency and are more efficient compared to foreign banks. A similar result is found by Sufian (2009) by applying the fixed effect model regression. In their study covering 100 emerging economies, Mian (2003) confirms that foreign banks possess the benefit of accessing external liquidity from their parent bank which reduces their cost of deposit. This external funding of foreign banks comes at the expense being restricted (apparently by their parent banks) to provide loan mainly to "hard information" companies.

Few studies have compared the performance of domestic and foreign banks in GCC nations. Abraham (2013) compares the performance of the listed foreign and domestic banks in Saudi Stock exchange for the period 2008 to 2009 by using T-test. The findings indicate that foreign banks in Saudi Arabia are more aggressive with regard to regulatory tier 1 capital, capital structure, and loan portfolios, but these does not result in higher performance by them. Al-Tamimi and Al-Mazrooei (2007) examine seventeen foreign and domestic banks in UAE using questionnaires, Pearson correlation coefficient, and OLS regression. The findings show that the banks are capable of handling risk and that there is significant difference between the foreign and domestic banks in terms risk assessment and risk management capabilities.

Table 3.24
Empirical Studies on Foreign Versus Domestic Banks Performance

Authors (year)	Countries	Period	Methodologies	Empirical results
Saif-Alyousfi *et al.* (2017a)	Saudi Arabia	2000-2014	OLS and Fixed effects	Domestic banks are more profitable than foreign banks.
Dong *et al.* (2016)	China	2002-2013	DEA	Foreign banks are the most cost efficient but the least profit efficient.
Ghosh (2016)	169 nations	1998-2013	Fixed effect and GMM	Foreign banks outperform domestic banks.
Khan *et al.* (2016)	Asean countries	1999-2014	GMM	Foreign banks outperform domestic banks.
Pennathur and Vishwasrao (2014)	India	2006-2009	OLS	Foreign banks outperform domestic banks.
Abraham (2013)	Saudi Arabia 11 listed banks	2008-2009	T-test	Foreign ownership banks are more aggressive but do not have higher performance outcomes.
Hassan *et al.* (2013)	24 countries	1996-2010	WLS	Foreign Islamic banks outperform domestic banks with respect to NIM. No difference with respect to their profit before taxes.
Claessens and van Horen (2012)	51 large developing countries	1999-2006	OLS	Foreign banks in a high-income country outperform when regulation in the host country is relatively weak.
Chen and Liao (2011)	70 countries	1992-2006	Panzar–Rosse and Random effect model	Foreign banks perform better than domestic banks.
Claessens and Horen (2011)	137 countries	1995-2009	OLS	Domestic banks have a higher profit than foreign banks.
Havrylchyk and Jurzyk (2011)	EEC countries	1993-2004	Random effects	Foreign banks outperform domestic banks.
San *et al.* (2011)	Malaysia	2002-2009	DEA	Domestic banks outperform foreign banks and are more efficient and have management competency.
Wu *et al.* (2011)	OECD countries	1996-2003	OLS and GMM	Foreign banks outperform domestic banks.
Correa (2009)	179 Developing and developed countries	1994–2004	Fixed effect	No difference for ROA and ROE but domestic banks outperform foreign banks according to COST.

Table 3.24 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Sufian (2009)	Malaysia	2000-2004	Fixed effect	Domestic banks perform better than foreign banks.
Lensink *et al.* (2008)	105 countries	1998-2003	SFA	Negative performance with increasing levels of foreign ownership.
Al-Tamimi and Al-Mazrooei (2007)	U.A.E	Questionnaire	ANOVA	Domestic banks are more capable in managing risk and have a better risk assessment and analysis.
Yildirim and Philippatos (2007)	12 Transition European countries	1993–2000	SFA and DFA	Foreign banks outperform domestic banks in cost efficiency; opposite is true for profit efficiency.
Pasiouras and Kosmidou (2007)	Europe	1995-2001	Fixed effects	Foreign banks less perform than domestic banks.
Haas and Lelyveld (2006)	Europe	1993-2000	OLS	No different between foreign and domestic banks performance.
Kosmidou et al. (2006)	UK	1998-2001	Logistic regressions	Domestic banks outperform foreign banks.
Bonin et al. (2005)	11 Transition countries	1996-2000	DEA and SFA	Foreign banks outperform domestic banks according to both efficiency measures, for ROA there is no difference.
Chantapong (2005)	Thailand	1995-2000	GLS	Foreign banks have higher profitablity than domestic banks.
Fries and Taci (2005)	15 European countries	1994-2001	SFA and DEA	Foreign banks outperform domestic banks.
Sturm and Williams (2004)	Australia	1988-2001	DEA	Foreign banks outperform domestic banks.
Kosmidou et al., (2004)	UK	1998-2001	Logistic regression	Foreign banks less perform than domestic banks.
Mian (2003)	100 Emerging economies	1992-1999	Fixed effects	No difference in foreign and domestic banks performance.
Williams (2003)	Australia	1989-1993	OLS	Foreign banks outperform domestic banks.

Table 3.24 (Continued)

Authors (year)	Countries	Period	Methodologies	Empirical results
Miller and Parkhe (2002)	13 host countries	1989-1996	Efficient frontier	Domestic banks outperform foreign banks.
Buch and Golder (2001)	Germany and U.S.A	1986-1999	Multiplicative X11	Domestic banks outperform or perform equally as foreign banks.
Claessens et al. (2001)	80 Developing and developed countries	1988-1995	WLS	Foreign banks outperform domestic banks in developing countries, otherwise is true in developed economies.
Crystal et al. (2001)	Chile, Colombia, and Argentina	1995-2001	1995–2000	No difference in foreign and domestic banks performance.
Sathye (2001)	Australia	1986-1995	DEA	Domestic banks outperform foreign banks.
Barajas et al. (2000)	Colombia	1991-1998	Fixed effects	Foreign banks outperform domestic banks.
Berger et al. (2000)	France, Germany, Spain, U.K. and U.S.A	1992–1998	Fixed effect	Domestic banks outperform or perform equally as foreigners.
Goldberg et al. (2000)	Mexico and Argentina	1994-1996	OLS	Foreign banks have better growth than domestic banks.
Demirguc-Kunt and Huizinga (1999)	80 countries	1988-1995	WLS	Foreign banks outperform domestic banks in developing countries, otherwise is true in developed economics.
Peek et al. (1999)	U.S.A	1984-1997	OLS	Foreign banks less perform than domestic banks.
Chang et al. (1998)	U.S.A	1984-1988	OLS	Domestic banks outperform foreign banks.
Molyneux and Seth (1998)	U.S.A	1987-1991	2SLS	Foreign banks outperform domestic banks.
Mahajan et al. (1996)	U.S.A	1987-1990	Pooled-time series	Domestic banks outperform foreign banks.
Meinster and Elyasiani (1988)	U.S.A	1970-1980	3SLS and OLS	No difference in the performance of foreign and domestic banks.

Various econometric techniques and performance measures have been used to measure the performance of foreign and domestic banks in host nations and have arrived at varied results. Variations in time periods and countries may explain some of the differences in reported results. However, these studies do not fully explain the diversity of performances amongst foreign banks and their operating conditions in host nations. Several studies propose that host and home country features play a significant role in bank performance. Furthermore, features of host and home nations, cultural, institutional or geographical distance may also influence the comparative evaluation of the performance of foreign and domestic banks.

3.3.2.2 The Role of Foreign Banks: Related Literature

The role plays by foreign banks and the effect of their entry into the domestic financial markets have been considered by many studies. Several studies lay emphasis on issues such as the variations in comparative advantages in financial services across countries and, the influence of foreign bank entry on the systemic stability of the domestic financial sector.

The supporters of foreign bank entry contend that foreign banks improve competition in the local banking markets, increase the effectiveness of local bank activities, offer financial services with lesser costs, and contribute positively in economic development through enhancing the efficacy of resource (Acheampong, 2013; Simpasa, 2013; Jeon *et al.*, 2011; Xu, 2011; Wu *et al.*, 2010; Reddy, 2009; Kosmidou *et al.*, 2007; Claessens & Laeven, 2005; Denizer, 1999). They also contend that foreign banks do not weaken the domestic banking markets or confuse the transmission mechanism of monetary policy to a substantial level, but they play a positive role in mitigating the banking crisis and credit crunch in host countries by bringing in added liquidity from their parent banks in the home nation (Haas & Lelyveld, 2010). Bruno and Hauswald (2014) propose that foreign banks ameliorate the effect of financial constraints and improve real growth in developing countries where firms usually have no accessibility to other sources of financing. The larger is their presence, the less does the external financial reliance hinder the performance of banks. Berger, Hasan, and Zhou (2009) also indicate that minority foreign ownership significantly improved the efficiency of "Big-Four" Chinese banks.

Furthermore, foreign bank entry increases regulation of the domestic banking sector and improves banking sincerity (Demirgüç-Kunt, Detragiache, & Tressel, 2008). The entry of foreign-owned banks is also beneficial to the domestic banking system since it results in the development of the local financial sector through innovative buildings and technology (Gormley, 2010). It also results in domestic banks learning good banking practices from the foreign-owned banks, and also from the transfer of proficiency to the domestic banking sector (Qin & Liu, 2008). The entry of foreign bank typically results in attracting FDIs, which finally result in economic development of emerging market economies (Asiedu, 2006). FDI is beneficial to fund local income-producing plans, which will lead to capital growth and diversification. Moreover, foreign banks may also assist in improving the domestic bank's management by partaking in joint ventures or M&As (Bhaumik & Gelb, 2005; Lensink & Hermes, 2004). This may result in managerial efficiency and improvement since the new entities will be managed by the management teams of the foreign banks. The appearance of a foreign bank can also result in the improvement and development of the legal framework and supervision of the local banking system (Lensink & Hermes, 2004). This is as a result of foreign-owned banks may demand improvement in the local banking sector from the regulatory bodies as a pre-requisite to entering the domestic market. In other words, foreign banks can demand better systems of supervision and regulation from the regulatory bodies in the host countries. This may improve the banking operations of local banks.

The antagonists of the developing role of foreign banks are worried that entry of foreign-owned banks exerts negative influences on the local banking sector. Ghosh (2016), Levent (2016), and Lee and Hsieh (2014) find a significant negative influence of foreign ownership, indicating that a higher foreign ownership level decreases the level of financial stability in the domestic market. Berger, Klapper, and Turk-Ariss (2009) find that foreign ownership affects bank stability in twenty-three advanced countries confirming home field hypothesis of the basic model of the authors. However, Yeyati and Micco (2007) evaluate eight countries in Latin American and reveal that foreign entry seems to have resulted in higher bank risk. Denizer, Dinc, and Tarimcilar (2007) confirm that the entry of foreign-owned banks leads to competition for locally-owned banks resulting in increases in operating expenses and decrease in ROA. Lensink and Naaborg (2007) find similar results. Additionally, Jeon and Wu (2014) contend that generally, foreign banks do not portray distinctive behavior from local banks in modulating loan interest rates and loan growth in host banking markets during non-CRISIS periods. However, it is also revealed that in the periods of CRISIS, foreign banks create hindrance in the transmission mechanism of monetary policy by taking opposite posture compared to domestic banks in setting interest rates and loan growth.

3.4 Gap in Literature

Previous studies on the comparative performance between foreign and domestic banks have mainly focused on the U.S.A and the European countries. There are only a few studies that provide insight on performances of the banking industry in the Asian economies in general and in Middle East countries in particular. Moreover, the results reported so far are far from univocal. Some studies find that foreign banks performed better compared to domestic banks while others find the opposite to be true. Hence, an agenda for this study is to study the performance of foreign banks compared to domestic banks in developing economies with specific reference to GCC countries. In addition, most of the previous studies have looked at the performance of banks either considered domestic or foreign banks on a standalone basis or have taken domestic and foreign banks together. Moreover, there only a few studies which have taken a comprehensive view of the performances of domestic, foreign on an independent basis and also as a whole.

In recent years, foreign banks have expanded their presence significantly in several emerging and developing economies. Today, in many countries foreign banks have become an important part of the local banking system. The impact of entry of foreign banks on the financial sector development and financial stability depends importantly on the host country, home country, and bank characteristics. Although most of the Middle Eastern countries are oil-producing countries, several of them increasingly depend on foreign banks to meet the expanding needs of the borrowers. However, the impact of the expansion of foreign banks in domestic markets and the comparative performance of foreign banks and domestic banks are unclear in the Middle East in general and in the GCC region in particular.

Theoretical and empirical evidence on banks specific factors, macroeconomic factors and financial structure indicators that contribute to the performance of domestic and foreign banks so far have looked at non-Islamic countries. The impact of such factors on the financial performances of banks in Islamic countries may, however, be different in view of significant differences in the capital structure, regulatory framework, systems and processes and principles of banking between Islamic and non-Islamic countries.

Survey of literature shows that while measuring bank performance, some key bank-specific factors are not considered in those studies (see Table 3.25). For example, the impact of MR on bank profitability measured by ROE and NIM has not been examined. Similarly, the impact of LNGRTH on ROE has not been tested. NPLs ratio has not been evaluated with market-based performance (Tobin's Q). Furthermore, previous studies have not examined the effect of DMDEP on bank performance using Tobin's Q and bank risk (SDROA and SDROE). In addition, OPC, MR, LNGRTH and OBSs activities have not been studied with bank risk measured by SDROA and SDROE.

The past literature investigates the impact of macroeconomic indicators (especially GDP, INF, RIR) on bank performance. However, to the best of the knowledge of the researcher, no studies have investigated the effect of RIR on bank performance as measured by Tobin's Q. Also, there are no studies that have examined the impact of FDI on both domestic and foreign banks performance. Previous literature finds that FDI may produce positive externalities towards local firms, by direct financing, enhancing firms' productivity, directly transfer technology to foreign branches as well as indirectly spread or "spill over" into domestic firms. Therefore, gaining insightful evidence on the effect of FDI on banks performance is critical in order to understand whether the impact of FDI on the performance of banks in each GCC countries is similar or different.

In addition, the importance of oil prices for the economic development of oil-exporting countries is widely acknowledged. The empirical academic literature mainly has focused on the influence of oil price changes on economic activities and stock returns in several different countries. However, all the previous studies that mainly have looked at the bank performance have not analyzed their relationship with the oil price. The oil price is the major revenue source of oil exporting economies and affects the banks through its influence on the liquidity, costs, profits, returns and share price of the banks. There is only one paper (by Poghosyan & Hesse, 2009) which studies the influence of oil price shocks on banks' ROA. Thus, a gap in the literature of oil price studies can be observed.

The literature also suggests that the financial structure indicators clearly have an influence on the profitability of foreign and domestic banks and plays a significant role in understanding their respective competitive advantages. However, to the best of the knowledge of the researcher, the impact of HHI and MARKE_CAP on bank risk, as measured by SDROA and SDROE, have not been studied empirically either at a country level or across countries. Also, no studies have examined Lerner index, MARKE_CAP, and DCPS with market-based performance (Tobin's Q). Furthermore, until now, the impact of Boone indicator as a measure of bank competition has not been examined with bank profitability, market-based performance as well as bank risk.

Table 3.25

Summary of the Independent Variables (IVs) That Examined in Previous Studies with the Dependent Variables (DVs) of this Study and Gap in Literature

Independent Variables	**Dependent Variables**					
	Bank Profitability			Market-Based Performance	Bank Risk	
	ROA	ROE	NIM	Tobin's Q	SDROA	SDROE
Bank Specific Characteristics						
Cost to income ratio (COST)	✓	✓	✓	✓	✓	✓
Non-interest revenues (NIR)	✓	✓	✓	✓ 1	✓	✓
Opportunity cost (OPC)	✓	✓	✓	✓ 1		
Liquidity risk (LR) (loans/deposits)	✓	✓	✓	✓	✓	✓
Demand deposits to total deposits (MDEP)	✓	✓	✓			
Market risk (MR)	✓			✓		
NPLs ratio	✓	✓	✓		✓	✓
LLPs ratio	✓	✓	✓	✓	✓	✓
Capital adequacy ratio (CAR)	✓	✓	✓	✓	✓	✓
Loans to assets ratio (LOAN)	✓	✓	✓	✓	✓	✓
Loan growth (LNGRTH)	✓		✓	✓		
Bank size (SIZE)	✓	✓	✓	✓	✓	✓
Off balance sheet activities (OBSs)	✓	✓	✓	✓		

Note: ✓= The IVs used while = Gap (The IVs have not been examined before)

Table 3.25 (Continued)

Independent Variables	Dependent Variables					
	Bank Profitability			Market-Based Performance	Bank Risk	
	ROA	ROE	NIM	Tobin's Q	SDROA	SDROE
Macroeconomic Indicators						
GDP growth	✓	✓	✓	✓	✓	✓
Inflation rate (INF)	✓	✓	✓	✓	✓	✓
Real interest rate (RIR)	✓	✓	✓		✓	✓
FDI inflow						
Oil Price shocks	✓					
Financial Structure Indicators						
Herfindahl index of market concentration (HHI)	✓	✓	✓	✓		
Five bank concentration (CR5)	✓	✓	✓	✓	✓	✓
Lerner index	✓	✓	✓	✓	✓	✓
Boone indicator						
Stock market capitalization (MARKE_CAP)	✓	✓	✓			
Credit to private sector (DCPS)	✓	✓	✓		✓	✓
Dummy Variables						
Listed	✓	✓	✓	✓	✓	✓
Foreign banks	✓	✓	✓	✓	✓	✓
Global financial crisis (CRISIS)	✓	✓	✓	✓	✓	✓
Arab spring revolutions	✓					

Note: ✓= The IVs used while Gap (The IVs have not been examined before)

Table 3.26

Summary of the Independent Variables (IVs) that Examined in Previous Studies in GCC Countries with the Dependent Variables (DVs) of this Study and Gap in Literature

Independent Variables	**Dependent Variables**					
	Bank Profitability			Market-Based Performance	Bank Risk	
	ROA	ROE	NIM	Tobin's Q	SDROA	SDROE
Bank Specific Characteristics						
Cost to income ratio (COST)	✓	✓	✓			
Non-interest revenues (NIR)						
Opportunity cost (OPC)						
Liquidity risk (LR) (loans/deposits)	✓	✓				
Demand deposits to total deposits (MDEP)						
Market risk (MR)						
NPLs ratio	✓	✓				
LLPs ratio	✓	✓				
Capital adequacy ratio (CAR)	✓	✓		✓		
Loans to assets ratio (LOAN)	✓	✓				
Loan growth (LNGRTH)						
Bank size (SIZE)	✓	✓	✓	✓		
Off balance sheet activities (OBSs)	✓	✓				

Note: ✓= The IVs used while [shaded] = Gap (The IVs have not been examined before)

Table 3.26 (Continued)

Independent Variables	Dependent Variables					
	Bank Profitability			Market-Based Performance	Bank Risk	
	ROA	ROE	NIM	Tobin's Q	SDROA	SDROE
Macroeconomic Indicators						
GDP growth	✓	✓	✓			
Inflation rate (INF)	✓	✓	✓			
Real interest rate (RIR)						
FDI inflow						
Oil Price shocks	✓					
Financial Structure Indicators						
Herfindahl index of market concentration (HHI)	✓	✓				
Five bank concentration (CR5)	✓	✓				
Lerner index						
Boone indicator						
Stock market capitalization (MARKE_CAP)	✓	✓				
Credit to private sector (DCPS)	✓	✓				
Dummy Variables						
Listed						
Foreign banks						
Global financial crisis (CRISIS)						
Arab spring revolutions						

Note: ✓= The IVs used while ■ = Gap (The IVs have not been examined before)

Previous literature has focused either on domestic listed banks or comparing the performance of Islamic and conventional banks in GCC countries. Also, most of the past studies in GCC countries have examined the profitability (ROA, ROE, and NIM) with some bank-specific characteristics such COST, LR, NPLs ratio, LLPs ratio, CAR, LOAN, SIZE and OBSs activities. Some macroeconomic factors namely GDP growth and INF; and financial structure indicators like HHI, CR5, MARKE_CAP, and DCPS have been used. However, studies on bank performance in GCC economies have not analysed the relationship between bank performance and NIR, OPC, MR, LNGRTH, DMDEP, RIR, FDI, OIL, a proxy for the CRISIS and for listed banks. Furthermore, there are no reported studies that have investigated all the independent variables used in this study (excepting SIZE and CAR) with market-based performance (Tobin's Q), as well as bank risk measured by SDROA and SDROE. Table 3.26 provides a list of parameters used in various studies on banks performance in GCC countries.

3.5 Chapter Summary

The present chapter presents the review of the literature on underpinning theories and empirical research on bank performance. It also presents the literature review relating to the determinants of banks performance that is addressed in this study i.e., bank-specific factors (COST, NIR, OPC, LR, DMDEP, MR, NPLs, LLPs, CAR, LOAN, LNGRTH, SIZE, and OBSs), macroeconomic indicators (GDP, INF, RIR, FDI inflow, and OIL), financial structure indicators (HHI, MARKE_CAP, and DCPS), listed bank and CRISIS. Survey of literature pertaining to the comparative performance of foreign and domestic banks as well as the role of foreign banks in economic development is also highlighted. The current chapter ends in listing the gaps in the literature on the performances of banks in general and more specifically in GCC economies.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

The first section of this chapter elaborates the research framework used in the present study to measure bank performance. The second section presents the hypotheses test of this study. The research design and operational definition of variables and their measurements are discussed in the third and fourth sections respectively. In the next sections, data collection, the specification of regression models, preliminary tests of data analysis, and techniques of data analysis are discussed. The last section summarizes the chapter.

4.2 Research Framework

The following research framework is based on previous literature (Leunga *et al.*, 2014; Saghi-Zedek & Tarazi, 2014; Trinugroho *et al.*, 2014; Lee & Hsieh, 2013, 2014; Liang, Peng, & Chan, 2013; Chen & Liao, 2011; Dietrich & Wanzenried, 2011, 2014; Kosmidou *et al.*, 2007; Pasiouras & Kosmidou, 2007; Williams, 2003). This framework suggests four sets of independent variables (bank-specific characteristics, macroeconomic factors, financial structure indicators, and the CRISIS, listed and foreign banks as dummy variables) which are the likely determinants of the dependent variable which is bank performance (profitability as measured by ROA, ROE and NIM, market- based performance as measured by Tobin's Q and bank risk as proxy by SDROA and SDROE) parameters of both domestic and foreign banks (see Figure 4.1).

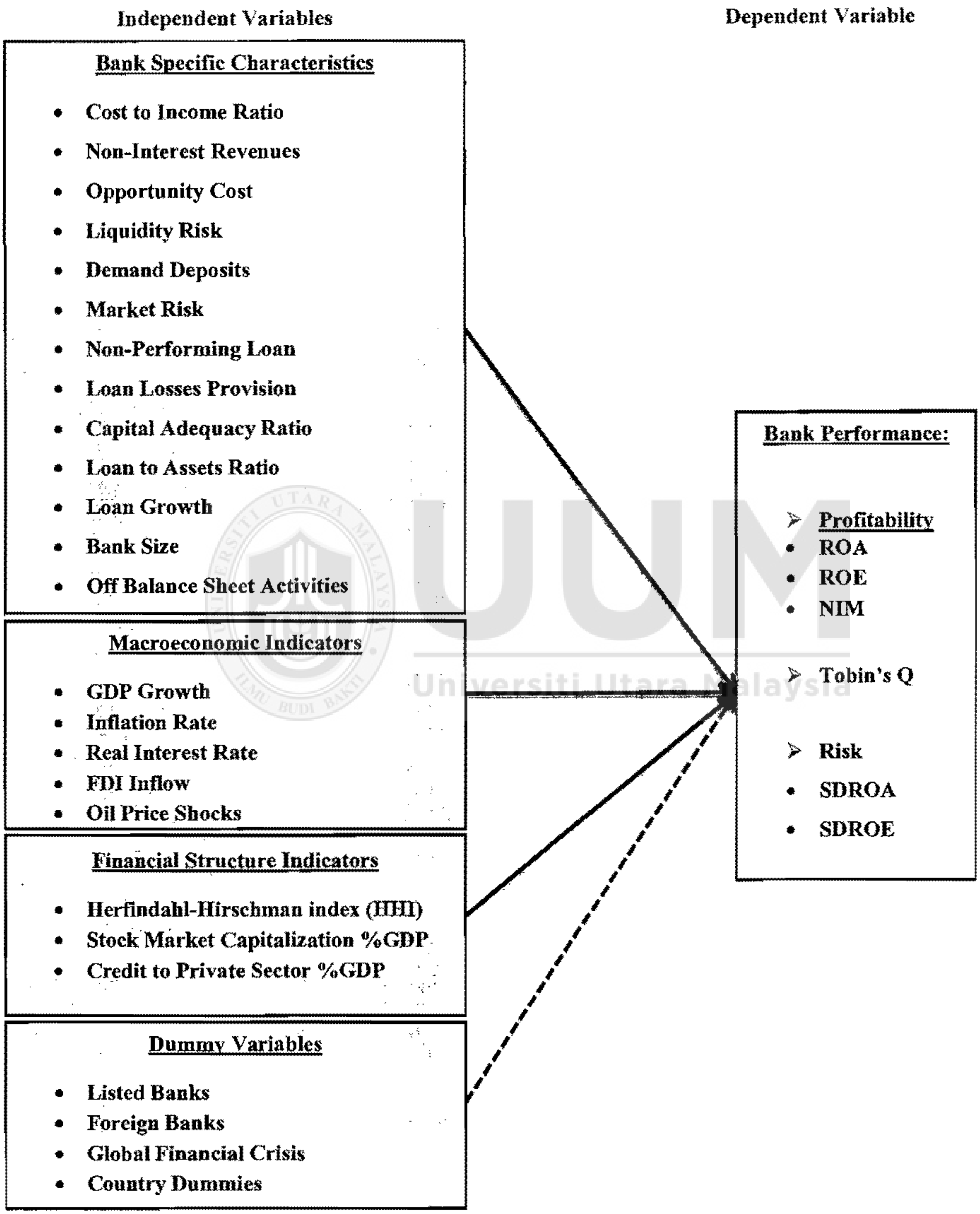

Figure 4.1
Research Framework

4.3 Hypotheses Development

Based on the arguments provide in the review of literature in the previous chapter, and in line with the research questions and objectives of the study report in the first chapter, the following hypotheses are proposed.

4.3.1 Foreign Versus Domestic Banks

The home field advantage hypothesis (Berger *et al.*, 2000) predicts foreign banks to be at a disadvantage in terms of higher costs of providing the same financial services or lower revenues, and have problems in providing the same quality and variety of services as a domestic bank. Important factors leading to a home field advantage are the distance between the principal and the agent, differences in language, culture and regulatory and supervisory structures. The general form of the global advantage hypothesis, on the other hand, argues that foreign-owned banks have comparative advantages relative to domestic banks leading to a better performance. One of the main arguments is that foreign-owned banks use more advanced technologies.

Abraham (2013), Claessens and Horen (2011), Lensink *et al.* (2008), Pasiouras and Kosmidou (2007), Kosmidou *et al.* (2006), Berger *et al.* (2000), and Mahajan *et al.* (1996) provide evidence in favor of the home field advantage hypothesis (domestic banks better perform than foreign banks). However, Pennathur and Vishwasrao (2014), Claessens and Horen (2012), Chen and Liao (2011), Fries and Taci (2005), Williams (2003), Claessens *et al.* (2001), and Molyneux and Seth (1998) conclude that foreign banks are better performance than domestic banks. Correa (2009), Haas and Lelyveld (2006), Bonin *et al.* (2005), and Meinster and Elyasiani (1988) find no significant results for either the home field advantage theory or the global advantage theory.

Relating foreign bank performance to the level development of a country, Demirguc-Kunt and Huizinga (1999) find that in developed economies foreign banks are less profitable than domestic banks while in developing countries foreign banks are more profitable than domestic banks. Therefore, the hypothesis is developed as follows:

H1: There is a difference between the performance of foreign and domestic banks in GCC countries.

4.3.2 Bank specific Characteristics

The formulation of bank performance is influenced by bank-specific characteristics. The present study employs thirteen bank-specific variables: COST, NIR, OPC, LR, DMDEP, MR, NPLs, LLPs, CAR, LOAN, LNGRTH, SIZE, and OBSs. These variables have been identified from previous studies.

4.3.2.1 Cost to Income Ratio

Numerous studies have examined whether cost to income ratio (COST) influences bank performance. For instance, Dietrich and Wanzenried (2014), Shah and Jan (2014), Trinugroho *et al.* (2014), and Chen and Liao (2011) find a negative relationship between COST and bank performance due to a lack of competence in expenses management. On the other hand, higher expenses may be linked with an increase of banking activities and, therefore, higher profits. Karim and Alam (2013), Ongore and Kusa (2013), and Abreu and Mendes (2001) find a positive relationship between COST and bank performance. On the other hand, Alkhatib and Harsheh (2012) find no relationship between COST and bank performance. Therefore, based on the transaction costs theory and consistent with previous studies, the following hypothesis is proposed:

H2: There is a relationship between the COST and bank performance.

H2a: There is a relationship between the COST and bank profitability (ROA, ROE, and NIM).

H2b: There is a relationship between the COST and market-based performance (Tobin's Q).

H2c: There is a relationship between the COST and bank risk (SDROA and SDROE).

4.3.2.2 Non-Interest Revenues

The coefficient of non-interest revenues (NIR) may be positive or negative depending on the bank's expertise or strategic objective. The relationship can be positive if a bank has the technical ability to offer NIR product lines, i.e., fee-based services, which permit the bank to achieve a higher level of efficiency from its resources (especially its human capital). It can be negative if the bank human capital resources and expertise are oriented more towards traditional commercial and industrial lending activities. Osuagwu (2014), Saghi-Zedek and Tarazi (2014), Goddard *et al.* (2008), Williams (2003), and DeYoung and Roland (2001) find that NIR is positively related to bank performance. However, Chen and Liao (2011), Calmès and Théoret (2010), Lin and Zhang (2009), and DeYoung and Rice (2004) conclude that the effect is negative while Bedendo and Bruno (2012) find that the effect is insignificant. Therefore, based on the theory of diversification theory and consistent with previous studies, the following hypothesis is proposed:

H3: There is a relationship between NIR and bank performance.

H3a: There is a relationship between NIR and bank profitability (ROA, ROE, and NIM).

H3b: There is a relationship between NIR and market-based performance (Tobin's Q).

H3c: There is a relationship between NIR and bank risk (SDROA and SDROE).

4.3.2.3 Opportunity Cost

The opportunity cost (OPC) of keeping reserves, which can be considered as an implicit tax, seems to positively influence bank profits. Thereby, commercial banks try to alleviate the effect of this tax that erodes their profitability by increasing their explicit margins and passing it on to customers. Besides, the impact of the cost of reserves on profit is positive, meaning that banks make customers pay a price above the OPC of keeping reserves. Chen and Liao (2011) and Naceur and Omran (2011) find that the relationship between OPC and bank performance is significantly positive, while Maudos and Solís (2009), Maudos and Guevara (2004), and Ho and Saunders (1981) find the relationship is positive but insignificant. In contract, Osuagwu (2014) conclude that the relationship is negative. He argues that this may be due to the data inconsistency. Therefore, based on the theories of financial intermediation and consistent with previous studies, the following hypothesis is proposed:

H4: There is a relationship between OPC and bank performance.

H4a: There is a relationship between OPC and bank profitability (ROA, ROE, and NIM).

H4b: There is a relationship between OPC and market-based performance (Tobin's Q).

H4c: There is a relationship between OPC and bank risk (SDROA and SDROE).

4.3.2.4 Liquidity Risk

The classic argument is that higher liquidity levels imply higher costs. In other words, lower risk exposure, combined with high liquidity has a negative effect on bank performance. In the loan market, particularly loan to households and companies is risky and has a higher expected profitability than other assets of the bank. Jara-Bertin *et al.* (2014), Fu *et al.* (2014b), Bedendo and Bruno (2012), and Cebenoyan and Strahan (2004) find the relationship between liquidity risk (LR) and bank performance is negatively significant. In contrast, Trinugroho *et al.* (2014), Chen and Liao (2011), Akhtar *et al.*, (2011), and Bourke (1989) conclude that the relationship is positively significant. On the other hand, Ongore and Kusa (2013) and Alper and Anbar (2011) conclude that there is no relationship between LR and bank performance. Therefore, the hypothesis is developed as follows:

H5: There is a relationship between LR and bank performance.

H5a: There is a relationship between LR and bank profitability (ROA, ROE, and NIM).

H5b: There is a relationship between LR and market-based performance (Tobin's Q).

H5c: There is a relationship between LR and bank risk (SDROA and SDROE).

4.3.2.5 Demand Deposits

Banks with larger deposit base may be more profitable because such funds are cheaper especially in the presence of deposit insurance (Gropp & Köhler, 2010) but may also be less profitable because deposits are costly in terms of fixed and labor costs (branching). Jara-Bertin *et al.* (2014), Alper and Anbar (2011), Chirwa (2003), and Smirlock (1985) find that the relationship between demand deposits ratio (DMDEP) and bank performance is positive, while Osuagwu (2014) finds the relationship is negative but insignificant. Therefore, based on the informational asymmetries and moral hazard theory and consistent with previous studies, the following hypothesis is proposed:

H6: There is a relationship between DMDEP and bank performance.

H6a: There is a relationship between DMDEP and bank profitability (ROA, ROE, and NIM).

H6b: There is a relationship between DMDEP and market-based performance (Tobin's Q).

H6c: There is a relationship between DMDEP and bank risk (SDROA and SDROE).

4.3.2.6 Market Risk

Many studies try to estimate the impact of systematic risks on bank performance. CAPM theory asserts that systematic risk is a undiversifiable risk and bank's management tries to manage the impact of systematic risk by transferring and hedging. Fu *et al.* (2014b), Leunga *et al.* (2014), Jones *et al.* (2013), and Maudos and Solís (2009) suggest that market risk (MR) is positively significant to bank performance, while Fiordelisi and Molyneux (2010) find the relationship is negative due to the inefficiencies in risks management. Therefore, the hypothesis is developed as follows:

H7: There is a relationship between MR and bank performance.

H7a: There is a relationship between MR and bank profitability (ROA, ROE, and NIM).

H7b: There is a relationship between MR and market-based performance (Tobin's Q).

H7c: There is a relationship between MR and bank risk (SDROA and SDROE).

4.3.2.7 Non-Performing Loans

There are two competing arguments regarding the relationship between non-performing loan (NPLs) and margins. On the one hand, banks facing higher credit risk may charge a higher risk premium on their loans (Maudos & Guevara, 2004) thereby increase their interest margins. On the other hand, as argue by Fungáčová and Poghosyan (2011) depositors may require higher interest rates on their deposits because they feel that the bank is more risky and, therefore, interest margins may be lower. Apergis (2014), Trinugroho *et al.* (2014), and Daly and Zhang (2014) find the relationship between bank performance and credit risk is negatively significant hence, the expected sign for credit risk and bank margin is ambiguous. Therefore, the hypothesis is developed as follows:

H8: There is a relationship between NPLs and bank performance.

> H8a: There is a relationship between NPLs and bank profitability (ROA, ROE, and NIM).
>
> H8b: There is a relationship between NPLs and market-based performance (Tobin's Q).
>
> H8c: There is a relationship between NPLs ratio and bank risk (SDROA and SDROE).

4.3.2.8 Loan Loss Provisions

Given a similar charge-off policy, the higher the loan loss provisions to gross loans ratio (LLPs) the poorer the quality and, therefore, the higher the risk of the loan portfolio. The risk-return hypothesis implies a positive relationship between risks in a bank's portfolio of assets and its profitability. However, increase exposure to credit risk is normally associated with higher LLPs and hence decreases bank profitability. On the other hand, bad asset quality may have a negative impact on bank profitability by reducing interest income revenue and by increasing the provisions costs. In addition, if banks operate in more risky environments and lack the expertise to control their lending operations, it will probably result in a higher LLPs ratio to cover this risk and vice versa. Khediri *et al.* (2015), Dietrich and Wanzenried (2014), and Lee and Hsieh (2013) find the relationship between bank performance and LLPs is negatively significant, while Raza *et al.* (2012), Kosmidou *et al* (2005), and Maudos and Guevara (2004) conclude that the relationship is positively significant. Kosmidou *et al.* (2007) and Ho and Saunders (1981) find the effect of this ratio on bank performance is insignificant. Therefore the hypothesis as the following:

H9: There is a relationship between LLPs and bank performance.

H9a: There is a relationship between LLPs and bank profitability (ROA, ROE, and NIM).

H9b: There is a relationship between LLPs and market-based performance (Tobin's Q).

H9c: There is a relationship between LLPs and bank risk (SDROA and SDROE).

4.3.2.9 Capital Adequacy Ratio

Altunbas *et al.* (2007) refer to a positive relationship between capital and performance as the 'regulatory hypothesis', meaning regulators encourage banks to increase their capital commensurable with the amount of risk taken. A negative relationship between capital and performance may refer to the 'moral hazard hypothesis' that undercapitalized banks take on excessive risk to exploit existing flat deposit insurance schemes (Demirgüç & Kane, 2002). In general, banks with high capital adequacy ratio (CAR) are considered safer. The conventional risk-return hypothesis will thus imply a negative relationship between the CAR and bank profitability. However, a lower risk should increase a bank's creditworthiness and reduce its funding cost. Furthermore, banks with higher CAR normally have a lower need for external funding, which has again a positive effect on their profitability. Jara-Bertin *et al.* (2014), Saghi-Zedek and Tarazi (2014), and Liang *et al.* (2013) find the relationship between CAR and bank performance is positive and significant, while Ayadi and Boujelbene (2012) and Goddard *et al.* (2008) find the relationship is negatively significant. Alper and Anbar (2011) and Williams (2003) conclude that the relationship is insignificant. Therefore the hypothesis as the following:

H10: There is a relationship between CAR and bank performance.

H10a: There is a relationship between CAR and bank profitability (ROA, ROE, and NIM).

H10b: There is a relationship between CAR and market-based performance (Tobin's Q).

H10c: There is a relationship between CAR and bank risk (SDROA and SDROE).

4.3.2.10 Loans to Total Assets

Amongst bank assets, in general, loans generate the highest return and hence loans should positively affect bank performance as long as a bank is not taking on unacceptable level of risk, but if a bank invests too heavily in securities at the expense of issuing loans (i.e., loans are more costly) the relationship may become negative. For example, if banks that held fewer loans had more credit risky securities, it is expected that these banks to have performed worse because of the increase in credit spreads. In contrast, banks that held government securities instead of loans will presumably have performed better. Saghi-Zedek and Tarazi (2014) and Staikouras and Wood (2011) find a negative relationship between loans to total assets (LOAN) and bank performance while Olson and Zoubi (2011) and Abreu and Mendes (2001) find the relationship is positive significant. On the other hand, Khediri *et al.* (2015) conclude that the relationship between LOAN and bank performance is insignificant. Hence, the expected relation between LOAN and bank performance is unclear. Therefore, the hypothesis is developed as follows:

H11: There is a relationship between LOAN and bank performance.

H11a: There is a relationship between LOAN and bank profitability (ROA, ROE, and NIM).

H11b: There is a relationship between LOAN and market-based performance (Tobin's Q).

H11c: There is a relationship between LOAN and bank risk (SDROA and SDROE).

4.3.2.11 Loan Growth

Loan asset is one of the key drivers of earnings in the balance sheet of commercial banks and hence a major driver of its earnings performance. The implicit assumption in this earning performance is that the bank is able to maintain its asset quality. International experience suggests that periods of rapid growth in loans exposes the bank to the risk of poor asset quality resulting in higher loan provisioning and finally loan losses (Keeton, 1999). This adds to the fragility of the banking system of any country. Bedendo and Bruno (2012), Foos *et al.* (2010), Caprio *et al.* (2007), and Naceur (2003) find a positive relationship between loan growth (LNGRTH) and bank performance. On the other hand, Köhler (2012) and García-Herrero *et al.* (2009) find a negative relationship between this variable and bank performance. Therefore, based on the theory of the informational asymmetries and moral hazard issue, the following hypothesis is proposed:

H12: There is a relationship between LNGRTH and bank performance.

H12a: There is a relationship between LNGRTH and bank profitability (ROA, ROE, and NIM).

H12b: There is a relationship between LNGRTH and market-based performance (Tobin's Q).

H12c: There is a relationship between LNGRTH and bank risk (SDROA and SDROE).

4.3.2.12 Bank Size

Intermediation theory predicts efficiency gains related to bank size (SIZE), owing to economies of scale. Larger banks are likely to have a higher degree of product and loan diversification than smaller banks, which reduces risk. Moreover, economies of scale can arise from a larger size. Reduced risk and economies of scale lead to increased operational efficiency (i.e., lower costs for larger banks that they may result in higher profits if they do not operate in a very competitive environment). However, prior studies have shown mixed results, such as Guillén et al. (2014), Liang et al. (2013), and Fiordelisi and Molyneux (2010) who find a positive relationship between SIZE and bank performance, while Căpraru and Ihnatov (2014), Chen and Liao (2011), and Dietrich and Wanzenried (2011) show a negative relation between the two. On the other hand, Dietrich and Wanzenried (2014) find no evidence that larger banks are more profitable than medium-sized and small-sized banks. Therefore, the hypothesis is developed as follows:

H13: There is a relationship between SIZE and bank performance.

H13a: There is a relationship between SIZE and bank profitability (ROA, ROE, and NIM).

H13b: There is a relationship between SIZE and market-based performance (Tobin`s Q).

H13c: There is a relationship between SIZE and bank risk (SDROA and SDROE).

4.3.2.13 Off-Balance Sheet Activities

Off-balance sheet activities (OBSs) should normally increase bank profitability since they permit banks to expand its earning activities beyond which is permitted by equity or deposit financing (Angbazo, 1997; James, 1988). On the other hand, since these instruments are subject to lower capital requirements, the moral hazard hypothesis predicts that banks will increase OBSs in a manner that increases asset risk and enhances the subsidy value of deposit insurance if the premium does not reflect the marginal risk associated with new investment opportunities. Khediri *et al.* (2015) and Chen and Liao (2011) find a negative relationship between OBSs and banks performance while Haq and Heaney (2012) and Tafri *et al.* (2009) find a positive relationship between this variable and banks performance. Delis and Kouretas (2011) conclude that there is no significant relationship between OBSs and banks risk. Therefore, the hypothesis is developed as follows:

H14: There is a relationship between OBSs and bank performance.

> H14a: There is a relationship between OBSs and bank profitability (ROA, ROE, and NIM).
>
> H14b: There is a relationship between OBSs and market-based performance (Tobin's Q).
>
> H14c: There is a relationship between OBSs and bank risk (SDROA and SDROE).

4.3.3 Macroeconomic Indicators

This study uses four variables of macroeconomic indicators: GDP, INF, RIR, FDI inflow, and OIL.

4.3.3.1 GDP Growth Rate

Asset quality of banks will depend on the position of an economy in the cycle of growth. LLPs are related to default risks. These will be greater in downturns than in upturns so that bank profitability will be positively correlated with GDP growth rate (GDP). Moreover, during upturns (i.e., when there is growth in the economy), there will be a higher demand for bank credit than in downturns. If the number of banks operating across the cycle remains constant, one will, under conditions of imperfect competition, expect the higher profitability of banks. On other hand, countries with higher gross personal income (GPI) or GDP are assumed to have a banking system that operates in a mature environment resulting in more competitive interest and profit margins (Goldberg & Anoop, 1996). Nouaili *et al.* (2015) and Dietrich and Wanzenried (2014) find a positive relationship between GDP and bank performance while Chen and Liao (2011) and Staikouras and Wood (2011) find a negative relationship between the two. However, Alper and Anbar (2011) and Naceur (2003) find no significant relationship between GDP and bank performance. Therefore, the hypothesis is developed as follows:

H15: There is a relationship between GDP and bank performance.

> H15a: There is a relationship between GDP and bank profitability (ROA, ROE, and NIM).
>
> H15b: There is a relationship between GDP and market-based performance (Tobin's Q).
>
> H15c: There is a relationship between GDP and bank risk (SDROA and SDROE).

4.3.3.2 Inflation Rate

The relationship between the inflation rate (INF) and bank performance may be positive or negative depending on whether it is anticipated or unanticipated. It also depends on wages and other operating costs of banks which may increase at a faster rate than INF (Perry, 1992 & Revell, 1979). If the INF is fully anticipated by the bank's management, it implies that banks can appropriately adjust interest rates in order to increase their revenues faster than their costs and thus acquire higher economic profits. In contrast, unanticipated INF can lead to an incorrect adjustment of the interest rates and, therefore, the possibility that costs may rise faster than products. Apergis (2014), Jara-Bertin *et al.* (2014), and Chen and Liao (2011) find that the relationship between INF and bank performance is positively significant, while Lee and Hsieh (2013) and Afanasieff *et al.* (2002) find the relationship is negatively significant. Alper and

Anbar (2011) and Claessens *et al.* (2001) find an insignificant relationship between INF and bank performance. Therefore the hypothesis is developed as follows:

H16: There is a relationship between INF and bank performance.

H16a: There is a relationship between INF and bank profitability (ROA, ROE, and NIM).

H16b: There is a relationship between INF and market-based performance (Tobin's Q).

H16c: There is a relationship between INF and bank risk (SDROA and SDROE).

4.3.3.3 Real Interest Rate

The low-interest rate stimulates the demand for loans which facilitates economic activities result in increased business and households' earnings. These conditions increase the borrowers' ability to repay their loans (profit and risk are low). In contrast, high-interest rate increases the cost of borrowed funds. As a result, the borrowers will face a problem to repay their loans (profit and risk are high). The effect of interest rates on bank performance depends on the growth rate of the real economy. Moreover, the transmission of interest and economic growth rates to bank profit is conditional upon the specific balance sheet structure (Bolt *et al.*, 2012). Lee and Hsieh (2013) and Staikouras and Wood (2011) find the relationship between real interest rate (RIR) and bank performance is negative while Alper and Anbar (2011) and Molyneux and Thornton (1992) find the relationship is positive. Thus, the hypothesis to be tested is as follows:

H17: There is a relationship between RIR and bank performance.

H17a: There is a relationship between RIR and bank profitability (ROA, ROE, and NIM).

H17b: There is a relationship between RIR and market-based performance (Tobin's Q).

H17c: There is a relationship between RIR and bank risk (SDROA and SDROE).

4.3.3.4 FDI Inflow

The defensive expansion hypothesis suggests that banks follow their clients into foreign markets (Brimmer & Dahl, 1975; Grubel, 1977). Fieleke (1977) argues that this expansion may be a method for a bank to gain access to a new market, and, thus, following clients acts as a beachhead. Some of the previous studies find evidence to support the application of the defensive expansion hypothesis to trade patterns while others have found mixed results. For example, Williams (2003), Minh To and Tripe (2002), Williams (1998a), Williams (1998b), and Sabi (1988) find evidence to support the application of the defensive expansion hypothesis, while Kosmidou *et al.* (2007) and Williams (1996) find no evidence to support the defensive expansion hypothesis. On the other hand, Ursacki and Vertinsky (1992) find the effect of defensive expansion is negatively significant on total asset of Korean banks, while negative but insignificant on total assets of Japan's banks. Therefore, based on the defensive expansion hypothesis (internalisation theory) and consistent with previous studies, the following hypothesis is proposed:

H18: There is a relationship between FDI inflow and bank performance.

H18a: There is a relationship between FDI inflow and bank profitability (ROA, ROE, and NIM).

H18b: There is a relationship between FDI inflow and market-based performance (Tobin's Q).

H18c: There is a relationship between FDI inflow and bank risk (SDROA and SDROE).

4.3.3.5 Oil Price Shocks

Higher oil prices in oil exporting countries are associated with higher liquidity which will increase the deposits inflows and the consequent rise in the lending activities. Therefore, a positive relationship between oil prices and banks performance is likely. Furthermore, with oil prices falling recently has hit banks in the oil exporter countries. On the other word, Poghosyan and Hesse (2009) stress that there are direct and indirect channels through which oil prices shocks (OIL) may affect bank performance. The direct channel assumes that OIL may affect bank profitability by increased oil-related lending or business activity. The indirect channel suggests that the impact is transmitted through macroeconomic and institutional characteristics of the countries bolstered by increased expectations and business sentiment in the country. Therefore, the hypothesis is developed as follows:

H19: There is a relationship between oil price and bank performance.

H19a: There is a relationship between OIL and bank profitability (ROA, ROE, and NIM).

H19b: There is a relationship between OIL and market-based performance (Tobin's Q).

H19c: There is a relationship between OIL and bank risk (SDROA and SDROE).

4.3.4 Financial Structure Indicators

Financial structure indicators are the third group of variables whose effect on bank performance is being evaluated in this study. This study uses three variables of financial structure factors: HHI, MARKE_CAP, and DCPS. These variables have been identified from the previous literature.

4.3.4.1 Herfindahl-Hirschman Index

According to the SCP hypothesis, banks in highly concentrated markets tend to collude and, therefore, earn monopoly profits as they tend to charge higher rates on loans and lower interest rates being paid on deposits (Short, 1979; Gilbert,1984; Bourke, 1989). On the other hand, higher bank concentration may be the result of a tougher competition in the banking industry, which will suggest a negative relationship between performance and market concentration (Williams, 2003). As a result, the overall effect of market concentration on banking performance is indeterminate. In addition, the empirical evidence on the relationship between Herfindahl-Hirschman index (HHI) and bank performance is not conclusive. For instance, Apergis (2014) and Jara-Bertin *et al.* (2014) find a positive relationship between HHI and bank performance while Chronopoulos *et al.* (2015), Liang *et al.* (2013), and Kanas *et al.* (2012) find the relationship is negatively significant. Ayadi and Boujelbene (2012) and Athanasoglou *et al.* (2008) find no relationship between bank performance and HHI. Therefore, the following hypothesis is proposed:

H20: There is a relationship between HHI and bank performance.

> H20a: There is a relationship between HHI and bank profitability (ROA, ROE, and NIM).
>
> H20b: There is a relationship between HHI and market-based performance (Tobin's Q).
>
> H20c: There is a relationship between HHI and bank risk (SDROA and SDROE).

4.3.4.2 Stock Market Capitalization

The growth of the stock markets inherently allows banks to obtain higher profit margins. This supports the hypothesis of complementarity between financing through raising funds and through debt. With the development of the stock market, a better availability of information increases the common potential funds of the borrowers. This enables the banks to identify and monitor the borrowers thereby increasing the volume of the business of banks and making their margins high (Levine, 1997). However, greater bank development brings about tougher competition, higher efficiency and lower profits. Growe *et al.* (2014) and Naceur and Omran (2011) find the relationship between stock market capitalization (MARKE_CAP) and bank performance is positively significant while Raza *et al.* (2013) find the relationship is negative. Sufian and Noor (2012) and Sufian and Chong (2008) find no significant relationship between this variable and bank performance. Consequently, the hypothesis is developed as follows:

H21: There is a relationship between MARKE_CAP and bank performance.

> H21a: There is a relationship between MARKE_CAP and bank profitability (ROA, ROE, and NIM).
>
> H21b: There is a relationship between MARKE_CAP and market-based performance (Tobin's Q).
>
> H21c: There is a relationship between MARKE_CAP and bank risk (SDROA and SDROE).

4.3.4.3 Credit to Private Sector

Previous studies have examined whether credit to private sector (DCPS) influences performance. For instance, Srairi (2011) find a positive relationship between DCPS and bank performance, while Detragiache *et al.* (2008) find a negative relationship between the two. Naceur and Omran (2011) and Wu *et al.* (2010) find no relationship between DCPS and bank performance. On the other hand, Mirzaei *et al.* (2013) suggest that an increase in releasing DCPS results in lower profitability and stability in emerging economies, but the reverse is the case in advanced economies. Again, this is perhaps due to the fact that un-matured banks tend to invest in risky investment projects or release funds to lower quality borrowers with a lack of adequate screening and monitoring systems in place. Therefore, based on the theory of informational asymmetries and moral hazard theory and consistent with previous studies, the following hypothesis is proposed:

H22: There is a relationship between DCPS and bank performance.

H22a: There is a relationship between DCPS and bank profitability (ROA, ROE, and NIM).

H22b: There is a relationship between DCPS and market-based performance (Tobin`s Q).

H22c: There is a relationship between DCPS and bank risk (SDROA and SDROE).

4.3.5 Listed Bank

Listed banks are subject to stricter governance standards and regulatory requirements compared to unlisted banks and this adversely affects their profit performance. Listed banks also face increased pressure to be profitable by their shareholders, analysts and financial markets in general. Several studies have compared whether listed banks perform better than unlisted banks. For example, Mokni and Rachdi (2014), Saghi-Zedek and Tarazi (2014), and Barry *et al.* (2011) find listed banks perform better than unlisted banks, while, Curcio *et al.* (2014), Agyei and Yeboah (2011), and Fonseca and González (2008) find that performance of listed banks are lower than unlisted banks. On the other hand, Trinugroho *et al.* (2014) find no difference between the performance of listed and unlisted banks. Therefore, based on the regulatory theory and consistent with previous studies, the following hypothesis is proposed:

H23: Listed banks have higher performance than unlisted banks in GCC countries.

H23a: Listed banks have higher profitability (ROA, ROE, and NIM) than unlisted banks.

H23b: Listed banks are more risky (SDROA and SDROE) than unlisted banks.

4.3.6 Global Financial Crisis

Numerous studies have examined whether the global financial crisis (CRISIS) has an effect on bank performance. For instance, Matousek *et al.* (2015), Căpraru and Ihnatov (2014), Dietrich and Wanzenried (2014), and Fu *et al.* (2014b) find that the effect of the CRISIS is negatively significant on bank performance. They argue that CRISIS has significantly affected the banking industry in the high-income countries whereas the banks in low-income countries are better able to meet the challenges of the fall-out of the CRISIS. On the other hand, Curcio *et al.* (2014), Mokni and Rachdi (2014), and Malhotra *et al.* (2011) conclude that the effect is not significant, which may due to that these countries are less exposed to subprime loan risk. Therefore, consistent with previous studies, the following hypothesis is proposed:

H24: The CRISIS has an effect on bank performance in GCC countries.

H24a: The CRISIS has an effect on bank profitability (ROA, ROE, and NIM).

H24b: The CRISIS has an effect on market-based performance (Tobin's Q).

H24c: The CRISIS has an effect on bank risk (SDROA and SDROE).

4.4 Research Design

This study adopts secondary data in a quantitative approach to analyzing the financial performance of commercial banks, both foreign and domestic in GCC countries. The secondary data is collected from several published sources: data of listed banks in GCC stock markets are collected from Bankscope Database of Bureau van Dijk's company from Universiti Teknologi MARA (UITM) Perlis, Malaysia. The data for unlisted and foreign banks is collected from their respective annual reports. Furthermore, Annual Economic Reports, International Monetary Funds (IMF) Reports, World Bank Reports, UNCTAD Reports, and WTI Reports for each country in the GCC region are used to collect the data on macroeconomic factors and financial structure indicators. The macroeconomic data extract from the above sources has been cross-checked to ensure consistency and accuracy of the indicators. This study uses annual data from the year 1996 to 2015, where selected data set consists of panel data. The use of panel data provides the advantage of using all the information available that is not detectable in the separate cross-sectional and time series data (Cosar, 2012). In addition, in order to compare the levels of banks performance, the analysis will be carried out in five main stages. In the first stage, the independent variables are regressed without a dummy variable. In the next stages, the independent variables are regressed with various dummy variables separately.

4.5 Operational Variables Definition and Their Measurements

The study employs six dependent variables to test bank performance of domestic and foreign banks. There are 25 independent variables that are used in this study: 13 bank-specific factors, five macroeconomic indicators, three financial structure indicators, and four dummy variables. Such variables are explained and operationally defined in the following sections.

4.5.1 Dependent Variables

The dependent variables of the study are bank profitability measured by ROA, ROE, and NIM; market-based performance measured by Tobin's Q; and bank risk taking measured by SDROA and SDROE.

4.5.1.1 Bank Profitability

This study uses the three most common accounting measures of bank profitability which are the ROA, the ROE, and the NIM. The ROA is defined as the ratio of after-tax profit over total assets. ROE indicates the return of after-tax profit over total equity. The NIM is defined as the net interest income divided by total assets. Following, Trad et al. (2017), Saghi-zedek (2016), Saghi-Zedek and Tarazi (2014), Lee and Hsieh (2013), Liang et al. (2013), Chen and Liao (2011), Naceur and Omran (2011), Angbazo (1997), Goldberg and Anoop (1996), and Berger (1995a) among others, the dependent variable use in this study is ROA, ROE, and NIM.

ROA shows the profit earned per dollar of assets and most importantly, reflects the ability of bank management to utilize financial and real investment resources to generate profits (Dietrich & Wanzenried, 2014; Pasiouras & Kosmidou, 2007; Hassan & Bashir, 2003). For any bank, ROA depends on the bank's policy decisions as well as uncontrollable factors relating to the economy and government regulations. Many regulators believe ROA is the best measure of bank profitability (Hassan & Bashir, 2003). Furthermore, Rivard and Thomas (1997) and Dietrich and Wanzenried (2011, 2014) suggest that bank profitability is best measured by ROA since ROA is not distorted by high equity multipliers and represents a better measure of firms' ability to generate returns on its portfolio of assets. The calculation for ROA is as follows:

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}} * 100$$

The second measure of profitability is the ROE, which is the return to shareholders on their equity and equals ROA multiplied by the ratio between total assets and equity which is known as the bank's equity multiplier. As the bank's multiplier reflects financial leverage, ROE can be interpreted as ROA adjusted by the amount of leverage. The higher the equity (and the lower the leverage), the higher will be the ROA and the lower will be the ROE. Given that ROA may be biased due to OBSs activities and that ROE disregards financial leverage and the risks associated with it (i.e, the proportion of risky assets, liquidity and solvency situation), the study chooses to employ ROE profitability measures. Athanasoglou *et al.* (2008) and Dietrich and Wanzenried (2014) argue that an analysis based on ROE disregards the risks associated with leverage, often a consequence of regulation. On the other hand, Goddard *et al.* (2004b) employ ROE as a profitability measure, arguing that for many European banks, the OBSs business makes a significant contribution to total profit. The earnings generated from these activities are excluded from the denominator of ROA. Since ROA tends to be lower for financial intermediaries, most banks utilize financial leverage heavily to increase ROE to competitive levels (Hassan & Bashir, 2003). The calculation for ROE is as follows:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Total Equity}} * 100$$

The third measure of profitability uses in this study is the NIM. Broadly defined, NIM measures the cost of financial intermediation calculates as the net interest income (the difference between interest income and interest expense) as a percentage of total assets. This ratio suggests that the higher the NIM, the better the performance. While the ROA and ROE reflect how well bank management uses the bank's real investment resources, the NIM focuses on the profit earned on interest-bearing activities (lending, investing and funding activities). Ameur and Mhiri (2013) argue that ROA and NIM are more robust in reflecting bank's profitability and they use them as the main dependent variable in their analysis. Hassan and Bashir (2003) argue that NIM captures the bank's ability to reduce the risk of insolvency. Moreover, since the returns on banks' deposits are contingent on the outcomes of the projects that banks finance, then NIM reflects the management's ability to generate positive returns on deposits. The calculation for NIM is as follows:

$$NIM = \frac{\text{Net Interest Revenue}}{\text{Total Assets}} * 100$$

4.5.1.2 Market-Based Performance (Tobin's Q)

Tobin (1969) explains the relationship between the current cost of replacement assets to the market value of the firm's assets including share and stocks. Tobin's Q calculates as the ratio of firm market value to replacement value i.e., market value of common equity plus the book value of debt divided by the book value of total assets (Laeven & Levine, 2007; Liang *et al.*, 2013; Al-Saidi & Al-Shammari, 2013; Arouri *et al.*, 2014; Fu *et al.*, 2014b; Jiang & Zeng, 2014; Pan & Tian, 2014; Battaglia & Gallo, 2015; Cornett *et al.*, 2016). If the Tobin' Q is less than one, it means that the bank is undervalued as the market value of the banks is below its total assets. Similarly, if the ratio is more than one, it means that the bank is overvalued because the market value of the bank is higher than the book value of the bank's total assets. They also argue that Tobin's Q is popularly adopted as a measure of firm performance because it reflects the market's expectations of future earnings. Tobin's Q is the main measure of the performance of firms (Short & Keasey, 1999).

The use of Tobin's Q in the finance literature is motivated by the insight that firms earning a rate of return in excess of the required rate of return will command a market valuation premium relative to replacement or book values. Thus, contemporaneously, banks with a higher Tobin's Q can be considered to be more favorably viewed by the market (Abraham, 2013). Ehrunza and Senbet (1981), Smirlock, Gilligan, and Marshall (1984), and Lustgarten and Thomadakis (1987) have utilized Tobin's Q to measure the monopoly power of a firm. They argue that replacement cost of assets should equal the capitalized competitive rents on employed capital. The difference between the market value of the firm's securities and replacement cost of its assets will reflect the monopolistic component of future profits. Thus, values that exceed replacement cost indicate barriers to entry of additional players into the industry, and values that fall short of replacement cost indicate restrictions on an exit of resources out of the industry. On the other hand, Al-Kayed, Zain, and Duasa (2014) recommend that future research where market data are available can use Tobin's Q as a performance measure. Therefore, this study uses Tobin's Q, primarily because of its popularity and ease of use. The calculation for Tobin's Q is as follows:

$$\text{Tobin's Q} = \frac{\text{Market Value of Equity} + \text{Book Value of Debt}}{\text{Book Value of Assets}} * 100$$

4.5.1.3 Bank Risk

Bank risk-taking behavior is the third dependent variable in this study. Bank risk-taking behavior, which refers to the level of risks in banks, is measured by the volatility of returns (Barry *et al.*, 2011; Soedarmono *et al.*, 2013). Rivard and Thomas (1997) argue that volatility risk is present because banks face uncertain returns and costs of financing. Volatility risk is measured by SDROA and SDROE. SDROA measures the riskiness of the income stream produced by each bank. SDROA measures assets risk and it the actual risks faced by banks whereby the larger the standard deviations, the higher the uncertainty of future returns and thus the higher the risks.

SDROE measures equity risks. Bank regulators and the public are generally more concerned with the risk that a particular bank will become insolvent than with the volatility risk of a bank (Rivard & Thomas, 1997). The volatility of returns as measured by SDROA and SDROE has been widely used by previous researchers as it indicates the real financial condition of banks (Agusman, Cullen, Gasbarro, Monroe, & Zumwalt, 2014; Ayaydin & Karakaya, 2014; Saghi-Zedek & Tarazi, 2014; Soedarmono *et al.*, 2013; Lee & Hsieh, 2013; Köhler, 2012; Rahman, Ahmad, & Abdullah, 2012; Barry *et al.*, 2011; Laeven & Levine, 2009; Agusman, Monroe, Gasbarro, & Zumwalt, 2008; Lepetit *et al.*, 2008; Berger & Bonaccorsi, 2006; Cebenoyan & Strahan, 2004; Rivard & Thomas, 1997) among others.

This study uses SDROA measured as net income to total assets while SDROE is measured as net income to total equity. To compute volatility return measures (SDROA and SDROE), five years data is used by Nash and Sinkey (1997), Rahman *et al.* (2012), Beck *et al.* (2013), Anginer *et al.* (2014), and Rahman (2014). They argue that five years is enough to reflect changes or variance in bank return. For instance, SDROA in 2015 is measured using observations from 2011 to 2015; SDROA in 2014 is measured using observation from 2010 to 2014 and so on. To calculate SDROA and SDROE for the years of 2001 and 2000, data from 1996 and 1999 is used.

SDROA = Standard Deviation of ROA from A Five-Period Rolling Window

SDROE = Standard Deviation of ROE from A Five-Period Rolling Window

4.5.2 Independent Variables

Independent variables or predictors variables are those variables that will have an influence the dependent variable. The independent variables of this study are bank characteristics, macroeconomic variables, financial structure indicators, and dummy variables.

4.5.2.1 Bank Specific Characteristics

4.5.2.1.1 Lagged of dependent variable

Lagged one-period performance (profitability, Tobin's Q and risk), i.e., $LPERFORM_{t-1}$ is included to capture the dynamic adjustment of PERFORM. A positive coefficient with the $LPERFORM_{t-1}$ is expected because banks experiencing higher performance in the previous year may face higher performance in the subsequent year. While previous studies use a second or third lag to capture the dynamic adjustment of PERFORM, this study only uses the first lag to avoid losing observations. The use of a lagged dependent variable as an explanatory variable may also entail the problems of endogeneity and serial correlation (Arellano & Bond, 1991; Arellano & Bover, 1995; Baltagi, 2008).

4.5.2.1.2 Cost-Income-Ratio

The efficiency in bank performance is measured by the cost-income-ratio (COST). The COST, defined by operating expenses divided by total income, can be used by a bank to benchmark its operational efficiency. On other meaning, the COST is defined as the operating costs (staff salaries, property costs, administrative costs, excluding losses due to bad and non-performing loans) over total revenues generated. This is in line with research by Dietrich and Wanzenried

(2014), Saghi-Zedek and Tarazi (2014), Ameur and Mhiri (2013), Louzis, Vouldis, and Metaxas (2012), Chen and Liao (2011), Dietrich and Wanzenried (2011), and Pasiouras and Kosmidou (2007). Pasiouras and Kosmidou (2007) find that COST is the most significant determinant of performance for both domestic and foreign banks. This ratio is used to measure the impact of efficiency in managing expenses on banks performance. The lower the ratio of operating expenses to total income (revenue) the more efficient is the management in terms of operational efficiency and income generation (i.e., better performance). The calculation for COST is as follows:

$$\text{COST (\%)} = \frac{\text{Operating Expenses}}{\text{Total Income}} * 100$$

4.5.2.1.1 Non-Interest Revenues

The share of non-interest revenue to total revenue (NIR) is a measure of the focus on non-traditional banking activities. While this is not an exogenous variable and reflects banks' strategic choices and business opportunities, one can use it to examine the historical relationship between revenue and non-interest activity (Stiroh, 2004). Lin and Zhang (2009) use NIR to capture business orientation. Growe, Debruine, Lee, and Tudón (2014) argue that NIR may be less stable than interest income but it provides the bank with the diversification of income streams. Financial institutions in recent years have increasingly been generating income from OBSs business, particular income from trading in the stock markets and derivative financial instruments and fee income. The share of NIR is calculated as the ratio of NIR, as in Saghi-Zedek and Tarazi (2014), Growe *et al.* (2014), Chen and Liao (2011), Lin and Zhang (2009), Stiroh and Rumble (2006), and Stiroh (2004). The share of NIR consists of the commission, service charges, fees, guarantee fees, net profits from sales of investment securities, and foreign exchange profits. The calculation for NIR is as follows:

$$\text{NIR (\%)} = \frac{\text{Non-Interest Revenue}}{\text{Total Revenue}} = \frac{\text{Non-Interest Revenue}}{\text{Net Interest Revenue+Non-Interest Revenue}} * 100$$

4.5.2.1.4 Opportunity Cost

Opportunity cost (OPC) reflects the benefits one can receive by taking an alternative action. The notion of OPC plays a crucial part in ensuring that scarce resources are used efficiently. The maintenance of bank reserves remunerated at an interest rate below that of the market involves costs whose magnitude will depend on the volume of reserves and on their OPC (Maudos & Guevara, 2004). Following Chen and Liao (2011), Naceur and Omran (2011), Maudos and Solís (2009), Maudos and Guevara (2004), and Ho and Saunders (1981), OPC of bank reserves is measured by the ratio of liquid reserves to total assets, using the cash variable (cash and due from banks) as a proxy for bank reserves. The greater the volume of liquid reserves, the greater the OPC, so a greater margin is needed. The calculation for OPC is as follows:

$$\text{OPC (\%)} = \frac{\text{Liquid Reserves}}{\text{Total Assets}} = \frac{\text{Cash + Due from Banks}}{\text{Total Assets}} * 100$$

4.5.2.1.5 Liquidity Risk

Liquidity risk (LR), which is defined as the possible inability of a bank to adapt itself to decrease its liabilities or realize gains on the side of the balance sheet, is considered an important determinant of bank performance (Ayadi & Boujelbene, 2012). Tai (2014) argues that maintaining adequate liquidity is one of the major challenges that banks face. Pasiouras and Kosmidou (2007) contend that the ratio of net loans to customers and short-term funding is used to measure the relationship between liquidity management and performance. On other meaning, illiquidity of a bank can be measured by loan to deposit ratio used to measures loans created per dollar of deposits. This ratio shows the relationship between comparatively illiquid assets (i.e. loans) and comparatively stable funding sources (i.e. customer deposits and other short-term funding). Therefore, the lower the value of this ratio, the more liquid the bank is. The measure is used by Jara-Bertin *et al.* (2014), Leunga *et al.* (2014), Trinugroho *et al.* (2014), Liang *et al.* (2013), Chen and Liao (2011), Pasiouras and Kosmidou (2007), Spathis, Kosmidou, and Doumpos (2002), and Sabi (1988). Trinugroho *et al.* (2014) argue that the higher the ratio of loan to total deposits, the higher the LR and the lower the bank holds reserves. The calculation for LR is as follows:

$$\text{LR (\%)} = \frac{\text{Net Loans}}{\text{Customers Deposits and Short - Term Funding}} * 100$$

4.5.2.1.6 Demand Deposits

Another important determinant of commercial bank performance is the ratio of demand deposits to total deposits (DMDEP). The DMDEP is included in the analysis because explicit interest payments on demand deposits is prohibited and thus provides a cheaper source of funds than other deposits (Smirlock, 1985). Having a higher proportion of DMDEP increases the level of efficiency because banks can utilize this source of financial capital (core deposits) without incurring higher interest cost (Chen, 2009). The DMDEP is a measure of liquidity. Smirlock (1985) argues that demand deposits are a low-cost source of funds that improves bank profitability. The ratio is used by Smirlock (1985), Barajas *et al.* (2000), Hao, Curt, and Keun (2001), Chirwa (2003), Yeyati and Micco (2007), Al-muharrami and Matthews (2009), and Osuagwu (2014). Barajas *et al.* (2000) argue that the less intensive use of demand deposits by foreign-owned banks is reflected in higher average interest payments. The calculation for DMDEP is as follows:

$$\text{DMDEP (\%)}= \frac{\text{Demand Deposits}}{\text{Total Deposits}} * 100$$

4.5.2.1.7 Market Risk

Market risk (MR) is the risk of change value of assets associated with a systematic factor. MR by its nature can be hedged but cannot be completely diversified (Santomero, 1997). MR reflects bank exposure to the MR factor and shocks to interest rate risk, market-wide default risk, the structured finance market and asset-backed money markets. Santomero (1997) argues that two types of MR that concern the banking sector and have impacts on its performance are interest rates and the relative value of currencies. Leunga *et al.* (2014) present significant evidence that better banks performance, have a lower market risk. Fiordelisi and Molyneux (2010), Jones *et al.* (2013), Fu *et al.* (2014b), Imbierowicz and Rauch (2014), and Leunga *et al.* (2014) measure MR exposure as the ratio of the total amount of investments in securities to total assets. The calculation for MR is as follows:

$$\text{MR (\%)} = \frac{\text{Total Amount of Investments in Security}}{\text{Total Assets}} * 100$$

4.5.2.1.8 Non-Performing Loans

The ratio of impaired loans to gross loans (NPLs) is included to capture the effect of credit risk on bank profitability. Evidence suggests that impaired loans may increase after periods of increased lending when senior bank managers under competitive pressure to satisfy short-term profit targets and employ less rigorous lending standards. The loan portfolio quality has a direct bearing on bank performance. The highest risk facing a bank is the losses derived from delinquent loans (Dang, 2011). Thus, NPLs ratio one of the best proxies for asset quality or credit risk. It is the major concern of all commercial banks to keep the amount of NPLs to a low level. This is so because high NPLs affect the profitability of the bank. The lower the ratio the better the performance of bank (Sangmi & Nazir, 2010). This study uses NPLs ratio to measure the credit risk as in Apergis (2014), Daly and Zhang (2014), Trinugroho *et al.* (2014), Jones *et al.* (2013), Bedendo and Bruno (2012), Fungáčová and Poghosyan (2011), and Maudos and Solís (2009). This ratio also measures the strength of environmental variables on bank performance (Osuagwu, 2014). The calculation for credit risk is as follows:

$$\text{NPLs Ratio (\%)} = \frac{\text{NPLs}}{\text{Total Loans}} * 100$$

4.5.2.1.9 Loan Loss Provision

Loan loss provision to total loans (LLPs) is a measure of credit allocation and credit quality of banks, which show how much a bank is provisioning in a given year relative to its total loans. A higher ratio indicates a lower credit quality and, therefore, a lower profitability. Fu *et al.* (2014b), LLPs ratio is used to measure output quality and management's strategy for high-risk investment. Demirguc-Kunt and Huizinga (1999) argue that LLPs ratio is a direct measure of the difference in credit quality across countries but it also reflects differences in provisioning regulations. Miller and Noulas (1997) suggest that declines in LLPs are in many instances the primary catalyst for increases in profit margins. Wahlen (1994) examines the information content in NPLs, LLPs and loan charge-offs and finds that all three components are important for explaining returns and future cash flows. LLPs are amounts set aside from earnings to adjust for the probable decline in the value of the bank's loan assets. Because provisions depend on the probability of loans becoming non-performing, higher provisions usually indicate a higher probability of LLPs ratios and lower asset quality. LLPs ratio is used by Dietrich and Wanzenried (2011, 2014), Fu *et al.* (2014b), Kanagaretnam, Lim, and Lobo (2014), Tan and Floros (2012a), and Athanasoglou *et al.* (2008).

$$\text{LLPs Ratio (\%)} = \frac{\text{LLPs}}{\text{Total Loans}} * 100$$

4.5.2.1.10 Capital Adequacy Ratio

Capital adequacy ratio (CAR) is the equity to assets ratio and is used to measure the capital strength of a bank. Financial regulators require commercial banks to maintain a minimum CAR to ensure that banks hold a sufficient amount of equity to absorb any shocks they might experience. Under the 1988 Accord of the Basel Committee on Banking Supervision, the minimum capital requirement is specified as a percentage of the risk-weighted assets of the bank, measured by either Tier 1 or total capital ratio. Under the new accord (known as Basel II and III), the definition of capital and the minimum capital requirement of 8 percent remain unchanged although the current risk categories of credit risk and market risk are supplemented by a third risk category – operational risk – which in future will have to be explicitly backed by capital.

Berger (1995b), among others, supports the notion that well-capitalized banks enjoy access to cheaper sources of funds with subsequent improvement in profit rates. Probably the use of risk-weighted capital ratios such as Tier 1 or (Tire 1+ Tire 2) divided by risk-weighted assets would be more appropriate, but due to many missing values of these measures in a dataset of this study researcher had to rely on equity to assets ratio (CAR). CAR is considered as one of the traditional ratios for capital strength whose use dates back to the 1900s (Golin, 2001), and is used in many recent studies in banking (e.g. Kosmidou *et al.*, 2007; Goddard *et al.*, 2008; Liang *et al.*, 2013; Dietrich & Wanzenried, 2011, 2014; Kanagaretnam *et al.*, 2014; Lee & Hsieh, 2013, 2014; Trinugroho *et al.*, 2014; Khediri *et al.*, 2015).

$$\text{CAR (\%)} = \frac{\text{Total (Tier 1 and Tier 2) Equity}}{\text{Total Assets}} * 100$$

4.5.2.1.11 Loan to Total Assets

The ratio of loans to total assets (LOAN) is used to characterize the asset side of banks. Specifically, banks with higher values of LOAN ratio are banks with a smaller portfolio of investment securities. It is also a measure of the sources income of the bank (Alper & Anbar, 2011). Kosmidou *et al.* (2007) use the LOAN ratio as a measure of liquidity indicating the percentage of bank assets that is tied up in loans. It is sometimes referred to as a loan specialization ratio, liquidity ratio, or as asset utilization ratio. To avoid insolvency problems, banks often hold liquid assets that can be easily converted into cash. Hence, the higher the LOAN ratio, the less liquid a bank is. The measure is used by Khediri *et al.* (2015), Saghi-Zedek and Tarazi (2014), Lee and Hsieh (2013), Goddard *et al.* (2008), Kosmidou *et al.* (2007), and

Miller and Noulas (1997). Saghi-Zedek and Tarazi (2014) find that banks with a higher share of LOAN are less risky and profitability.

$$\text{LOAN (\%)} = \frac{\text{Net Loans}}{\text{Total Assets}} * 100$$

4.5.2.1.12 Loan Growth

Loan growth (LNGRTH) is a crude measure of credit risk. Köhler (2012) stresses that LNGRTH is an important determinant of bank risk. He finds evidence that banks with high rates of LNGRTH are more risky. To measure banks' lending activity, this study includes a bank's LNGRTH as a measure of credit risk. Following Growe *et al.* (2014), García-Herrero *et al.* (2009), and Foos *et al.* (2010) the annual growth rate in total loans is used as a measure of credit risk.

$$\text{LNGRTH} = \text{Annual Growth Rate of Total Loan} = \frac{\text{Total Loans}_t - \text{Total Loans}_{t-1}}{\text{Total Loans}_{t-1}} * 100$$

4.5.2.1.13 Bank Size

Bank size (SIZE) is considered as an important determinant of its performance. The reason is that large size may result in economies of scale that will reduce the cost of gathering and processing information (Boyd & Runkle, 1993). As in most studies in banking, this study uses the natural log of total assets of the bank as a proxy for its size to account for size-related economies or diseconomies of scale. This proxy has been widely used by researchers such as Dietrich and Wanzenried (2014), Fu *et al.* (2014b), Liang *et al.* (2013), Chen and Liao (2011), Fiordelisi and Molyneux (2010), Goddard *et al.* (2008), Micco *et al.* (2007), and Smirlock (1985).

$$SIZE = Ln_{\text{Total Assets}}$$

4.5.2.1.14 Off-Balance Sheet Activities

Off-balance-sheet activities to total assets ratio (OBSs) is another important variable includes the study. Casu and Girardone (2005) argue that empirical study without the role of OBSs activities will lead to biased results. Furthermore, controlling for all other relevant factors, the coefficient on the OBSs is statistically significant for the advanced markets banking systems. However, Haq and Heaney (2012) argue that greater levels of regulation and increased competition have prompted in banks developing non-traditional activities which do not appear on the balance sheet, but create contingent assets and liabilities. It has proven difficult for investors and regulators to identify the actual level of risk a bank faces in a given period of time with these changes in OBSs activities.

OBSs can be categorized into lending (or credit-related) products, such as loan commitments and letters of credit, and derivatives (or risk-management) products, including futures, options, and swaps. OBSs help banks to cover their long-term financial assets and increase their profitability which allows banks to expand their leverage and maximize the return on investment (Karim & Chan, 2007). However, OBSs activities, such as guarantees, increase the risk of banks because the bank is obligated to make payments in the future under certain circumstances, which may seem adverse to the bank (Hassan, Karels, & Peterson, 1993). Mokni and Rachdi (2014) assume that the OBSs increase profitability because they allow banks to expand their investments while increasing their risk exposure. To measure this variable this study uses the ratio of OBSs to total assets as in Khediri *et al.* (2015), Mokni and Rachdi (2014), Mirzaei *et al.* (2013), Haq and Heaney (2012), Chen and Liao (2011), Karim and Chan (2007), Allayannis and Ofek (2001), and Angbazo (1997).

$$\text{OBSs } (\%) = \frac{\text{Off-Balance Sheet Activities}}{\text{Total Assets}} * 100$$

4.5.2.2 Macroeconomic Indicators

Bank performance is sensitive to the macroeconomic conditions despite the industry tendency towards a greater geographic diversification and greater use of financial engineering techniques to manage risks arising out of volatilities in the macro economic conditions. The GDP, INF, and RIR are the macroeconomic indicators most commonly used and they are a measure of total economic activity within an economy.

4.5.2.2.1 GDP Growth Rate

The GDP growth is one of the macroeconomic indicators most commonly used. It is a measure of all the economic activity expected to have an impact on many factors related to the supply and demand for loans and deposits. Claessens *et al.* (2001) argue that the level of economic development is an important factor that determines the entry of foreign banks in the domestic market. Saghi-Zedek and Tarazi (2014) include the GDP growth to control for differences in the macroeconomic environment. Flamini *et al.* (2009) use GDP growth as a control for cyclical output effects and find that downturns in the GDP cycles deteriorate banks' profits. Dietrich and Wanzenried (2014) suggest that the effect of GDP growth on bank performance is statistically significant and positive in middle and high-income countries. This study uses GDP growth rate as in Dietrich and Wanzenried (2014), Saghi-Zedek and Tarazi (2014), Lee and Hsieh (2013), Chen and Liao (2011), Flamini *et al.* (2009), and Kosmidou *et al* (2005).

GDP =Annual Growth Rate of GDP (as Proposed of WDI)

4.5.2.2.2 Inflation Rate

This study also accounts for macroeconomic risk by controlling for inflation rate (INF), as measured by the current period consumer price index (CPI) growth rate as in Apergis (2014), Dietrich and Wanzenried (2014), Lee and Hsieh (2013), Chen and Liao (2011), Flamini *et al.* (2009), García-Herrero *et al.* (2009), Pasiouras and Kosmidou (2007), and Claessens *et al.* (2001). The relationship between INF and banks performance depends on whether the INF is anticipated or unanticipated (Perry, 1992). In anticipated INF, banks can timely adjust interest rates, with a positive impact on performance and vice versa in unanticipated INF. Demirguc-Kunt and Huizinga (2000) find INF is significant and positive, which suggests that banks tend to profit in inflationary environments. INF is measured as:

INF = Current Period Inflation Rate (Consumer Prices) (as Proposed of WDI)

4.5.2.2.3 Real Interest Rate

The real interest rate (RIR) is the rate of interest an investor expects to receive after allowing for inflation. On other meaning, an interest rate that has been adjusted to remove the effects of inflation to reflect the real cost of funds to the borrower, and the real yield to the lender. It can be described more formally by the Fisher equation, which states that the RIR is approximately the nominal interest rate minus the INF. This study uses RIR as in Lee and Hsieh (2013), Bolt *et al.* (2012), Chen and Liao (2011), Claessens *et al.* (2001), and Demirguc-Kunt and Huizinga (1999). Alper and Anbar (2011) find that only the RIR affects the performance of banks positively.

RIR = Real Interest Rate as proposed of WDI = Nominal Interest Rate - Inflation Rate

4.5.2.2.4 FDI Inflow

FDI has been defined in various ways. For example, IMF (1993) define the FDI as an investment made to achieve fixed beuefits in enterprises operating outside of the country of the investor. Pajunen (2008) define FDI as private capital flows from a parent company to an enterprise outside the parent company's home country and Bradley (2005) define it as the establishment of a new business abroad. Cavusgil, Knight, and Riesenberger (2012) argue that FDI is an internationalization strategy in which the firm establishes a physical presence abroad through ownership of productive assets such as capital, technology, labor, land, plant, and equipment. Bronzini (2007) confirms that FDI occurs when a foreign company establishes a subsidiary in another country from scratch. This includes acquiring real estate, hiring and training employees, providing capital and the management style in accordance with the culture of the company (Osei, 2014).

Defensive expansion effects have been measured using a number of empirical proxies which, accordiug to Williams (2002), can be classified into two groups: (i) those that consider direct investment from the home nation to the host nation; (ii) those that consider trading relationships.

The use of numerous empirical proxies in the literature owes to the fact that the defensive expansion theory does not clarify which client's activities result in multinational banking. Williams (2002) and Kosmidou *et al.* (2007) suggest that the use of investment measures like FDI as preferred proxies for testing the defensive expansion hypothesis. The theory of defensive expansion argues that banks follow their clients into the host market in order to retain (defend) their bank-client relationship. If the bank fails to follow the client overseas, the bank is concerned that a new banking relationship will be formed in the host country. This new banking relationship may expand to exclude the existing banking relationships. In this study, the defensive expansion hypothesis is tested using the natural log of FDI inflow as a measure of banks following their clients. This proxy has been nsed by Benacek, Gronicki, Dawn, and Magdolna (2000), Bellak, Leibrecht, and Riedl (2008), Ahmed (2012), Qiong and Minyu (2013), and Kahouli and Maktouf (2015).

$$\text{FDI Inflow} = \text{Annual FDI Inflow (as Proposed of UNCTAD)} = Ln_{FDI\ Inflow}$$

4.5.2.2.5 Oil Price Shocks

The changes in oil price (oil price shock or OIL) is a key factor in the production process which affects the costs, cash flow and the financial performance of institutions which, in turn, influences the dividend payments, the retained earnings, and therefore, the stock prices of these institutions. Basher and Sadorsky (2006) argue that rising oil prices are often indicative of inflationary pressures which central banks can control by raising interest rates. Higher interest rates make bonds look more attractive than stocks leading to a fall in stock prices. The rise in oil price before the CRISIS has spurred series of studies discussing appropriate measures of OIL (see, e.g., Hamilton, 2005; Kilian, 2008; Poghosyan & Hesse, 2009). Since there is no agreement in the literature on a single measure that would constitute OIL, the study employs average yearly oil spot price changes (Dollars per Barrel) which are collected from WTI - Cushing, Oklahoma as in, Dayanandan and Donker (2011), Wattanatorn and Kanchanapoom (2012), Said (2015), and Zaabouti *et al.* (2016). OIL is measured as:

OIL = Percentage change in an annual oil prices (as Proposed of WTI)

4.5.2.3 Financial Structure Indicators

In this study, there is an endeavor to examine how bank performance is linked to the relative development of the banking sector and stock market using ratios of the HHI, MARKE_CAP, and DCPS.

4.5.2.3.1 Herfindahl-Hirschman Index

Herfindahl-Hirschman index (HHI) of market concentration index is a measure that is tested with respect to the link between market structure and performance. HHI may influence performance, according to two well-known theoretical models: first is the SCP hypothesis, which indicates that banks in highly concentrated markets tend to collude and, therefore, earn monopoly profits as they tend to charge higher rates on loans and lower interest rates being paid on deposits (Gilbert, 1984). Second is the efficient–structure hypothesis, which states that bank's higher margin is attributable to more operational efficiency, better management or better production technologies. Since these banks will also gain a larger market share, the structure will become more concentrated due to efficiency gains (Berger, 1995a).

There are alternative indicators of the degree of competition in banking, such as the Rosse-Panzar, Lerner index and the Boone indicator. However, the use of such non-structural measures in the performance function has some major limitations. For example, to use the Rosse-Panzer, one has to effectively proxy bank output and then estimate the overall market equilibrium on the basis of a static model. The estimation of market equilibrium requires several assumptions concerning methodology, the evaluation of which is beyond the scope of the present work. Hence, without denying its limitations, this study proceeds with using HHI of market concentration index and make robustness tests by CR5, Lerner index, as well as Boone indicator. The HHI index measures market concentration and equals the sum of the squares of each bank's market share in total industry assets as in Mirzaei *et al.* (2013), Chen and Liao (2011), Liu and Wilson (2010), Seelanatha (2010), García-Herrero *et al.* (2009), Park and Weber (2006), and Park (2004). The calculation for HHI index is as follows:

$$\text{HHI} = \text{Sum of the Squared Market Shares of Each Bank Assets} =$$

$$\left[\frac{\text{Bank Total Assets}}{\text{Banking Sector Total Assets}} * 100 \right] 2$$

4.5.2.3.2 Stock Market Capitalization

Another industry-based indicator is the ratio of stock market capitalization to the GDP (MARKE_CAP). The size of the stock market may signal a competitive challenge to banks, or be complementary to banking operations. A larger stock market size increases bank profits (Kyriaki Kosmidou *et al.*, 2005). This study uses MARKE_CAP as a proxy of financial market development and is a measure of the size of the equity market as in Dietrich and Wanzenried

(2014), Tan and Floros (2012a), Naceur and Omran (2011), Pasiouras and Kosmidou (2007), and Demirguc-Kunt and Huizinga (1999).

$$\text{MARKE\_CAP (\%)} = \frac{\text{Stock Market Capitalization}}{\text{GDP}} * 100$$

4.5.2.3.3 Credit to Private Sector

Bank credit to the private sector as a percentage of GDP is the credit to the private sector divided by GDP (DCPS). DCPS is used as an indicator of the size of banking in a financial structure or the degree of financial deepening. This variable is also used to measure the importance of bank financing in the economy. Levine and Zerves (1998) stress that the DCPS may be a better measure of banking sector development. This study uses the ratio of DCPS as in Costa Navajas and Thegeya (2013), Lee and Hsieh (2013, 2014), Mirzaei *et al.* (2013), Jeon, Olivero, and Wu (2011), Naceur and Omran (2011), and Detragiache *et al.* (2008).

$$\text{DCPS (\%)} = \frac{\text{Domestic Credit to the Private Sector}}{\text{GDP}} * 100$$

4.5.2.4 Listed Banks

The first dummy variable includes in this study is listed banks. Listed banks are included in the model to investigate whether being listed at a stock exchange has an impact on bank performance. Farazi *et al.* (2011) note that the listed banks perform better than unlisted banks; this observation is due to more stringent governance standards and disclosure requirements imposed on these banks. However, Trinugroho *et al.* (2014) find little evidence of the difference regarding NIM between listed and unlisted banks. Listed banks is a dummy variable that takes the value of one if the bank is listed on the stock market and zero if otherwise as in Curcio *et al.* (2014), Mokni and Rachdi (2014), Saghi-Zedek and Tarazi (2014), Trinugroho *et al.* (2014), Jiang *et al.* (2013), Barry *et al.* (2011), Dietrich and Wanzenried (2011), García-Herrero *et al.* (2009), and Uchida and Satake (2009).

Listed Bank Dummy = Dummy Takes A Value of One for Listed Banks and Zero Otherwise

4.5.2.5 Foreign Banks

Consistent with previous literature (Dekle & Lee, 2015; Pennathur & Vishwasrao, 2014; Chen & Liao, 2011; Berger *et al.*, 2009; Sufian, 2009; Lensink *et al.*, 2008). This study uses dummy variables to control for the impact of foreign bank ownership on bank performance. Foreign banks is a dummy variable, uses to examine the relationship between foreign bank ownership with bank performance. It takes a value of one for foreign banks, zero otherwise. The study does not have a priori expectation on the sign of the variable.

Foreign_Dummy = Dummy Variable Equals to One for Foreign Banks and Zero Otherwise

4.5.2.6 Global Financial Crisis

To perform study analysis, this study has included the global financial crisis (CRISIS), as an explanatory variable, in the fourth model. This study considers a CRISIS dummy variable to gain additional insights into the impacts of the CRISIS on the GCC banks. Dietrich and Wanzenried (2014) find that the CRISIS has severely weakened the banking industry, resulting in lower profitability in high-income countries, while banks in low-income countries are less vulnerable than middle-income countries. A dummy variable labeled as CRISIS is incorporated into the regression model, taking a value of one in the years 2008 and 2009, and zero otherwise as in Dekle and Lee (2015), Fu *et al.* (2014b), Al-Musali and Ismail (2014), Zouari and Taktak (2014), and Didier, Hevia and Schmukler (2012).

Dummy CRISIS =

Dummy Crisis Takes A Value of One for the Years 2008 and 2009 and Zero Otherwise

4.5.2.7 Country Dummies

The study uses country dummies to control for country differences. Also, country dummies incorporate fixed effects for countries in the equation to disentangle the country effect. Country dummies are included to allow for differences in efficiency perhaps because of regulatory and institutional variations as well as the huge differences in GDP growth in the countries of GCC region. Furthermore, country dummies (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE) are used to distinguish between the countries of origin of the banks in the sample. Each dummy variable is equal to one if the bank nationality is that of the corresponding country and zero otherwise. Country dummies variable is the following (the corresponding countries are reported in parenthesis):

Dummy_BHR (Bahrain), Dummy_KWT (Kuwait), Dummy_OMN (Oman), Dummy_QAT (Qatar), Dummy_SAU (Saudi Arabia), Dummy_UAE (UAE).
The Dummy_UAE dummy variable has been dropped to avoid collinearity in the data.

Table 4.1 describes the measurements of the dependent variable and independent variables of this study, sources and expected sign which are as follows:

Table 4.1
Summary of Variables, Measurements and Expected sign

Variables	Notation	Measurements	Sources	Data Sources	Expected Sign
Dependent Variables:					
Profitability:					
ROA	ROA	$\frac{\text{Net Income}}{\text{Total Assets}}*100$	Trad et al. (2017), Saghi-zedek (2016), Saghi-Zedek and Tarazi (2014), Lee and Hsieh (2013), Liang et al. (2013), Chen and Liao (2011), Naceur and Omran (2011), Angbazo (1997), Goldberg and Anoop (1996), and Berger (1995a).	BankScope and Annual reports	
ROE	ROE	$\frac{\text{Net Income}}{\text{Total Equity}}*100$		BankScope and Annual reports	
NIM	NIM	$\frac{\text{Net Interest Revenue}}{\text{Total Assets}}*100$		BankScope and Annual reports	
Market-Based Performance					
Tobin's Q	Tobin's Q	$\frac{\text{(Market Value of Equity + Book Value of Debt)}}{\text{Book Value of Assets}}*100$	Laeven and Levine (2007), Liang *et al.* (2013), Al-Saidi and Al-Shammari (2013), Arouri *et al.* (2014), Fu *et al.* (2014b), Jiang and Zeng (2014), Pan and Tian (2014), Battaglia and Gallo (2015), and Cornett *et al.* (2016).	BankScope and Annual reports	
Bank Risk:					
SDROA	SDROA	Standard Deviation of ROA from a Five-Period Rolling Window	Nash and Sinkey (1997), Rahman *et al.* (2012), Beck *et al.* (2013), Anginer *et al.* (2014), and Rahman (2014).	BankScope and Annual reports	
SDROE	SDROE	Standard Deviation of ROE from a Five-Period Rolling Window		BankScope and Annual reports	
Independent Variables:					
Cost-Income-Ratio	COST	$\frac{\text{Operating Expenses}}{\text{Total Income}}*100$	Dietrich and Wanzenried (2014), Saghi-Zedek and Tarazi (2014), Ameur and Mhiri (2013), Chen and Liao (2011), Dietrich and Wanzenried (2011), and Pasiouras and Kosmidou (2007).	BankScope and Annual reports	+/-
Non-Interest Revenues	NIR	$\frac{\text{Non-Interest Revenue}}{\text{Total Revenue}}*100$	Saghi-Zedek and Tarazi (2014), Growe *et al.* (2014), Chen and Liao (2011), Lin and Zhang (2009), Stiroh and Rumble (2006), and Stiroh (2004).	BankScope and Annual reports	+/-

Table 4.1 (Continued)

Variables	Notation	Measurements	Sources	Data Sources	Expected Sign
Opportunity Cost	OPC	$\frac{\text{Liquid Reserves}}{\text{Total Assets}} = \frac{\text{Cash + Due from Banks}}{\text{Total Assets}} * 100$	Chen and Liao (2011), Naceur and Omran (2011), Maudos and Solís (2009), Maudos and Guevara (2004), and Ho and Saunders (1981)	BankScope and Annual reports	+/-
Liquidity Risk	LR	$\frac{\text{Net Loans}}{\text{Customers Deposits}} * 100$	Jara-Bertin *et al.* (2014), , Leunga *et al.* (2014), Trinugroho *et al.* (2014), Liang *et al.* (2013), Chen and Liao (2011), and Pasiouras and Kosmidou (2007)	BankScope and Annual reports	+/-
Demand Deposits	DMDEP	$\frac{\text{Demand Deposits}}{\text{Total Deposits}} * 100$	Smirlock (1985), Barajas *et al.* (2000), Hao *et al.* (2001), Chirwa (2003), Yeyati and Micco (2007), Al-muharrami and Matthews (2009), and Osuagwu (2014)	BankScope and Annual reports	+/-
Market Risk	MR	$\frac{\text{Total Amount of Investments in Security}}{\text{Total Assets}} * 100$	Fiordelisi and Molyneux (2010), Jones *et al.* (2013), Fu *et al.* (2014b), Imbierowicz and Rauch (2014), and Leunga *et al.* (2014)	BankScope and Annual reports	+/-
NPLs Ratio	NPLs	$\frac{\text{NPLs}}{\text{Total Loans}} * 100$	Apergis (2014), Daly and Zhang (2014), Trinugroho *et al.* (2014), Jones *et al.* (2013), Bedendo and Bruno (2012), Fungáčová and Poghosyan (2011), and Maudos and Solís (2009).	BankScope and Annual reports	+/-
Loan Loss Provision	LLPs	$\frac{\text{LLPs}}{\text{Total Loans}} * 100$	Dietrich and Wanzenried (2011, 2014), Fu *et al.* (2014b), Kanagaretnam, Lim and Lobo (2014), Tan and Floros (2012a), and Athanasoglou *et al.* (2008).	BankScope and Annual reports	+/-

Table 4.1 (Continued)

Variables	Notation	Measurements	Sources	Data Sources	Expected Sign
Capital Adequacy Ratio	CAR	$\frac{\text{Total (Tier 1 and Tier 2) Equity}}{\text{Total Assets}} * 100$	Kosmidou *et al.* (2007), Goddard *et al.* (2008), Liang *et al.* (2013), Dietrich and Wanzenried (2011, 2014), Kanagaretnam *et al.* (2014), Lee and Hsieh (2013, 2014), Trinugroho *et al.* (2014), and Khediri *et al.* (2015)	BankScope and Annual reports	+/-
Loan to Total Assets	LOAN	$\frac{\text{Net Loans}}{\text{Total Assets}} * 100$	Khediri *et al.* (2015), Saghi-Zedek and Tarazi (2014), Lee and Hsieh (2013), Goddard *et al.* (2008), Kosmidou *et al.* (2007), and Miller and Noulas (1997).	BankScope and Annual reports	+/-
Loan Growth	LNGRTH	Annual Growth Rate of Total Loan = $\frac{\text{Total Loans}_T - \text{Total Loans}_{T-1}}{\text{Total Loans}_{T-1}} * 100$	Growe *et al.* (2014), García-Herrero *et al.* (2009), and Foos *et al.* (2010)	BankScope and Annual reports	+/-
Bank Size	SIZE	$\text{Ln}_{\text{Total Assets}}$	Dietrich and Wanzenried (2014), Fu *et al.* (2014b), Liang *et al.* (2013), Chen and Liao (2011), Fiordelisi and Molyneux (2010), Goddard *et al.* (2008), Micco *et al.* (2007), and Smirlock (1985)	BankScope and Annual reports	+/-
Off-Balance Sheet Activities	OBSs	$\frac{\text{Off-Balance Sheet Activities}}{\text{Total Assets}} * 100$	Khediri *et al.* (2015), Mokni and Rachdi (2014), Mirzaei *et al.* (2013), Haq and Heaney (2012), Chen and Liao (2011), Karim and Chan (2007), Allayannis and Ofek (2001)	BankScope and Annual reports	+/-
Macroeconomic Indicators:					
GDP Growth Rate	GDP	Annual growth Rate of GDP as Proposed of WDI	Dietrich and Wanzenried (2014), Saghi-Zedek and Tarazi (2014), Lee and Hsieh (2013), Chen and Liao (2011), Flamini *et al.* (2009), and Kosmidou *et al* (2005)	WDI	+/-

Table 4.1 (Continued)

Variables	Notation	Measurements	Sources	Data Sources	Expected Sign
Inflation Rate	INF	Current Period Inflation Rate (Consumer Prices) as Proposed of WDI	Apergis (2014), Dietrich and Wanzenried (2014), Lee and Hsieh (2013), Chen and Liao (2011), Flamini *et al.* (2009), García-Herrero *et al.* (2009), and Pasiouras and Kosmidou (2007)	WDI	+/-
Real Interest Rate	RIR	Real Interest Rate as proposed of WDI= Nominal Interest Rate - Inflation Rate	Lee and Hsieh (2013), Bolt *et al.* (2012), Chen and Liao (2011), Claessens *et al.* (2001), and Demirguc-Kunt and Huizinga (1999)	WDI	+/-
FDI Inflow	FDI	Annual FDI inflow as proposed of UNCTAD = $Ln_{\text{FDI Inflow}}$	Benacek *et al.* (2000), Bellak, Leibrecht and Riedl (2008) Bellak *et al.* (2008),Ahmed (2012), Qiong and Minyu (2013), and Kahouli and Maktouf (2015)	UNCTAD	+/-
Oil Price Shocks	OIL	Oil Price = Percentage change in an annual oil prices (as Proposed of WTI)	Dayanandan and Donker (2011), Wattanatorn and Kanchanapoom (2012), Said (2015), and Zaabouti *et al.* (2016)	WTI	+/-
Financial Structure Indicators:					
Herfindahl-Hirschman Index	HHI	Sum of the Squared Market Shares of Each Bank Assets $= \left[\frac{\text{Bank Total Assets}}{\text{Banking Sector Total Assets}} * 100\right]$^2	Mirzaei *et al.* (2013), Chen and Liao (2011), Liu and Wilson (2010), Seelanatha (2010), García-Herrero *et al.* (2009), Park and Weber (2006) and Park (2004)	Calculated by Author	+/-
Stock Market Capitalization	MARKE_CAP	$\frac{\text{Stock Market Capitalization}}{\text{GDP}} * 100$	Dietrich and Wanzenried (2014), Tan and Floros (2012a), Naceur and Omran (2011), Pasiouras and Kosmidou (2007), and Demirguc-Kunt and Huizinga (1999)	WDI	+/-

Table 4.1 (Continued)

Variables	Notation	Measurements	Sources	Data Sources	Expected Sign
Credit to Private Sector	DCPS	$\frac{\text{Domestic Credit to the Private Sector}}{\text{GDP}} * 100$	Costa Navajas and Thegeya (2013), Lee and Hsieh (2013, 2014), Mirzaei *et al.* (2013), Jeon, Olivero and Wu (2011), Naceur and Omran (2011), and Detragiache *et al.* (2008)	WDI	+/-
Dummy Variables:					
Listed Banks	LISTED	Dummy Listed Takes a Value of 1 for Listed Banks and 0 Otherwise	Curcio *et al.* (2014), Mokni and Rachdi (2014), Saghi-Zedek and Tarazi (2014), Trinugroho *et al.* (2014), Jiang *et al.* (2013), Barry *et al.* (2011), Dietrich and Wanzenried (2011), García-Herrero *et al.* (2009), and Uchida and Satake (2009)	Calculated by Author	Better
Foreign banks	FOREIGN	Dummy Variable Equals to One for Foreign Banks and Zero Otherwise	Dekle and Lee (2015), Pennathur and Vishwasrao (2014), Chen and Liao (2011), Berger *et al.* (2009), Sufian (2009), and Lensink *et al.* (2008)	Calculated by Author	Difference
Global Financial Crisis	CRISIS	Dummy Crisis Takes a Value of 1 for the Years 2008 and 2009 and 0 Otherwise	Dekle and Lee (2015), Fu *et al.* (2014b), Al-Musali and Ismail (2014), Zouari and Taktak (2014), and Didier *et al.* (2012)	Calculated by Author	+/-
Country Dummies		Dummy-BHR (Bahrain), Dummy_KWT (Kuwait), Dummy_OMN (Oman), Dummy_QAT (Qatar), Dummy_SAU (Saudi Arabia), and Dummy_UAE (UAE). The Dummy_UAE dummy variable has been dropped to avoid collinearity in the data.		Calculated by Author	
		Other Variables used in the Robustness Tests			
Alternative Dependent variables:					
ROAA	ROAA	Net income / Average Total Assets	Mercieca et al. (2007), Dietrich and Wanzenried (2011), and Dietrich and Wanzenried (2011)	BankScope and Annual reports	
ROAE	ROAE	Net income / Average Total Equity			
SDROAA	SDROAA	Standard Deviation of ROAA from a Five-Period Rolling Window	Olson and Zoubi (2016), and Mirzaei and Moore (2016).	Calculated by Author	
SDROAE	SDROAE	Standard Deviation of ROAE from a Five-Period Rolling Window.			

Table 4.1 (Continued)

Variables	Notation	Measurements	Sources	Data Sources	Expected Sign
Credit Risk	NPLs	$\frac{NPLs_{it}}{\text{Total Loans}_{it}}$		BankScope and Annual reports	
Credit Risk	LLPs	$\frac{LLPS_{it}}{\text{Total Loans}_{it}}$	Stiroh and Rumble (2006), Mercieca *et al.* (2007), Lepetit *et al.* (2008), Goddard *et al.* (2008), Barry *et al.* (2011), Köhler (2012), Soedarmono *et al.* (2013), and Kasman and Kasman (2015).	BankScope and Annual reports	
Default Risk	ZROE	$\frac{1+ROE_{it}}{SDROE_{it}}$		Calculated by Author	
Default Risk	ZROA	$\frac{ROA_{it}+EQTA_{it}}{SDROA_{it}}$		Calculated by Author	
Portfolio Risk	ZROA1	$\frac{ROA_{it}}{SDROA_{it}}$		Calculated by Author	
Leverage Risk	ZROA2	$\frac{EQTA_{it}}{SDROA_{it}}$		Calculated by Author	
Alternative and additional Independent variables:					
Concentration ratio of Top Five banks	CR5	The five largest banks' assets divided by total assets of the banking sector in each country	Khan *et al.* (2016) and Tan (2016), Kasman and Kasman (2015), Fu *et al.* (2014a), and Chen and Liao (2011).	Calculated by Author	
Lerner Index	Lerner	$\frac{\text{Bank's Price} - \text{Marginal Costs}}{\text{Bank's Price}}$		Calculated by Author	
Boone Indicator	Boone	$\ln(\text{Profit})_i = \alpha + \beta\ln(\text{Marginal Costs})_i + \varepsilon_i$		Calculated by Author	
Bank Fixed Effect	Bank Effect	Dummies of bank level fixed effects.		Calculated by Author	
Time Effect	Time Effect	Dummies of time-invariant.			
Arab Spring	ArabSpring-1	A dummy variable that equals 1 if a country is affected (major and minor) by the Arab Spring and 0 otherwise.	Ghosh (2016) and Bitar *et al.* (2016), Bloomberg and World Bank (2011), and Wikipedia	Calculated by Author	
	ArabSpring-2	A dummy variable that equals 1 if a country is only severely (major) affected by the Arab Spring and 0 otherwise.		Calculated by Author	
	ArabSpring-3	A dummy variable that equals 1 if a country is only mildly (minor) affected by the Arab Spring and 0 otherwise.		Calculated by Author	

4.6 Population and Data Collection

In this study, the sample frame consists of all banks in GCC countries (UAE, Saudi Arabia, Qatar, Oman, Kuwait, and Bahrain) during the period from 2000 to 2015. According to the 2015 annual reports issued by the central banks in all GCC economies, the banking sectors in the region comprises of 230 banks (94 banks in Bahrain, 23 in Kuwait, 21 in Oman, 18 banks in Qatar, 23 banks in Saudi Arabia, and 51 banks in the UAE), of which 113 are domestic banks (70 banks of them are listed in GCC stock markets in 2015) and 117 are foreign-owned banks from the USA, Europe, and Asian countries.

Table 4.2
Types and Numbers of GCC Banks Included in this Study

Country	Domestic Banks			Foreign Banks			Total	
	Listed Banks No.	Unlisted Banks	Total Domestic Banks	Foreign Non-GCC Banks	Foreign GCC banks (Excluded)[10]	Total Foreign Banks	Total Banks	Total Observations
Bahrain	13	33	46	41	7	48	94	1504
Kuwait	10	1	11	4	8	12	23	368
Oman	8	4	12	7	2	9	21	336
Qatar	8	1	9	8	1	9	18	288
Saudi Arabia	11	1	12	6	5	11	23	368
UAE	20	3	23	22	6	28	51	816
Total	70	43	113	88	29	117	230	3680

Sampling

Country	Listed Banks Sample	Unlisted Banks Sample	Foreign Non-GCC Banks Sample	Total Sample	Total Observations
Bahrain	13	20	38	71	1136
Kuwait	10	1	4	15	240
Oman	8	4	6	18	288
Qatar	8	1	8	17	272
Saudi Arabia	11	1	6	18	288
UAE	20	3	20	43	688
Total	70	30	82	182	2912

[10] This study has incorporated the foreign GCC banks as a dummy variable; however, the results are insignificant and do not affect the results of the other variables. Thus, this dummy is dropped from the analysis.

The study also covers all listed and unlisted banks on GCC markets including the non-GCC foreign owned banks and local banks. However, in order to be more accurate and clearer, the GCC banks which have branches in other GCC countries have been excluded to avoid double counting. Table 4.2 shows the types and numbers of banks in each GCC country included in this study as well as a selection of sample banks.

4.7 Regression Models

In order to test the hypotheses of the study, the analysis will be carried out in five main regression models. The first regression model tests the impact of bank determinants on bank performance without dummy variables. The next set of regression model tests the bank determinants on bank performance using various dummy variables; CRISIS dummy variable in the second model, LISTED dummy in the third model, FOREIGN dummy in the fourth model, and a country dummy in the fifth model, respectively. In order to get more robust results and to avoid noise on the main variables of interest that may distort the results, the analysis involving dummy variables are estimated separately.

The study employs specific factors determinants as suggested in the theoretical and empirical literature to determine the effect of bank-specific characteristics, macroeconomic factors, financial structure indicators, and listed banks dummy on bank performance of domestic and foreign banks. The general equation model for this study is as follows:

$$\begin{aligned}\boldsymbol{PERFORM}_{it} = {} & \beta_0 + \beta_1 \boldsymbol{LPERFORM}_{it-1} + \beta_2\mathbf{COST}_{it} + \beta_3\mathbf{NIR}_{it} + \beta_4\,\mathbf{OPC}_{it} + \beta_5\,\mathbf{LR}_{it} \\ & + \beta_6\,\mathbf{DMDEP}_{it} + \beta_7\,\mathbf{MR}_{it} + \beta_8\,\mathbf{NPLs}_{it} + \beta_9\,\mathbf{LLPs}_{it} + \beta_{10}\,\mathbf{CAR}_{it} \\ & + \beta_{11}\,\mathbf{LOAN}_{it} + \beta_{12}\,\mathbf{LNGRTH}_{it} + \beta_{13}\,\mathbf{SIZE}_{it} + \beta_{14}\,\mathbf{OBSs}_{it} + \beta_{15}\,\mathbf{GDP}_{it} \\ & + \beta_{16}\,\mathbf{INF}_{it} + \beta_{17}\,\mathbf{RIR}_{it} + \beta_{18}\,\mathbf{FDI}_{it} + \beta_{19}\,\mathbf{OIL}_{it} + \beta_{20}\,\mathbf{HHI}_{it} \\ & + \beta_{21}\,\mathbf{MARKE\_CAP}_{it} + \beta_{22}\,\mathbf{DCPS}_{it} + \beta_{23}\,\mathbf{LISTED\_Dummy}_{it} \\ & + \beta_{24}\,\mathbf{FOREIGN\_Dummy}_{it} + \beta_{25}\,\mathbf{CRISIS}_{it} + \beta_{26}\sum_{i=1}^{5} \boldsymbol{COUNTRY}_{it} \\ & + \varepsilon_{it} \quad \ldots\ldots \quad (4.1)\end{aligned}$$

Where;

Dependent variable:
Perform = Bank Performance
i = Bank
t = Time Period

Independent Variables:
$LPERFORM_{it-1}$ = Lagged of dependent variable
COST = Cost-Income-Ratio
NIR = Non-Interest Revenues
OPC = Opportunity Cost
LR = Liquidity Risk
DMDEP = Demand Deposits Ratio
MR = Market Risk
NPLs = Non-performing Loans
LLPs = Loan Loss Provision
CAR = Capital Adequacy Ratio
LOAN = Loan to Total Assets
LNGRTH = Loan Growth
SIZE = Bank Size
OBSs = Off-Balance Sheet Activities
GDP = GDP Growth
INF = Inflation Rate
RIR = Real Interest Rate
FDI = FDI Inflow
OIL = Oil Price
HHI = The Herfindahl-Hirschman Index of Market Concentration
MARKE_CAP = Stock Market Capitalization to GDP
DCPS = Domestic Credit to Private Sector to GDP
LISTED_Dummy = Dummy of Listed Banks
FOREIGN_Dummy = Dummy of Foreign Banks
CRISIS = Global Financial Crisis.
COUNTRY = Country Dummies

As this study uses three measures of bank profitability (ROA, ROE, and NIM), one measure of market-based performance (Tobin's Q) and two measures of bank risk (SDROA and SDROE), the equation models to be tested are as follows:

$$\begin{aligned} ROA_{it} = {} & \beta_0 + \beta_1 LROA_{it-1} + \beta_2 COST_{it} + \beta_3 NIR_{it} + \beta_4\, OPC_{it} + \beta_5\, LR_{it} + \beta_6\, DMDEP_{it} \\ & + \beta_7\, MR_{it} + \beta_8\, NPLs_{it} + \beta_9\, LLPs_{it} + \beta_{10}\, CAR_{it} + \beta_{11}\, LOAN_{it} \\ & + \beta_{12}\, LNGRTH_{it} + \beta_{13}\, SIZE_{it} + \beta_{14}\, OBSs_{it} + \beta_{15}\, GDP_{it} + \beta_{16}\, INF_{it} \\ & + \beta_{17}\, RIR_{it} + \beta_{18}\, FDI_{it} + \beta_{19}\, OIL_{it} + \beta_{20}\, HHI_{it} + \beta_{21}\, MARKE\_CAP_{it} \\ & + \beta_{22}\, DCPS_{it} + \beta_{23}\, LISTED\_Dummy_{it} + \beta_{24}\, FOREIGN\_Dummy_{it} \\ & + \beta_{25}\, CRISIS_{it} + \beta_{26} \sum_{i=1}^{5} COUNTRY_{it} + \varepsilon_{it} \quad \ldots\ldots \quad (4.2) \end{aligned}$$

$$\begin{aligned} ROE_{it} = {} & \beta_0 + \beta_1 LROE_{it-1} + \beta_2 COST_{it} + \beta_3 NIR_{it} + \beta_4\, OPC_{it} + \beta_5\, LR_{it} + \beta_6\, DMDEP_{it} \\ & + \beta_7\, MR_{it} + \beta_8\, NPLs_{it} + \beta_9\, LLPs_{it} + \beta_{10}\, CAR_{it} + \beta_{11}\, LOAN_{it} \\ & + \beta_{12}\, LNGRTH_{it} + \beta_{13}\, SIZE_{it} + \beta_{14}\, OBSs_{it} + \beta_{15}\, GDP_{it} + \beta_{16}\, INF_{it} \\ & + \beta_{17}\, RIR_{it} + \beta_{18}\, FDI_{it} + \beta_{19}\, OIL_{it} + \beta_{20}\, HHI_{it} + \beta_{21}\, MARKE\_CAP_{it} \\ & + \beta_{22}\, DCPS_{it} + \beta_{23}\, LISTED\_Dummy_{it} + \beta_{24}\, FOREIGN\_Dummy_{it} \\ & + \beta_{25}\, CRISIS_{it} + \beta_{26} \sum_{i=1}^{5} COUNTRY_{it} + \varepsilon_{it} \quad \ldots\ldots \quad (4.3) \end{aligned}$$

$$\begin{aligned} NIM_{it} = {} & \beta_0 + \beta_1 LNIM_{it-1} + \beta_2 COST_{it} + \beta_3 NIR_{it} + \beta_4\, OPC_{it} + \beta_5\, LR_{it} + \beta_6\, DMDEP_{it} \\ & + \beta_7\, MR_{it} + \beta_8\, NPLs_{it} + \beta_9\, LLPs_{it} + \beta_{10}\, CAR_{it} + \beta_{11}\, LOAN_{it} \\ & + \beta_{12}\, LNGRTH_{it} + \beta_{13}\, SIZE_{it} + \beta_{14}\, OBSs_{it} + \beta_{15}\, GDP_{it} + \beta_{16}\, INF_{it} \\ & + \beta_{17}\, RIR_{it} + \beta_{18}\, FDI_{it} + \beta_{19}\, OIL_{it} + \beta_{20}\, HHI_{it} + \beta_{21}\, MARKE\_CAP_{it} \\ & + \beta_{22}\, DCPS_{it} + \beta_{23}\, LISTED\_Dummy_{it} + \beta_{24}\, FOREIGN\_Dummy_{it} \\ & + \beta_{25}\, CRISIS_{it} + \beta_{26} \sum_{i=1}^{5} COUNTRY_{it} + \varepsilon_{it} \quad \ldots\ldots \quad (4.4) \end{aligned}$$

$$\begin{aligned} Tobin's\ Q_{it} = {} & \beta_0 + \beta_1 LTobin's\ Q_{it-1} + \beta_2 COST_{it} + \beta_3 NIR_{it} + \beta_4\, OPC_{it} + \beta_5\, LR_{it} \\ & + \beta_6\, DMDEP_{it} + \beta_7\, MR_{it} + \beta_8\, NPLs_{it} + \beta_9\, LLPs_{it} + \beta_{10}\, CAR_{it} \\ & + \beta_{11}\, LOAN_{it} + \beta_{12}\, LNGRTH_{it} + \beta_{13}\, SIZE_{it} + \beta_{14}\, OBSs_{it} + \beta_{15}\, GDP_{it} \\ & + \beta_{16}\, INF_{it} + \beta_{17}\, RIR_{it} + \beta_{18}\, FDI_{it} + \beta_{19}\, OIL_{it} + \beta_{20}\, HHI_{it} \\ & + \beta_{21}\, MARKE\_CAP_{it} + \beta_{22}\, DCPS_{it} + \beta_{23}\, CRISIS_{it} + \beta_{24} \sum_{i=1}^{5} COUNTRY_{it} \\ & + \varepsilon_{it} \quad \ldots\ldots \qquad (4.5) \end{aligned}$$

$$\begin{aligned} \boldsymbol{SDROA}_{\mathrm{it}} = {} & \beta_0 + \beta_1 \boldsymbol{LSDROA}_{\mathrm{it-1}} + \beta_2 \mathbf{COST}_{\mathrm{it}} + \beta_3 \mathbf{NIR}_{\mathrm{it}} + \beta_4\, \mathbf{OPC}_{\mathrm{it}} + \beta_5\, \mathbf{LR}_{\mathrm{it}} \\ & + \beta_6\, \mathbf{DMDEP}_{\mathrm{it}} + \beta_7\, \mathbf{MR}_{\mathrm{it}} + \beta_8\, \mathbf{NPLs}_{\mathrm{it}} + \beta_9\, \mathbf{LLPs}_{\mathrm{it}} + \beta_{10}\, \mathbf{CAR}_{\mathrm{it}} \\ & + \beta_{11}\, \mathbf{LOAN}_{\mathrm{it}} + \beta_{12}\, \mathbf{LNGRTH}_{\mathrm{it}} + \beta_{13}\, \mathbf{SIZE}_{\mathrm{it}} + \beta_{14}\, \mathbf{OBSs}_{\mathrm{it}} + \beta_{15}\, \mathbf{GDP}_{\mathrm{it}} \\ & + \beta_{16}\, \mathbf{INF}_{\mathrm{it}} + \beta_{17}\, \mathbf{RIR}_{\mathrm{it}} + \beta_{18}\, \mathbf{FDI}_{\mathrm{it}} + \beta_{19}\, \mathbf{OIL}_{\mathrm{it}} + \beta_{20}\, \mathbf{HHI}_{\mathrm{it}} \\ & + \beta_{21}\, \mathbf{MARKE\_CAP}_{\mathrm{it}} + \beta_{22}\, \mathbf{DCPS}_{\mathrm{it}} + \beta_{23}\, \mathbf{LISTED\_Dummy}_{\mathrm{it}} \\ & + \beta_{24}\, \mathbf{FOREIGN\_Dummy}_{\mathrm{it}} + \beta_{25}\, \mathbf{CRISIS}_{\mathrm{it}} + \beta_{26} \sum_{i=1}^{5} \boldsymbol{COUNTRY}_{it} \\ & + \varepsilon_{\mathrm{it}} \quad \ldots\ldots \quad (4.6) \end{aligned}$$

$$\begin{aligned} \boldsymbol{SDROE}_{\mathrm{it}} = {} & \beta_0 + \beta_1 \boldsymbol{LSDROE}_{\mathrm{it-1}} + \beta_2 \mathbf{COST}_{\mathrm{it}} + \beta_3 \mathbf{NIR}_{\mathrm{it}} + \beta_4\, \mathbf{OPC}_{\mathrm{it}} + \beta_5\, \mathbf{LR}_{\mathrm{it}} \\ & + \beta_6\, \mathbf{DMDEP}_{\mathrm{it}} + \beta_7\, \mathbf{MR}_{\mathrm{it}} + \beta_8\, \mathbf{NPLs}_{\mathrm{it}} + \beta_9\, \mathbf{LLPs}_{\mathrm{it}} + \beta_{10}\, \mathbf{CAR}_{\mathrm{it}} \\ & + \beta_{11}\, \mathbf{LOAN}_{\mathrm{it}} + \beta_{12}\, \mathbf{LNGRTH}_{\mathrm{it}} + \beta_{13}\, \mathbf{SIZE}_{\mathrm{it}} + \beta_{14}\, \mathbf{OBSs}_{\mathrm{it}} + \beta_{15}\, \mathbf{GDP}_{\mathrm{it}} \\ & + \beta_{16}\, \mathbf{INF}_{\mathrm{it}} + \beta_{17}\, \mathbf{RIR}_{\mathrm{it}} + \beta_{18}\, \mathbf{FDI}_{\mathrm{it}} + \beta_{19}\, \mathbf{OIL}_{\mathrm{it}} + \beta_{20}\, \mathbf{HHI}_{\mathrm{it}} \\ & + \beta_{21}\, \mathbf{MARKE\_CAP}_{\mathrm{it}} + \beta_{22}\, \mathbf{DCPS}_{\mathrm{it}} + \beta_{23}\, \mathbf{LISTED\_Dummy}_{\mathrm{it}} \\ & + \beta_{24}\, \mathbf{FOREIGN\_Dummy}_{\mathrm{it}} + \beta_{25}\, \mathbf{CRISIS}_{\mathrm{it}} + \beta_{26} \sum_{i=1}^{5} \boldsymbol{COUNTRY}_{it} \\ & + \varepsilon_{\mathrm{it}} \quad \ldots\ldots \quad (4.7) \end{aligned}$$

Where;

ROA = Return on Assets
LROA = Lag of of Return on Assets
ROE = Return on Equity
LROE = Lag of of Return on Equity
NIM = Net Interest Margin
LNIM = Lag of Net Interest Margin
SDROA = Standard deviation of ROA
LSDROA = Lag of Standard deviation of ROA
SDROE = Standard deviation of ROE
LSDROE = Lag of Standard deviation of ROE

Listed dummy and foreign dummy variables are excluded from the models of Tobin's Q as Tobin's Q is applicable only with listed banks. The above models are regressed using generalized method of moments (GMM) estimators to measure the effect of bank determinants on bank performance. The Wald Chi-square will be used to determine the explanatory power of independent variables.

4.8 Preliminary Tests of Data analysis

Before regression analysis is conducted, several tests such as normality, multicollinearity, homoscedasticity, and autocorrelation test are carried out. Hair, Black, Babin, and Anderson (2006) and Gujarati (2003) have posited that linearity, normality, multicollinearity, and heteroscedasticity are four main assumptions, that need to be tested to verify the validity of inclusion of the variables in the study in order to arrive at the best linear unbiased estimator.

4.8.1 Normality Test

This test is most fundamental in multivariate analysis. It refers to the degree to which the distribution of the sample data corresponds to a normal distribution. As suggest by Hair *et al.* (2006), residual (the difference between the observed and predicted values for dependent variable) plots and statistical tests are used to check the normality of the data. The statistical test used to check for normality in this study is kolmogorov-smirnov test or shapiro-wilk test and skewness and kurtosis test.

4.8.2 Linearity

As stated by Osborn and Waters (2002), the assumption of a linear relationship in regression analysis between dependent and independent variable may result in Type-I and Type-II error. Cohen, Cohen, West, and Aiken (2003) and Pedhazur (1997) suggest that it may be relevant to look into a possible theoretical justification or empirical work in assuming a linear relationship between the variables. The plot of residuals may also be looked into in this regard as suggested by Osborn and Waters (2002).

4.8.3 Multicollinearity Test

The main objective of this test is to estimate the correlation between the independent variables. To estimate the impact of multicollinearity, there are two tests which are tolerance value and the variance inflation factor (VIF).Tolerance value demonstrates the variability of the specified independent variable that is not clarified by alternate by the other variables in the model. Pallant (2007) argues that the tolerance value below 0.10 indicates presence of multicollinearity (multiple relationships with other variables may be high). On the other hand, VIF value is the opposite of the tolerance value, whereby VIF values over 10 demonstrate multicollinearity.

4.8.4 Heteroscedasticity Test

Hair *et al.* (2006) argue that when the variance of error terms appears constant over a range of independent variables, the data is said to be homoscedastic. On the other hand, heteroscedasticity show the distortion that exists in the regression analysis where error term shows no variance similarity. The problem of heteroscedasticity may be determined through the use of Park Test or Glejser Test, Breuch-Pagan Godfrey Test, White General Heteroscedasticity Test (Gujarati, 2003; Wooldridge, 2009). Hair *et al.* (2006) and Gujarati (2003) argue that the problem of heteroscedasticity may be resolved through the use of WLS and GMM methods or by data transformation.

4.9 Technique of Data Analysis

There are several methods that can be used to measure the bank performance. For example, Saghi-Zedek and Tarazi (2014) use the GLS to investigate the determinants of bank profitability and risk in Europe during the period 2000-2010. Furthermore, Lepetit *et al.* (2008) examine the determinants of banks performance during 1996-2002 using ordinary least square (OLS) method. Chen and Liao (2011) analyze the profitability of both domestic and foreign banks in 70 countries during 1992-2006 using random effects method. However, Baltagi (2008) stress that fixed effect and random effect are biased in a dynamic model of panel data. He also argues that pooled OLS is biased and inconsistent even if ε_{it} are not serially associated.

Furthermore, García-Herrero *et al.* (2009) argue that when estimating bank performance, the researcher faces a number of challenges. First, endogeneity may make the results biased. As an example, more profitable banks may be able to increase their equity more easily by retaining profits. They can also pay more for advertising campaigns and increase their size, which in turn may affect profitability. However, the causality can also go in the opposite direction as more profitable banks may hire more personnel, reducing their operational efficiency. Second, unobserved heterogeneity across banks cannot be measured accurately. Hence, in order to solve these problems, GMM estimates can be used. This methodology accounts for endogeneity. Arellano and Bond (1991) suggest that consistency and efficiency gains can be obtained by using all available lagged values of the dependent variable plus lagged values of the exogenous regressors as instruments. Arellano (2003) and Baltagi (2008) stress that GMM methodology control for unobservable heterogeneity and endogeneity and provides estimators with a superior efficiency compared with other estimation methods such as conventional static panel data regression model (Jara-Bertin *et al.*, 2014).

Yet, the Arellano and Bond estimator have been criticized when applied to panels with very small T, the argument being that under such conditions this estimator is inefficient if the instruments used are weak (Arellano & Bover, 1995). However, in the present study T=16, which is large enough to avoid such problems. Consequently, the study will proceed with the estimation of its model using the estimator in the Arellano and Bond paradigm. Most importantly, GMM accommodates possible endogeneity of dependent variables of this study and some of the explanatory variables in its models by means of appropriate instruments. The system GMM estimator uses lagged values of the dependent variable in levels and in differences as instruments, as well as lagged values of other regressors which may potentially suffer from endogeneity. The latter problem may lead to a correlation between those endogenous variables and the error term and too inconsistent estimates if not properly taken care of.

Lee and Hsieh (2013) argue that GMM model is particularly well-suited to handling short macro panels with endogenous variables and is also helpful in amending the bias induced by omitted variables in cross-sectional estimates and the inconsistency caused by endogeneity. It is rather convenient that the dynamic GMM technique at the same time allows us to control for the endogeneity bias induced by reverse causality running from profit (or risk) to banking capital and other explanatory variables. This estimation technique is particularly suitable for small T and large N samples such as this study. Köhler (2012), using System GMM is appropriate for at least two reasons. First, the variables used to describe a bank's business model are potentially endogenous as outlined above. Second, first differencing the regression equation to eliminate the bank-specific effects would lead to a correlation between the lagged dependent variable and the error term. Furthermore, the ability of a bank to channel funds efficiently across a continent or even across the regions within the continent is limited despite ongoing financial integration (Bos

& Kool, 2006). In addition, bank-specific variables such as bank capital, liquidity, size, charter values are considered to be endogenous.

GMM estimator is used in the current study due to the fact that a number of problems in estimating the determinants of bank profitability including unobserved heterogeneity, endogeneity, profit persistence, and autocorrelation cannot be solved by OLS and fixed effects (Poghosyan & Hesse, 2009; Tan, 2016). Furthermore, the estimator of system GMM addresses the unit root property problem and provides more accurate findings (Bond, 2002). In addition, Driffill, Psaradakis, and Sola (1998) indicate that a conventional OLS analysis of the actual change in the short rate on the relevant lagged term spread yields coefficients with some wrong signs and the wrong size. Lee, Liang, Lin, and Yang (2015), Guidara *et al.* (2013), and Hall (2005) stress that GMM estimation more efficient estimator than 2SLS or 3SLS estimation because it accounts for heteroskedasticity. Dietrich and Wanzenried (2011) argue that dynamic panel estimation is more appropriate in generating unbiased and the consistent estimates. Finally, the estimation methods based on the OLS principle are vulnerable to the omitted variable bias if some important determinants of bank performance are not included among explanatory variables. The system GMM method is also robust to the omitted variable problem (Poghosyan & Hesse, 2009).

There are two types of GMM estimator have been used in the literature to estimate dynamic panels: First, the difference GMM estimator developed by Arellano and Bond (1991), and second, the system GMM estimator developed by Arellano and Bover (1995). In the difference GMM, the data is first-differenced to eliminate fixed effects, while in system GMM, data is estimated simultaneously in differences and levels. Blundell and Bond (1998, 2000) and Lee and Hsieh (2013) argue that the system GMM performs better than the difference GMM because it is more robust to improve efficiency gains and may reduce the finite sample bias. Sarafidis, Yamagata, and Donald Robertson (2009) also argue that the system GMM may probably deal with serial correlation better in unbalanced panel data as in this study. Therefore, this study prefers the system GMM due to the fact that the estimator of system GMM addresses the unit root property problem and provides more accurate findings (Bond, 2002; Tan, 2016).

To test the validity of the instruments, the Sargan test of over-identifying restrictions is used where the null hypothesis of the error term is uncorrelated with the instruments. In this case, one should get high Sargan p-value (p-value is insignificant) in order for the instruments to be valid. Furthermore, to test the autocorrelation, the Arellano-Bond test for autocorrelation has a null hypothesis of no autocorrelation and is applied to the differenced residuals. The presence of first-order autocorrelation, AR (1), does not imply that the estimates are inconsistent. The presence of second-order serial correlation, AR (2), would render the GMM estimator inconsistent and this is the most important test. For this reason, the result for AR (2) should not reject the null hypothesis to ensure the consistency of the GMM estimator.

System GMM estimator has one- and two-step alternative. According to Castro (2013) and Lee and Hsieh (2013), for the system GMM, the two-step GMM estimator is usually more efficient than the one-step GMM estimator because it is more robust to the weak instruments problem. Moreover, Windmeijer (2005) presents a corrected variance estimate for the two-step estimator and has produced more accurate inferences than that of the one-step estimator due to lower bias and standard errors. For these reasons and in line with the previous study of Sissy *et al.* (2017), Yang and Shao (2016), Kasman and Kasman (2015), Trinugroho *et al.* (2014), Castro (2013), Guidara *et al.* (2013), Lee and Hsieh (2013), Fiordelisi *et al.* (2011), Hsieh and Lee (2010), Liu and Wilson (2010), Flamini *et al.* (2009), García-Herrero *et al.* (2009), Maudos and Solís (2009), Detragiache *et al.* (2008),and Goddard *et al.* (2004a, 2004b), this study uses the two-step system GMM estimator with Windmeijer (2005) corrected standard error to conduct its analysis. In this study, the regression models for bank performance analysis that cover the period 1996-2015 are estimated using the orthogonal deviations option using STATA 13.

4.10 Chapter Summary

This chapter depicts the research framework, hypotheses, research design, operational definition of variables, data collection and techniques of data analysis. The present study investigates the relationship of bank characteristics, macroeconomic factors, financial structure indicators, and dummy variahles with bank performance (profitability, market-based performance, and bank risk-taking) in GCC countries as aggregate and in every GCC country. The analysis is carried out in five main models: in the first model, main determinants of bank performance are analysed, followed by an independent analysis of each of the main bank performance determinants with CRISIS, listed, foreign, and country dummies in the second, third, fourth and fifth models respectively. The sample of the study comprises of 113 domestic-owned banks and 117 foreign-owned banks during the period of 1996 to 2015 (20 years). In this study, the number of observations is 4600 observations (20 years x 230 banks). To test the hypotheses of the study, two-step system GMM estimator is used.

CHAPTER FIVE

ANALYSIS OF RESULTS AND DISCUSSIONS

5.1 Introduction

The current chapter presents the empirical results of the analysis carried out in the study for the GCC banking sector for the period 2000 to 2015. The descriptive statistics of the variables studied are presented in the first section. The findings of the analysis to test normality, multicollinearity, homoscedasticity and auto-correlation of the variables are than considered. This chapter then focuses on the results of multiple regression analysis of the direct impacts of bank-specific characteristics, macroeconomic factors and financial structure indicators on bank performance. Conclusions are drawn in the final section.

5.2 Descriptive Statistics

Descriptive statistics explain the fundamental characteristic of the data used in the study. Table 5.1 presents the descriptive statistics of the dependent and the independent variables. The table reports the mean, standard deviation, the minimum and maximum for the complete sample, as well as the domestic and foreign banks separately. In order to check whether there exist any significant differences between the parameters used in the study, a column is added to the Table 5.1 that reports the significance level of the difference between the domestic and foreign banks by using Bonferroni, Scheffe and Sidak multiple comparison tests.

From Table 5.1, it is observed that the mean ROA, ROE, and NIM for the domestic banks are 1.30, 8.68 and 3.21 respectively compared to 1.80, 9.98 and 5.10 respectively for the foreign banks. This indicates that ROA, ROE, and NIM of foreign banks are significantly (10 percent level for ROA and one percent level for ROE and NIM) higher than that of domestic banks. These results are inconsistent with the findings of Abraham (2013) for banks in Saudi Arabia. The higher level of profitability (ROA, ROE, and NIM) of foreign banks can be explained by the fact that foreign banks have advantages in engaging in more diversified activities compared to domestic banks. With regard to the other dependent variables, the average of Tobin's Q (0.48) value of the listed banks in the GCC economies is lower than one, which means that the market value of equity of these banks is lower than the book value of equity. The average of SDROA and SDROE is 2.77 and 11.11 respectively; the high average values largely result from the foreign banks in the sample (SDROA and SDROE are 4.61 and 12.48 respectively). This implies that the returns of domestic banks more stable than the returns of foreign banks over the period 1996 to 2015.

As for the independent variables, domestic banks have, on an average, a lower COST (52.86 percent). It seems that GCC domestic banks enjoy a cost advantage over foreign banks but are less profitable, as mentioned above. Domestic banks have however a lower ratio of NIR (37.43 percent) than foreign banks (65.98 percent), which means that foreign, banks more diversified base of income than domestic banks. The mean OPC of keeping reserves for domestic banks (0.25 percent) is lower than the mean for foreign banks (0.27 percent) but the statistical difference between the means is not significant. The average LR of GCC banks are 63.04 percent; the high value is mainly due to domestic banks (80.01 percent). This indicates that foreign banks are more liquid (lower liquidity risk) than domestic banks. Likewise, the mean of DMDEP for domestic banks (68 percent) is higher than the average of DMDEP for foreign banks (41 percent).

Table 5.1

Descriptive Statistics of Variables

Variable	All banks					Domestic Banks				Foreign Banks				Sign. of diff. btw the means of dom and for banks
	Obs	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	
ROA	2722	1.59	5.17	-44.35	15.29	1.30	5.39	-80.80	15.29	1.80	7.09	-68.17	15.27	*
ROE	2721	9.16	29.53	-946.05	64.06	8.68	32.57	-946.05	52.77	9.98	23.62	-150.45	64.06	***
NIM	2689	4.28	5.95	-26.27	15.95	3. 21	2.82	-26.27	31.00	5.10	8.46	-40.00	39.93	***
Tobin's Q	757	0.48	0.28	0.09	2.59	0.48	0.28	0.09	2.59	....	--	--	--	--
SDROA	2343	2.77	4.64	0.02	33.54	1.88	4.34	0.02	37.80	4.61	4.48	0.08	21.67	***
SDROE	2342	11.11	28.90	0.18	435.33	9.68	32.44	0.22	435.33	12.48	19.17	0.18	138.07	*
COST	2692	56.17	69.66	4.78	950.00	52.86	69.15	9.57	950.00	60.45	64.54	0.59	771.88	*
NIR	2672	47.44	38.17	-437.93	225.00	37.43	30.53	-437.93	225.00	65.98	43.05	-131.57	212.71	***
OPC	2714	0.25	0.23	0.00	4.59	0.25	0.23	0.00	4.59	0.27	0.24	0.00	0.99	--
LR	2401	63.04	48.40	0.16	339.29	80.01	39.87	0.67	354.19	55.27	56.90	0.16	248.75	*
DMDEP	2462	61.32	25.56	0.00	97.88	68.28	24.14	0.00	94.11	40.53	24.71	0.00	122.43	***
MR	2604	24.84	23.42	0.13	96.25	19.20	16.60	0.23	96.25	34.32	25.85	0.13	85.99	***
NPLs	2568	8.50	12.53	0.10	99.51	7.35	11.66	0.01	99.51	13.98	16.31	0.11	67.73	*
LLPs	2595	1.38	7.14	-66.67	80.13	1.48	7.95	-56.60	167.98	1.39	10.91	-66.67	75.32	--
CAR	2713	30.49	25.17	-51.55	99.82	24.46	23.44	-15.69	99.78	49.86	26.62	-51.55	99.24	***
LOAN	2575	~~43.83~~	28.63	0.15	99.51	~~51.81~~	24.12	0.27	99.40	~~30.11~~	28.83	0.15	99.51	***
LNGRTH	2498	25.30	118.43	-100.00	2333.39	24.64	90.07	-100.00	1868.79	23.19	141.86	-100.00	2333.39	--
SIZE	2711	14.52	1.85	8.87	18.81	15.13	1.82	9.40	18.81	13.38	1.67	8.12	17.28	***
OBSs	2476	23.57	31.16	0.11	314.26	29.12	28.20	0.02	314.26	12.92	21.96	0.11	275.89	***
GDP	2722	5.01	4.46	-7.08	26.17	5.20	4.28	-7.08	26.17	4.87	4.82	-7.08	26.17	
INF	2722	3.21	3.15	-4.86	15.05	2.88	3.19	-4.86	15.05	3.27	2.93	-4.86	15.05	
RIR	2695	1.54	9.14	-19.93	43.50	1.55	8.94	-19.93	43.50	1.32	9.69	-19.93	43.50	
FDI	2706	21.00	1.98	15.10	24.40	20.88	1.98	15.10	24.40	20.65	2.08	15.10	24.40	
OIL	2722	9.31	25.27	-47.77	57.08	9.78	26.78	-47.77	57.08	10.67	23.16	-47.77	57.08	
HHI	2714	56.54	238.32	0.00	3508.17	89.64	303.79	0.00	3508.17	7.10	35.40	0.00	651.74	***
MARKE_CAP	2722	67.58	37.79	5.49	196.71	65.79	37.18	5.49	196.71	76.68	38.56	5.49	196.71	
DCPS	2722	54.03	15.05	24.37	85.17	50.58	14.87	24.37	85.17	57.41	14.42	24.37	85.17	

The table reports descriptive statistics of the variables used in the regression analyses by type bank. Data is annually and covers the years 2000-2015. Differences between the means of domestic and foreign banks that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively and are based on Bonferroni, Scheffe and Sidak multiple comparison tests. ROA is net profits over average total assets; ROE is net profits over average total equity; NIM is net interest income divided total assets; Tobin's Q is the market value of equity plus book value of debt divided book value of assets. The independent variables are operating expenses to total income (COST), non-interest revenue to total revenue (NIR), liquid reserves to total assets (OPC), liquidity risk measured by loans divided by customers and short-term funding (LR), demand deposit to total deposits (DMDEP), market risk measured by total amount of investments in security divided total assets (MR), non-performing loans to total loans (NPLs), loan loss provision to total loans (LLPs), capital adequacy ratio measured by equity to total assets (CAR), loans to total assets (LOAN), annual growth rate of total loan (LNGRTH), the natural logarithm of the total assets value (SIZE), off-balance sheet divided total assets (OBSs), Annual growth Rate of GDP (GDP), Inflation Rate (INF), real interest rate (RIR), the natural logarithm of the FDI inflow value (FDI), annual oil spot price change (Dollars per Barrel) (OIL), Herfindahl index measured by sum of the squared each bank's total assets to total banking sector assets (HHI), stock market capitalization measured value of listed shares relative to GDP (MARKE_CAP), and credit to private sector measured by value of domestic credit to the private sector to GDP (DCPS). Note: Banks with negative equity will be removed from the regressions analysis.

The significant difference, at the level of one percent, between the means of MR for both domestic and foreign banks indicate that foreign banks have more investment in the securities (34.32 percent) compared to domestic banks (19.20 percent). On the average, NPLs ratio at the aggregate level is 8.5 percent; the higher value is due to the foreign banks where the value of the said ratio is 13.98 percent. Furthermore, the LLPs ratio indicates that the quality of the credit portfolio and the allocation efficiency in the credit market are quite lower for foreign banks than for domestic banks in GCC. Bank capitalization or CAR between the banking groups is significantly different (at one percent). In general, GCC banks have maintained a much higher level of CAR than the minimum required level of eight percent: foreign banks (almost 50 percent) are better capitalized than domestic banks (around 25 percent). Support from their respective parent banks explains the strong capital base of the branches of foreign banks in the host countries.

The mean value of LOAN of GCC banks is 43.83 percent; the higher value of this ratio is due to the domestic banks (51.81 percent). The mean value of LOAN of domestic banks is lower compared to Khediri *et al.* (2015), which report LOAN was 55 percent for the period (2003-2010) of their study. The higher mean LOAN indicates the higher participation of banks in extending loans. Likewise, domestic banks have slightly higher mean value of LNGRTH (24.64 percent) compared to foreign banks (23.19 percent), which confirms that domestic banks are more focused on loan growth. The table also shows that there is a significant difference (at the level of one percent) between the SIZE of both domestic and foreign banks in GCC economies. In fact, domestic banks have the larger size in terms of total assets compared to foreign banks. Similarly, results indicate that domestic banks have higher OBSs. OBSs average 29.12 percent for the domestic banks versus 12.92 percent for foreign banks. The difference between the two groups of banks is statistically significant at one percent level for this variable, which indicates that domestic banks are more engaged in OBSs activities.

With regards to the macroeconomic and industry environment in GCC region, the table shows that macroeconomic environment in GCC countries is more stable than the industry environment during the under reference period. The mean GDP growth, INF, RIR, the natural logarithm of FDI, and OIL are 5.01, 3.21, 1.54, 2, and 9.31 percent respectively at the aggregate level. The HHI as a measure of bank concentration on average amounts to 56.54 percent. Domestic banks have a significantly higher market concentration than foreign banks in GCC economies (significant at one percent level). The average of MARKE_CAP and DCPS relative to GDP are 67.58 and 54.03 respectively, which is quite high compared to other countries (Naceur & Omran, 2011).

Overall, it is observed that there are significant differences among the domestic and foreign banks in terms of various parameters during the study period: all the parameters excepting OPC, LLPs, and LNGRTH are significantly different between the domestic and the foreign banks operating in GCC economies. The differences in the value of the variables between the banks may due to the differences in the bank's policies, lending guidelines, ability to do diversified business, financial support by government or support from parent banks.

5.3 Normality Test

Table 5.2 provides the findings of Kolmogorov-Smirnov and Shapiro-Wilk tests, which estimate the normality of the distribution of the study parameters. The findings of the normality test are presented in Table 5.2.

Table 5.2
Test of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
ROA	.120	705	.000	.807	705	.000
ROE	.056	705	.000	.971	705	.000
NIM	.132	705	.000	.819	705	.000
Tobin's Q	.124	705	.000	.866	705	.000
SDROA	.343	705	.000	.333	705	.000
SDROE	.397	705	.000	.192	705	.000

Normality assumptions: If the p-value of the variable is less than 0.05 (p-value<0.05), the results are significant and the distribution of the data is not normal; while if p-value of the variable is more than 0.05 (p-value>0.05), the result is not significant and the distribution is normal. In this study, the results as presented in Table 5.2 shows that the p-values of the dependent variables are less than 0.05, which clearly indicate that the variables are significant and follow a non-normal distribution.

Furthermore, Hair *et al.* (2006) argue that skewness and kurtosis tests are tests to check for the normality in data distribution. Table 5.3 shows the results for the test of skewness and kurtosis.

Table 5.3
Skewness and Kurtosis Test

	Skewness			Kurtosis			Normal
	Statistic	Std. Error	Z-Value	Statistic	Std. Error	Z-Value	
ROA	2.18	0.05	41.91	5.82	0.10	56.05	Non
ROE	0.64	0.05	12.42	0.49	0.10	4.69	Non
NIM	1.51	0.05	28.88	4.41	0.10	42.19	Non
Tobin's Q	2.41	0.09	27.12	10.70	0.18	60.27	Non
SDROA	3.08	0.06	53.96	11.15	0.11	97.82	Non
SDROE	9.74	0.06	170.78	124.17	0.11	1089.32	Non
COST	7.32	0.05	140.02	67.61	0.10	646.84	Non
NIR	1.23	0.05	23.43	1.61	0.10	15.38	Non
OPC	5.08	0.05	97.66	71.48	0.10	687.30	Non
LR	1.48	0.06	26.30	4.16	0.11	37.11	Non
DMDEP	-0.95	0.06	-17.16	-0.41	0.11	-3.74	Non
MR	1.22	0.05	22.83	0.63	0.11	5.91	Non
NPLs	3.28	0.06	52.97	13.08	0.12	105.62	Non
LLPs	8.17	0.06	146.64	83.37	0.11	748.82	Non
CAR	1.43	0.05	27.42	0.91	0.10	8.70	Non
LOAN	-0.10	0.05	-1.86	-1.20	0.11	-11.14	Non
LNGRTH	13.55	0.05	247.47	227.68	0.11	2080.02	Non
SIZE	-0.19	0.05	-3.57	-0.41	0.10	-3.90	Non
OBSs	3.81	0.06	69.26	23.94	0.11	217.48	Non
GDP	1.60	0.05	30.77	4.53	0.10	43.60	Non
INF	1.73	0.05	33.37	2.87	0.10	27.68	Non
RIR	3.32	0.05	63.47	12.39	0.10	118.60	Non
FDI	-1.93	0.05	-36.93	12.67	0.10	121.44	Non
OIL	0.74	0.05	14.28	-0.41	0.10	-3.99	Non
HHI	9.02	0.05	172.95	98.66	0.10	946.51	Non
MARKE_CAP	0.93	0.05	17.97	0.85	0.10	8.20	Non
DCPS	0.04	0.05	0.84	-1.13	0.10	-10.89	Non
LISTED_Dummy	0.24	0.05	4.53	-1.95	0.10	-18.72	Non
FOREIGN_Dummy	0.32	0.05	6.18	-1.90	0.10	-18.26	Non
CRISIS	1.96	0.05	37.81	1.86	0.10	17.88	Non
Dummy_BHR	1.07	0.05	20.56	-0.86	0.10	-8.29	Non
Dummy_KWT	1.48	0.05	28.53	0.19	0.10	1.88	Non
Dummy_OMN	2.65	0.05	51.10	5.05	0.10	48.61	Non
Dummy_QAT	3.21	0.05	61.87	8.33	0.10	80.24	Non
Dummy_SAU	2.48	0.05	47.68	4.13	0.10	39.81	Non

Note: Z-value (skewness) = skewness/std. error skewness; Z-value (kurtosis) = kurtosis/std. error kurtosis

Hair *et al.* (2006) suggest that the most commonly used critical value are +1.96 (0.05 significance level) and +2.58 (0.01 significance level), which can be compared with the Z-value from kurtosis and skewness of the variables. Table 5.3 shows that the calculated Z-value for kurtosis and skewness exceeded the specified critical values, and therefore suggests that the distributions of the sample are not normal as per Shapiro-Wilk and Kolmogorov-Smirnova test.

Pallant (2007) and Hair *et al.* (2006) argue that in a large sample (N>100 observations), violation of normality assumption should not cause any major problems. Gujarati (2003) argues that in a large sample (N>30 observations), the normality assumption does not assume a critical role and may be relaxed because non-normality will not affect the findings of regression analysis. In the present study, the sample size is very large (N=3600 observations), thus the violation of the normality assumption may not become a serious problem.

5.3 Multicollinearity Analysis

Table 5.4 shows the results of the Multicollinearity Diagnostic Test which is used to test the multicollinearity problems in the variables included in the analysis of the study model. Hair *et al.* (2006) stress that multicollinearity problems exist when the values of VIF are higher than 10 or the values of Tolerance are less than 0.10. In this case, Table 5.4 shows that there is no evidence of multicollinearity problem between the variables of this study. All the study variables have VIF that is less than 10 and the Tolerance are more than 0.10. The values of VIF test are recorded between 1.14 and 4.35.

Furthermore, Pallant (2007) stresses that the correlation analysis can also be used to identify the existence of multicollinearity problems between the independent variables, which may influence their association with the dependent variable. Table 5.5 shows the correlation analysis between the study variables.

Table 5.4
Multicollinearity Diagnostic Test

Variables	Tolerance	VIF
COST	.752	1.330
NIR	.475	2.104
OPC	.582	1.717
LR	.645	1.550
DMDEP	.240	4.168
MR	.485	2.061
NPLs	.629	1.589
LLPs	.800	1.251
CAR	.247	4.053
LOAN	.385	2.596
LNGRTH	.876	1.141
SIZE	.289	3.461
OBSs	.726	1.378
GDP	.558	1.794
INF	.495	2.022
RIR	.540	1.851
FDI	.359	2.787
OIL	.593	1.688
HHI	.717	1.395
MARKE_CAP	.436	2.295
DCPS	.246	4.059
LISTED_Dummy	.342	2.922
FOREIGN_Dummy	.230	4.346
CRISIS	.432	2.312
Dummy_BHR	.329	3.038
Dummy_KWT	.255	3.915
Dummy_OMN	.368	2.720
Dummy_QAT	.386	2.590
Dummy_SAU	.283	3.531

Table 5.5

Correlation Matrix

	ROA	ROE	NIM	TobinsQ	SDROA	SDROE	COST	NIR	OPC	LR	DMDEP	MR	NPLs	LLPs
ROA	1													
ROE	.550***	1												
NIM	.197***	.243***	1											
Tobin`s Q	.463***	.352***	.040	1										
SDROA	-.027	-.315***	-.320***	.260***	1									
SDROE	-.104***	-.144***	-.146***	.086**	.418***	1								
COST	-.233***	-.342***	-.216***	.008	.438***	.136***	1							
NIR	.170***	-.157***	-.581***	.224***	.378***	.128**	.188***	1						
OPC	.078***	.010	-.107***	.119***	-.027	.014	.017	.096***	1					
LR	.003	.024	.348***	-.140***	-.075***	-.052**	-.076***	-.301***	-.164***	1				
DMDEP	.316***	.260***	.075***	.323***	-.455***	-.058**	-.202***	-.415***	.003	-0.045*	1			
MR	.190***	-.160***	-.326***	.169***	.349***	.069***	.080***	.445***	-.026	-.344***	-.408***	1		
NPLs	.045	-.190***	-.115***	.044	.405***	.310***	.242***	.299***	.107***	-.171***	-.236***	.300***	1	
LLPs	-.080***	-.188***	-.120***	.037	.266***	.135***	.100***	.168***	-.011	-.098***	-.138***	.222***	.352***	1
CAR	.341**	-.345***	-.012	.346***	.454***	.009	.241***	.347***	.072***	.049**	-.793***	.412***	.324***	.085***
LOAN	-.100***	.201***	.425***	-.156***	-.321***	-.093***	-.202***	-.536***	-.254***	.472**	.322**	-.614***	-.367***	-.222***
LNGRTH	.150***	.004	.0001	.165***	0.046*	-.002	.056**	0.043*	.010	.009	-.067***	-.001	-.093***	-.012
SIZE	-.276***	.268***	-.081***	-.257***	-.433***	-.082***	-.228***	-.257***	-.089***	.006	.567***	-.343***	-.397***	-.175***
OBSs	-.014	.199***	.142***	-.064	-.131***	-.056**	-.120***	-.147***	-.036	.101***	.221***	-.225***	-.175***	-.096***
GDP	.194***	.228***	.027	.238***	-.119***	-.070***	-.099***	-.002	.075***	-.027	.013	-.001	-.068***	-.078***
INF	.044**	.076***	.004	.126***	.030	.017	-.059***	.044**	-.028	.043	.052**	-.046**	-.125***	-.009
RIR	-.137***	-.165***	-.024	-.073**	.082***	.041	.071***	-0.042*	-.004	.015	-.0001	-.010	.024	0.039*
FDI	-.104***	0.028**	.049***	-.068	.105**	0.043*	-.057***	-.113***	-.111***	.147***	.155***	-.222***	-.184***	-.021
OIL	.100***	.133***	0.035*	.279***	0.007*	0.007*	-.043**	.029	.047*	-.053**	.005	.014	.008	-.019
HHI	-.067***	.099***	-.012	-.026	-.122***	-.050**	-.064***	-.105***	-.021	.014	.168***	-.078***	-.096***	-.055**
MARKE_CAP	.305***	.190***	-.126***	.538***	.097***	0.041*	-.022	.197***	.108**	-.144***	-.140***	.218***	.033	.014
DCPS	-.093***	-.360***	-.212***	-.210***	.356***	.152***	.160***	.253***	.009	-.076***	-.240***	.159***	.097***	.142***
CRISIS	-.135***	-.138***	-.018	0.068**	.123***	.062***	.083***	.000	-.018	.002	-.013	-.026	-.066***	.047**

***. Correlation is significant at the 0.01 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed).
*. Correlation is significant at the 0.10 level (2-tailed).

Table 5.5
Continued

	CAR	LOAN	LNGRTH	SIZE	OBSs	GDP	INF	RIR	FDI	OIL	HHI	MARKE_CAP	DCPS	CRISIS
ROA														
ROE														
NIM														
Tobinsq														
SDROA														
SDROE														
COST														
NIR														
OPC														
LR														
DMDEP														
MR														
NPLs														
LLPs														
CAR	1													
LOAN	-.327***	1												
LNGRTH	.068***	-.019	1											
SIZE	-.617***	.231**	-.073***	1										
OBSs	-.214***	.256***	-.007	.107***	1									
GDP	.002	-.024	.068***	.021	.024	1								
INF	-.014	.029	.077***	.083***	.059***	.205***	1							
RIR	.001	.015	-0.042*	-.034	-.027	-.191***	-.177***	1						
FDI	-.117***	.139**	-.001	.236***	.046**	.080***	.304***	-.121***	1					
OIL	-.002	-.039	-.002	-.071***	.069***	.319***	.217***	-.377***	-.049**	1				
HHI	-.156***	.082***	-.025	.280***	.057**	.096***	-.006	.015	-.058***	.019	1			
MARKE_CAP	.156***	-.247***	.092***	.000	-.201***	.300***	.025	-.065***	-.196-**	.117***	.047**	1		
DCPS	.169***	-.212***	.003	-.056***	-.217***	-.328***	-.013	.237***	-.061***	-.252***	-.128***	.064***	1	
CRISIS	-.001	-.007	-.008	.024	-.035	-.121***	.388***	.412***	.091***	.078***	-.031	-.076***	.284***	1

***. Correlation is significant at the 0.01 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed).
*. Correlation is significant at the 0.10 level (2-tailed).

As shown in Table 5.5, the values of the correlation coefficients are less than 0.90 which is the benchmark to identify multicollinearity problems (Pallant, 2007). Hence this study does not show existence of multicollinearity between the independent variables of the study. Hence, all the independent variables are justified for inclusion in the model.

5.4 Homoscedasticity Analysis

This study uses the Breusch-Pagan-Godfrey test to identify the existence of heteroskedasticity problem. The results find that the *p*-value is significant ($p<0.01$), suggesting that null hypothesis of homoscedasticity is rejected, which means that there is a heteroscedasticity problem in the study model. To control for this, Gujarati (2003) argues that White's General Heteroscedasticity test is suitable for non-normal data as the test does not rely on normality assumption. The system GMM estimator also controls for unobserved heterogeneity problem (Areliano & Boverb, 1995)

5.5 Auto-Correlation Analysis

Wooldridge (2009) and Gujarati (2003) argue that AR (1) and AR (2) models are the most common procedures and are widely used to correct auto-correlation problems, which should be tested for autocorrelation before regression analysis. The results of AR(1) and AR(2) tests for the six dependent variables (Tables 5.6, 5.8, 5.10, 5.12, 5.14, & 5.16) indicate that average auto-covariance in residuals of order one is zero (H0: no autocorrelation).

5.6 Regression Analysis

Taking into account the problems that exist in the data like auto-correlations, homoscedasticity, and normality problem, the regression analysis for this study is managed by using GMM estimation (Arellano & Bond, 1991). GMM method is more appropriate to solve several problems such as unobserved heterogeneity, endogeneity, profit persistence and autocorrelation which cannot be solved by fixed effect (Tan, 2016). If there is endogeneity, using the OLS estimation leads to inconsistent and biased estimates (Lee *et al.*, 2015).

In the present study, as bank performance is measured by ROA, ROE, and NIM for profitability, Tobin's Q for the market-based shareholder value, and SDROA and SDROE for bank-risk taking orientation, regression results on each of the six dependent variables are shown in the next subsections.

5.6.1. Empirical Results for Profitability Measures

This section discusses the findings for the bank profitability measures used in the study which are ROA, ROE, and NIM.

5.6.1.1. Empirical Results for the ROA

Table 5.6 reports the empirical results of the regression analysis of various driver variables and a combination thereof on ROA. There are eight columns in Table 5.6; column one presents the determinants of bank-specific factors in the study model. Column two presents the results of the model with bank-specific and macroeconomic indicators. Column three reports the results using determinants of the bank-specific and financial structure indicators. Column four reports the results of the full model with bank-specific, macroeconomic, and financial market indicators. Column five reports the estimation that is controlled for LISTED_Dummy. Column six reports the outputs that are controlled for FOREIGN_Dummy. Column seven controls for the financial crisis as a dummy variable, while Column eight controls for country dummies. In order to identify the stability of the coefficients and their significance as well as to get more robust results, the analyses first include the first three columns. Furthermore, to get more robust findings and to avoid the noise on the main variables of interest that may distort the findings, the analysis involving dummy variables are estimated separately.

It is argued that the estimation techniques, which from the foundation of any econometric analysis, must be carefully specified. As noted above in Chapter four, the GMM estimator by Blundell and Bond (2000) and Areliano and Bover (1995) is used in the regression model to estimate bank performance: the presence of a lagged dependent variable (ROA_{t-1}) among the explanatory variables leads to the correlation between ROA_{t-1} and the error term (endogeneity problem). For this reason, the GMM estimator is used to alleviate the endogeneity problem by taking into consideration dynamic adjustment of the dependent variable.

In addition, the estimation of GMM dynamic model is efficient and consistent if it satisfies two conditions: First, the *p*-value result of Sargan test should give a non-significant result. The Sargan test of over-identifying restrictions is used to assess the validity of the overall instruments. Second, the test of the second-order of the Arellano-Bond serial correlation or AR (2) should also give a non-significant result. AR (2) test detects the autocorrelation in the model. For instruments, Arellano and Bond (1991) suggest that all available lagged values of the dependent variables and exogenous regressors can be used as instruments. In this study, following Arellano and Bond (1991), the analysis uses one-period lag for the dependent variable

(ROA_{t-1}) and explanatory variables as instruments in the model. This study uses STATA software version 13 to report all of these values when the GMM method is applied.

As shown in Table 5.6, the estimation results have stable coefficients. The Wald-test, which explains the overall significance of the model, is found to be significant. The Sargan-test displays that there is no evidence of over-identification restrictions. In other words, the Sargan test for over-identifying restrictions fails to reject the null hypothesis in all models, indicating that the instruments used in the ROA analysis are valid.

The Arellano-Bond autocorrelation tests, AR(1) and AR(2), are also reported in Table 5.6. The AR(1) of ROA models shows that the first-order serial correlation is present in the differentiated residuals. However, this does not mean that the estimates of GMM are inconsistent. Arellano and Bond (1991) argue that the inconsistency would be implied if second-order autocorrelation is present. As shown in Table 5.6, the p-value for AR(2) fails to reject the null hypothesis of the absence of second-order serial autocorrelation. This means that the GMM estimator used to analyse the profitability of banks in this study is consistent.

As expected in the results in Table 5.6, the lagged dependent variable (ROA_{it-1}) displays a positive and highly significant coefficient across all models. This implies that there exists a high-level of the persistence of GCC banks' profitability, giving a good reason to use the dynamic model in this study. This indicates that there is a relatively competitive structure in the GCC banking sector. It also shows that the prior year's ROA of GCC banks can be used to determine their ROA for the current year: on an average, the increase in the prior year ROA by one percent led to an increase in the current year's ROA by 0.0576 percent. In other words, the prior period of profit (ROA) will enhance the profit in the next period.

Turning to other explanatory variables, the cost-to-income ratio (COST) has a negative and significant effect on GCC banks profitability (ROA). This means that the higher the COST, the lower the ROA. In other words, the higher the efficiency of bank management, the lower will be its cost and higher will be the profit of the bank. These findings are consistent with the findings of Pasiouras and Kosmidou (2007), Athanasoglou *et al.* (2008), Dietrich and Wanzenried (2011, 2014), Chen and Liao (2011), and Saghi-Zedek and Tarazi (2014) who use ROA, ROE and NIM as dependent variables, as well as with Almazari (2013) and Almumani (2014) who use ROA and ROE as dependent variables for the Saudi Arabia banking sector. Evidently, efficient cost management has enhanced the profitability of GCC banks.

With regard to non-interest revenue (NIR), the analysis finds that the relationship between NIR and profitability (ROA) of GCC banks is negative and significant at level 1 percent, suggesting that banks with growing shares of NIR tend to generate lower profits. The findings can be interpreted by the fact that banks that engage in various non-lending fee generating activities adjust their pricing of loan products to cross-subsidize (Valverde & Fernández, 2007; Lepetit *et al.*, 2008). This finding is also in line with the results of Tan (2016), Chen and Liao (2011), Calmès and Théoret (2010), and Lin and Zhang (2009), which imply that on the whole GCC banks might not have necessary technical competence to offer relevant services to generate revenues from the non-traditional activities.

Table 5.6
Regression Results for ROA as Dependent Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
$LROA_{it-1}$	.146	.106	.0607	.0637	.0597	.0643	.0619	.0576
	(.0005)***	(.0018)***	(.0012)***	(.0014)***	(.00117)***	(.00127)***	(.00122)***	(.00275)***
Bank-specific factors								
COST	-.024	-.021	-.0179	-.0163	-.0162	-.01621	-.01609	-.01775
	(.00006)***	(.00013)***	(.00007)***	(.0001)***	(.00013)***	(.00009)***	(.00014)***	(.00015)***
NIR	-.00041	-.00011	-.00048	-.00037	-.00061	-.00103	-.00039	-.00055
	(.00001)***	(.00003)***	(.00001)***	(.00003)***	(.00002)***	(.00002)***	(.00003)***	(.00004)***
OPC	2.401	2.785	1.775	1.2783	1.3337	1.82661	1.23809	1.21924
	(.0844)***	(.1841)***	(.099)***	(.156)***	(.16797)***	(.16723)***	(.19893)***	(.28466)***
LR	-.0023	-.0029	-.0058	-.0040	-.00399	-.00276	-.00406	-.00285
	(.00005)***	(.00012)***	(.00011)***	(.00009)***	(.00012)***	(.00017)***	(.00012)***	(.00020)***
DMDEP	.0165	.026	.0427	.0316	.0336	.03503	.03115	.02984
	(.0007)***	(.0012)***	(.0008)***	(.0014)***	(.00162)***	(.00151)***	(.00162)***	(.00178)***
MR	-.0161	-.0186	-.0226	-.0410	-.0367	-.01484	-.04072	-.03912
	(.001)***	(.0014)***	(.0013)***	(.0016)***	(.00118)***	(.00222)***	(.00174)***	(.00334)***
NPLs	-.0194	-.035	-.0341	-.0412	-.04143	-.04413	-.04134	-.03625
	(.00015)***	(.0004)***	(.0002)***	(.0004)***	(.00031)***	(.00037)***	(.00032)***	(.00067)***
LLPs	-.389	-.377	-.3829	-.3893	-.3934	-.39270	-.39102	-.39796
	(.0014)***	(.0022)***	(.0012)***	(.0022)***	(.00266)***	(.00240)***	(.00252)***	(.00316)***
CAR	.2191	.2333	.2466	.2446	.25036	.263641	.24566	.28031
	(.0006)***	(.0012)***	(.0009)***	(.0011)***	(.00142)***	(.00150)***	(.00133)***	(.00239)***
LOAN	.0982	0997	.1008	.0863	.08008	.06973	.08568	.06259
	(.0009)***	(.0013)***	(.0012)***	(.002)***	(.00142)***	(.00213)***	(.00224)***	(.00259)***
LNGRTH	-.00054	-.00073	-.0048	-.0050	-.0052	-.00516	-.00513	-.00614
	(.0001)***	(.0002)***	(.0002)***	(.0003)***	(.00028)***	(.00036)***	(.00031)***	(.00039)***
SIZE	.7729	.0465	.1906	.5654	.5129	.25243	.59373	.34513
	(.011)***	(.0142)***	(..016)***	(.0191)***	(.02874)***	(.02306)***	(.01956)***	(.04577)***
OBSs	.00088	.0023	.00056	.00065	.00065	.00083	.00060	**.00022**
	(.00008)***	(.0002)***	(.00008)***	(.0002)***	(.00019)***	(.00017)***	(.00018)***	**(.00015)**
Macroeconomic indicators								
GDP		.252		.1786	.17882	.18009	.17956	.16907
		(.0032)***		(.0047)***	(.00432)***	(.00392)***	(.00462)***	(.00601)***
INF		-.115		-.0746	-.06644	-.04963	-.08416	-.04927
		(.0033)***		(.0027)***	(.00428)***	(.00378)***	(.00314)***	(.00493)***
RIR		-.0025		-.0337	-.0328	-.03528	-.03577	-.03549
		(.0004)***		(.0018)***	(.00209)***	(.00161)***	(.00172)***	(.00235)***
FDI		-.3044		-.4419	-.42754	-.38140	-.44571	-.40341
		(.0078)***		(.0099)***	(.01096)***	(.01080)***	(.01111)***	(.01323)***
OIL		.0518		.0022	.00228	.00439	**.00206**	.00372
		(.0012)***		(.0006)***	(.00065)***	(.00068)***	**(.00106)***	(.00076)***
Financial structure indicators								
HHI			-.00066	-.0006	-.00073	-.00123	-.00070	-.00069
			(.0002)**	(.0003)**	(.00022)***	(.00027)***	(.00024)**	(.00027)**
MARKE_CAP			.0271	.0295	.02929	.02864	.03006	.02897
			(.0003)***	(.0004)***	(.00042)***	(.00049)***	(.00047)***	(.00052)***
DCPS			-.1302	-.0734	-.06708	-.04564	-.07694	-.05384
			(.0013)***	(.0017)***	(.00196)***	(.00123)***	(.00210)***	(.00186)***
LISTED_Dummy					2.2246			
					(.13251)***			
FOREIGN_Dummy						**-7.5580**		
						(5.15964)		
CRISIS							-.14201	
							(.02664)***	
Dummy_BHR								9.6625
								(.49496)***
Dummy_KWT								8.7409
								(.71727)***
Dummy_OMN								6.3535
								(1.1713)***
Dummy_QAT								22.509
								(2.4848)***
Dummy_SAU								22.2052
								(1.5400)***

Constant	6.188 (.172)***	.868 (.264)***	-2.0196 (.253)***	-1.853 (.411)***	-2.93945 (.45786)***	1.5579 (.48781)***	-2.06119 (.42405)***	-9.5101 (1.0756)***
No. of observations	2266	2238	2266	2238	2238	2238	2238	2238
Number of banks	171	171	171	171	171	171	171	171
Number of instruments	138	143	141	146	147	147	147	146
Wald-test X^2	75500***	6240***	12200***	81800***	379000***	195000***	120000***	17000***
Sargan test (p-value)	0.8692	0.8636	0.8108	0.8644	0.8768	0.8791	0.8637	0.8333
AB test AR(1) (p-value)	0.0443	0.027	0.0379	0.0277	0.0283	0.0280	0.0274	0.0383
AB test AR(2) (p-value)	0.4611	0.4931	0.3012	0.2957	0.2700	0.2273	0.2988	0.2458

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance using two-step GMM estimations by Arellano and Bover (1995). The dependent variable is the return on assets ROA. COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; LISTED_Dummy is a dummy takes a value of 1 for listed banks and 0 otherwise; FOREIGN_Dummy is a dummy takes a value of 1 for foreign banks and 0 otherwise; CRISIS is a dummy crisis takes a value of 1 for the years 2008–2009 and 0 otherwise; Dummy_BHR is equal to one if the bank nationality is that of the Bahrain and zero otherwise; Dummy_KWT is equal to one if the bank nationality is that of the Kuwait and zero otherwise; Dummy_OMN is equal to one if the bank nationality is that of the Oman and zero otherwise; Dummy_QAT is equal to one if the bank nationality is that of the Qatar and zero otherwise; Dummy_SAU is equal to one if the bank nationality is that of the Saudi and zero otherwise. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

In the case of the coefficient of opportunity costs (OPC), the study finds that it has a positive and highly significant association with the profitability of banks in GCC countries suggesting that banks maintaining higher reserve generate higher ROA. This suggests that as OPC of the reserve add to the cost of funds, banks obtain additional returns via compensating themselves for these costs: banks force clients to pay a price higher than the OPC of reserves. This finding is consistent with the finding of Saunders and Schumacher (2000) and Chen and Liao (2011) in across countries, as well as with Naceur and Omran (2011) in MENA region.

Liquidity risk (LR) is found to be negative and significantly related to ROA; this finding suggests that lower loans to total deposits ratio (higher liquidity) improves the profitability of GCC banks. It also indicates a positive association between the profitability of banks and the level of liquid assets held by the bank. This result is consistent with the results of Jara-Bertin *et* *al.* (2014) and Claessens *et al.* (2001) for banking sectors in across countries as well as with Tai (2014) and Srairi (2009) who find the association between loan to deposits ratio and ROA of overall GCC banks are negative.

Analysis of the study shows that demand deposit to total deposits ratio (DMDEP) has a positive and significant effect on bank profitability measured by ROA in all models, indicating that the higher the demand deposit, the higher the banks profit. The findings are consistent with the argument that demand deposit is a low-cost source of fund that adds to the profit of banks. This result also confirms the results of Smirlock (1985), Gropp and Köhler (2010), Kashian *et al.* (2014), and Jara-Bertin *et al.* (2014).

Regarding market risk (MR), current analysis finds that MR exposure of banks has a significant negative relationship with profitability (ROA) of overall GCC banks. This result in line with the findings of Fiordelisi and Molyneux (2010) as well as with the view that that banks that are more engaged in capital markets activities face negative and significant association with profits. On other hand, banks without having relevant skills in managing their MR exposure increase the share of assets invested in securities may lead to a decrease in their operating profit.

As anticipated, the results show that the association between bank profitability and the ratio of NPLs as a measure of asset quality or credit risk is negative and significant. The higher the NPLs the lower banks profit. This results confirm the finding of García-Herrero *et al.* (2009), Fungáčová and Poghosyan (2011), Apergis (2014), Daly and Zhang (2014), and Trinugroho *et al.* (2014) who suggest that poor asset quality (high NPLs) should decrease bank performance in as much as it limits the loanable resources pool of banks. This is also in line with the argument that depositors may require higher interest rates since they believe that the banks are risky and hence returns may be lower (Fungáčová & Poghosyan, 2011).

The current study finds that credit quality measured by LLPs ratio has a negative and significant effect (at one percent) on banks performance which confirms the results of Khediri *et al.* (2015) and Al-tamimi (2014) for GCC banks. The higher the LLPs the lower the bank performance. This is also not surprising; the ratio of LLPs to NPLs of banks in Saudi Arabia, a major country in GCC region, rose from 153.3 percent during financial crisis period to 194 percent in 2015. The significant increase in LLPs of GCC banks after the financial crisis has negatively affected their profitability. This result is also in line with the conclusions of Dietrich and Wanzenried (2014), Fu *et al.* (2014), Athanasoglou *et al.* (2008), and Athanasoglou *et al.* (2006) who argue that banks improve their profitability through policies that improve monitoring and screening of credit quality.

The capital adequacy ratio (CAR) measured by equity-to-total assets has a positive and significant association with bank profitability (ROA) in all the regressions, reflecting the state of financial soundness and creditworthiness of GCC banks. This indicates that in view of their stronger capital position GCC banks are able to raise funds at a cheaper rate and are able to follow business opportunities and are able to garner more profits. This result is also in line with the results of Khediri *et al.* (2015) in GCC economies.

The effect of loans to total assets ratio (LOAN) on ROA is positive and significant, this in line with the argument of Fu and Heffernan (2009) that profitability of GCC banks improves with a higher percentage of LOAN due to the higher risk. It also reflects the fact that GCC banks have the capacity to properly manage and monitor their loans portfolio very well, which enhances bank profitability. This results is consistent with Demirguc-Kunt and Huizinga (1999) and Abreu and Mendes (2001) as well as with the more recent studies of Fu and Heffernan (2009), Naceur and Omran (2011), and Olson and Zoubi (2011).

The association between loan growth (LNGRTH) and ROA is negative and significant. The higher the LNGRTH the lower the ROA of banks. This suggests that banks with higher LNGRTH, suffer from higher loan losses that adversely affect their profitability. Keeton (1999) and García-Herrero *et al.* (2009) find similar results.

Regarding bank size (SIZE), the estimation finds that the effect of SIZE on bank profitability measured by ROA are positive and significant at the level one percent suggesting that larger banks achieve higher ROA. These findings provide evidence for the theory of economies of scale and scope. The finding is also consistent with Dietrich and Wanzenried (2014) Guillén *et al.* (2014), Liang *et al.* (2013), Micco *et al.* (2007), Athanasoglou *et al.* (2006), Smirlock (1985), and Short and Keasey (1999) who find that large banks in the emerging economies tend to be more profitable. Similar findings have been reported by Almazari (2013) in Saudi Arabia and Al-Saidi and Al-Shammari (2013) in Kuwait by using ROA and NIM as dependent variables.

The association between off-balance sheet activities (OBSs) and ROA is positive and highly significant (at the level of one percent) for all GCC banks. This suggests that the activities of OBSs allow banks to enhance their profitability. This finding is consistent with the view that engaging in OBSs activities improves the scope of diversification of product lines and operations and consequently profits of the commercial banks (Mokni & Rachdi, 2014). This is also in line with results of Haq and Heaney (2012), Demirgüç-Kunt and Huizinga (2010), Tafri *et al.* (2009), Karim and Chan (2007), and Goddard *et al.* (2004) who stress that banks with rapid growth in OBSs activities face problems in maintaining their performance. GCC banks have responded to the higher pressure of competition by providing a wider range of services and products lines and are also engaged deeply in OBSs activities. However, OBSs activities also add to the riskiness of banks.

In terms of macroeconomic variables, the effect of GDP growth on bank profitability (ROA) is positive and highly significant (at the level of one percent), reflecting that banks have improved performance when the economy is prosperous; economic prosperity leads to higher demand for loan during the expansionary periods.This finding is consistent with the various studies such as Tan (2016), Dietrich and Wanzenried (2014), Saghi-Zedek and Tarazi (2014), Guillén *et al.* (2014), Lee and Hsieh (2013), Kosmidou *et al* (2005), and Demirguc-Kunt and Huizinga (1999) on different economies as well as with Srairi (2009) in GCC economies.

Turning to the inflation rate (INF), INF is found to be negatively and significantly associated (at the level of one percent) with bank profitability (ROA) suggesting that the higher the INF the lower the bank profitability. The negative and significant effect of INF on banks performance is probably due to the inability of the bank's management in GCC economies to efficiently predict INF. As a result, the GCC banks have not been able to suitably adjust interest rate to gain higher returns. Moreover, it also reflects that the managers of GCC banks have also not been able to manage their expenses well during the inflationary periods, which led to decrease in the profitability of banks. Nouaili *et al.* (2015), Pasiouras and Kosmidou (2007), and Afanasieff *et al.* (2002) have the same results for the banking sector in various countries as well as Lee and Hsieh (2013) for the Asian banking industry.

In regard to the real interest rate (RIR), study finds that the effect of RIR is negative and significant (at the level of one percent) with profitability, suggesting thereby that the GCC banks with lower RIR tend to have more profits. It also reflects that increase in the RIR paid to depositors contributes to a reduction in profits of banks. This also confirms that the GCC banks have expanded their activities of OBSs to reduce the adverse impact of the RIR caused by higher competition between banks. Lee and Hsieh (2013), Chen and Liao (2011), Staikouras and Wood (2011), and Cebula (1999) have similar results for banking sectors in various countries.

Referring to FDI inflow, FDI inflows into GCC economies have a negative and significant effect on the profitability (ROA) of overall GCC bank, with the significant coefficient at one percent level in all the regression models. This means that the higher the FDI inflows the lower GCC banks profits. This result is, however, inconsistent with the Sabi (1988) and Williams (1998a, 1998b). They argue that foreign banks follow their customers into the host country in order to maintain (defend) their bank-customer relationship and they find that FDI increases the profit of foreign banks. The GCC banks may have been adversely affected by their loss of good clients to foreign banks due to the higher competition from them. The negative effect of FDI may also due to the fact that banks from several countries have opened branches in GCC, Bahrain in particular, despite negligible levels of FDI by their clients.

In terms of oil price shocks (OIL), OIL has significant (at one percent level) and positive effect on bank performance measured by ROA, indicating thereby that the higher the OIL the higher the performance of banks. Clearly, GCC banks benefit the most from the increase in economic activity (launching of new investment projects, fee income, cheaper access to liquidity via wholesale funding market) associated with OIL. This results also in line with the finding of Poghosyan and Hesse (2009) who argue that higher OIL is related to higher liquidity and hence higher deposits inflows which are then intermediated into lending to increase profitability.

The findings regarding financial structure indicators are as follows. The empirical analysis shows that the effect of the bank concentration measured by HHI on bank performance (ROA) is negative and significant (at the level of one percent). Hence, this study finds no evidence to support the SCP hypothesis which argues that the financial institutions operating in less competitive environment (higher HHI) tend to have wider scale and scope of operations which results in an increase in their level of profit. The study finding is consistent with Short (1979), Berger (1995) and other more recent researchers such as Chronopoulos *et al.* (2015), Liang *et al.* (2013), Kanas *et al.* (2012), Tan and Floros (2012), Liu and Wilson (2010), Goddard *et al.* (2008), Athanasoglou *et al.* (2008), Kosmidou *et al.* (2007), Pasiouras and Kosmidou (2007), Park and Weber (2006), Bikker and Bos (2005), and Williams (2003) for banks in various economies, as well as Tai (2014) for the GCC banking sector, who argue that banks profit are usually adversely affected by the market concentration. Banks managers in GCC have shown no motivations to improve their efficiency to be capable enough to pass on their cost on to clients as well as they have not been able to adjust spreads in response to the adverse changes in the macroeconomic environment to achieve more profits.

For stock market capitalization (MARKE_CAP), the study finds that the effect of MARKE_CAP on bank profitability is positive and significant (at one percent level), which is consistent with the findings of Dietrich and Wanzenried (2014), Growe *et al.* (2014), Tan and Floros (2012a), Naceur and Omran (2011), Pasiouras and Kosmidou (2007), Demirguc-Kunt and Huizinga (2000, 1999), and Levine (1997). This indicates that stock market development exerts positive influence on bank performance. Stock market development contributes to improved transparency of information about the borrowers which enables better screening and monitoring by banks. This results in improved bank performance.

The ratio of domestic credit to private sector (DCPS) has a negative effect on bank performance and is statistically significant at one percent level: an increase in DCPS inflow by one unit will decrease bank profit by average 0.075 unit. In the conducive economic environment, banks tend to step-up their lending activities resulting in a highly competitive situation in the marketplace. In their eagerness to lend money banks tend to overreach the customers by relaxing their credit standards. Lee and Hsieh (2013) and Mirzaei *et al.* (2013) also find similar results.

Incorporating the dummy variables for listed and foreign banks in columns five and six does not influence the main results of the profitability measured by ROA analysis in Table 5.6. The relationship of the LISTED_Dummy variable is positive and significant, which suggests that the ROA of listed banks are higher than those of unlisted banks. This finding is consistent with the argument (Mokni & Rachdi, 2014) that listed banks have to comply with tougher rules of corporate governance which result in improving performance. Moreover, the market regulation and competitive pressure from stock markets force listed banks to increase their profitability. Saghi-Zedek and Tarazi (2014), Barry *et al.* (2011), and Nichols *et al.* (2009) have same results for European and USA banking sectors as well as Mokni and Rachdi (2014), Kobeissi and Sun (2010), and Farazi *et al.* (2011) for banking sectors in MENA countries. The insignificant coefficient of the FOREIGN_Dummy variable in column six shows that, on average, there is no significant difference between foreign and domestic banks in determining their ROA.

For global financial crisis (CRISIS), this study finds that the financial turmoil representing the impact of the CRISIS on bank performance is negative and statistically significant in GCC economies. This implies that performance of GCC banks is bad during financial turmoil. The average ROA for GCC banks drops from a value of 2.53 before the crisis (2000-2006) to 1.75 during the CRISIS (2007-2009). Furthermore, incorporating the dummy variable for CRISIS in column seven does not change the main findings of the ROA analysis with the exception of OIL. Estimation results show that the association between OIL and ROA has been distorted by CRISIS (positive and significant at 10 percent level) when positive OIL has resulted in a decrease in the profit of GCC banks due to the global financial turmoil in 2008.

For a country dummy, the positive and statistically significant value for the Bahrain, Kuwait, Oman, Qatar and Saudi Arabia suggests that the ROA of the banks in those countries are higher than that of UAE. After controlling for country dummy, the coefficient of OBSs, however, becomes positive but insignificant, while the results for other variables do not change. This implies that after including the country dummy, there is no evidence that the adoption of OBSs increases ROA, which may due to the differences in banking systems in GCC as well as technical competence in banks to handle OBSs activities.

Table 5.7
Summary of Empirical Results for ROA

Independent Variables	Expected sign	**Model 4** Full Model (sign)	**Model 5** With Listed Dummy (sign)	**Model 6** With Foreign Dummy (sign)	**Model 7** With Crisis Dummy (sign)	**Model 8** With Country Dummy (sign)
$LROA_{it-1}$		Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
COST	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
NIR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
OPC	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
DMDEP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
MR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
NPLs	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
LLPs	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
CAR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LOAN	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LNGRTH	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
SIZE	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
OBSs	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	**Insignificant (+)**
GDP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
INF	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
RIR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
FDI	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
OIL	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
HHI	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
MARKE_CAP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
DCPS	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
LISTED_Dummy			Significant (+)			
FOREIGN_Dummy				**Insignificant (-)**		
CRISIS	+/-				Significant (-)	
Dummy_BHR						Significant (+)
Dummy_KWT						Significant (+)
Dummy_OMN						Significant (+)
Dummy_QAT						Significant (+)
Dummy_SAU						Significant (+)

In conclusion, this study finds evidence that there is a relationship between bank-specific characteristics, macroeconomic and financial structure indicators, as well as global financial turmoil, with ROA of GCC banks, is also supported. Table 5.7 shows the summary of empirical results for ROA.

5.6.1.2. Empirical Results for the ROE

Table 5.8 summarizes the regression findings for the second profitability measure ROE. Similar to Table 5.6, the same set of independent variables is used in the regression of ROE as well as a similar number of eight columns. In terms of the model specification, as shown in Table 5.8, ROE estimations indicate stable coefficients. The Wald-test shows the goodness of fit for the evaluated model and the Sargan test for over-identifying restrictions fails to reject the null hypothesis in all columns, indicating that the instruments used in the ROE analysis are valid. Furthermore, the p-value for AR(2) in all columns fails to reject the null hypothesis of the absence of second-order serial autocorrelation. This means that the system GMM estimator used to analyse the ROE in this study is consistent.

From Table 5.8, as expected, lagged one period of ROE (ROE_{it-1}) exhibits a positive significant coefficient with the dependent variable (ROE) in all models. This implies that there exists a high degree of bank profit persistence which justifies the dynamic nature of our model specification. The empirical findings of the dependent variable of ROE mostly confirm the results from the estimation of ROA in Table 5.6. In this section, the focus is on highlighting some important exceptions among these regression findings compared to the ones with ROA.

Table 5.8

Regression Results for ROE as Dependent Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
$LROE_{it-1}$	.0239 (.0001)***	.0206 (.0003)***	.0204 (.0002)***	.0214 (.0003)***	.0211 (.0003)***	.0198 (.0003)***	.0224 (.0003)***	.0528 (.0006)***
Bank-specific factors								
COST	-.0497 (.0004)***	-.0384 (.0009)***	-.0336 (.0007)***	-.0213 (.0016)***	-.0224 (.0013)***	-.0189 (.0018)***	-.0329 (.0013)***	-.0340 (.0016)***
NIR	-.0023 (.0001)***	-.0033 (.0001)***	-.0037 (.0001)***	-.0047 (.0002)***	-.0051 (.0002)***	-.0037 (.0001)***	-.0036 (.0002)***	-.0041 (.0001)***
OPC	4.246 (.418)***	5.2399 (.1374)***	.4603 (.8780) **	11.395 (1.513)***	11.0872 (1.369)***	10.3069 (1.665)***	6.7469 (1.792)***	**1.4980** **(1.7400)**
LR	.079106 (.0029)***	.0797 (.0065)***	.0782 (.0053)***	.0875 (.0074)***	.0965 (.0097)**	.0805 (.0099)***	.0949 (.0083)***	.0736 (.0098)***
DMDEP	.6082 (.0059)***	.6016 (.0128)***	.6233 (.0122)***	.6002 (.0181)***	.5716 (.0205)***	.6109 (.0187)***	.5536 (.0197)***	.7457 (.0191)***
MR	-.0801 (.0043)***	-.0824 (.0154)***	-.1695 (.0098)***	-.0727 (.0168)***	-.0918 (.0173)***	-.0468 (.0212)**	-.1300 (.0188)***	-.3718 (.0259)***
NPLs	-.24867 (.0009)***	-.3094 (.0024)***	-.2195 (.0019)***	-.2895 (.0027)***	-.2906 (.0027)***	-.2854 (.0026)***	-.2891 (.0030)***	-.3130 (.0031)***
LLPs	-1.235 (.0059)***	-.9621 (.0152)***	-1.2814 (.0135)***	-1.0346 (.0195)***	-1.0535 (.0172)***	-.9957 (.0193)***	-.9143 (.0188)***	-1.0567 (.0230)***
CAR	.0606 (.0026)***	.1067 (.0071)***	.1480 (.0079)***	.1773 (.0088)***	.1750 (.0098)***	.1484 (.0094)***	.1799 (.0097)***	.1252 (.0179)***
LOAN	-.1861 (.0071)***	-.3323 (.0143)***	-.1784 (.0089)***	-.4128 (.0181)***	-.4440 (.0149)***	**.3891** **(.0166)****	-.3122 (.0179)***	-.0588 (.0232)**
LNGRTH	.0042 (.0014)**	.0229 (.0021)***	.0168 (.0016)***	.0096 (.0024)***	.0099 (.0023)***	.0119 (.0026)***	.0202 (.0030)***	.0053 (.0025)**
SIZE	**-6.20001** **(5.0885)**	**-7.4097** **(6.1456)**	**-4.6805** **(4.1729)**	**-4.8899** **(4.2783)**	**-5.1096** **(4.2703)**	**-4.2637** **(4.2490)**	**-8.7550** **(7.2783)**	**-1.4544** **(1.3312)**
OBSs	.0176 (.0010)***	.0298 (.0016)***	.0141 (.0009)***	.0272 (.0015)***	.02801 (.0015)***	.0262 (.0013)***	.0285 (.0017)***	.0121 (.0011)***
Macroeconomic indicators								
GDP		.3214 (.0104)***		-.0025 (.0146)	.0038 (.0136)	**-.0458** **(.0171)** **	**-.1904** **(.0182)** **	-.2113 (.0176)
INF		-1.4090 (.0311)***		-1.3015 (.0378)***	-1.2957 (.0362)***	-1.294 (.0474)***	-.2407 (.0380)***	-1.5205 (.0498)***
RIR		-.1924 (.0044)***		-.2194 (.0076)***	-.2246 (.0085)***	-.1942 (.0077)***	**-.0067** **(.0082)**	-.1820 (.0121)***
FDI		-3.0352 (.0849)***		-1.7150 (.0861)***	-1.7086 (.0839)***	-1.7544 (.0892)***	-2.6184 (.0766)***	-.9817 (.1130)***
OIL		.0657 (.0018)***		.0847 (.0019)***	.0838 (.0028)***	.0747 (.0032)***	.0762 (.0027)**	.0268 (.0033)***
Financial structure indicators								
HHI			-.0172 (.0021)***	-.0299 (.0024)***	-.0280 (.0023)***	-.0243 (.0025)***	-.0239 (.0020)***	-.0107 (.0011)***
MARKE_CAP			.1392 (.0014)***	.1513 (.0019)***	.15047 (.0022)***	.1507 (.0028)***	.1091 (.0022)***	.1466 (.0030)***
DCPS			-.0924 (.0064)***	-.0745 (.0111)***	-.0582 (.0094)***	-.1341 (.0127)***	**.1775** **(.0121)*****	-.2517 (.0129)***
LISTED_Dummy					9.4733 (.8198)***			
FOREIGN_Dummy						21.6299 (1.069)***		
CRISIS							-14.8102 (.2889)***	
Dummy_BHR								53.9253 (4.8908)***
Dummy_KWT								45.1215 (4.9240)***
Dummy_OMN								-207.9629 (16.783)***
Dummy_QAT								-128.245 (16.915)***
Dummy_SAU								18.6438 (11.3100)*

Constant	160.536 (1.122)***	123.329 (2.666)***	137.042 (2.196)***	118.364 (3.638)***	113.5158 (3.3038)***	105.6628 (3.453)***	138.0542 (4.1186)***	97.3514 (7.8025)***
No. of observations	2266	2238	2266	2238	2238	2238	2238	2238
Number of banks	171	171	171	171	171	171	171	171
Number of instruments	138	143	141	146	147	147	147	146
Wald-test X^2	2690***	1070***	908.81***	1550***	2260***	7160***	1350***	5900***
Sargan test (p-value)	0.8140	0.906	0.8575	0.9066	0.9179	0.8509	0.9382	0.8555
AB test AR(1) (p-value)	0.2648	0.2659	0.2613	0.2591	0.2586	0.2604	0.2565	0.2652
AB test AR(2) (p-value)	0.1888	0.1812	0.1696	0.2301	0.2395	0.2226	0.2684	0.5543

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance using two-step GMM estimations by Arellano and Bover (1995). The dependent variable is the return on equity ROE. COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; LISTED_Dummy is a dummy takes a value of 1 for listed banks and 0 otherwise; FOREIGN_Dummy is a dummy takes a value of 1 for foreign banks and 0 otherwise; CRISIS is a dummy crisis takes a value of 1 for the years 2008–2009 and 0 otherwise; Dummy_BHR is equal to one if the bank nationality is that of the Bahrain and zero otherwise; Dummy_KWT is equal to one if the bank nationality is that of the Kuwait and zero otherwise; Dummy_OMN is equal to one if the bank nationality is that of the Oman and zero otherwise; Dummy_QAT is equal to one if the bank nationality is that of the Qatar and zero otherwise; Dummy_SAU is equal to one if the bank nationality is that of the Saudi and zero otherwise. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

In contrast to the findings on the profitability measure ROA, the effect of the liquidity risk (LR) on bank profitability (ROE) is positive and significant, which means that an increase in banks liquidity risk improves the ROE of banks. It also indicates a negative correlation between the levels of liquid assets maintains by the bank and its profit. This finding is consistent with Trinugroho *et al.* (2014), Chen and Liao (2011), Akhtar *et al.* (2011), López-Espinosa *et al.* (2011), and Demirguc-Kunt and Huizinga (1999). This results also in line with the findings of Pasiouras and Kosmidou (2007), Kosmidou *et al.* (2006), and Bourke (1989) who find mixed results between LR and bank performance measures especially when the regression analysis include the sample of foreign banks.

The effect of the loans to total assets (LOAN) on bank performance measured by ROE is negative and significant (at the level of one percent) suggests that higher loan exposure results in decrease in banks' ROE. Similar results are found by Srairi (2009) who argues the negative effect of LOAN on GCC banks may due to the higher provisions for probable loan losses for those banks. These findings are also in line with the findings of Fu and Heffernan (2009), Lee and Hsieh (2013), and Tan (2016) who find that LOAN ratio has a positive and significant relationship with ROA and NIM but a negative and significant relationship with ROE.

The coefficient of the loans growth (LNGRTH) is positive and significant at one percent level, suggesting that banks with relatively higher lending growth rates are more profitable (ROE). This result is also in line with the findings of Dietrich and Wanzenried (2011) who argue that the possible reason for the positive association between bank profitability measured by ROE and the relative LNGRTH may due to the fact that banks with a high relative LNGRTH display higher NIM. The relationship between NIM and LNGRTH of GCC banks is positive and siguificant (Table 5.10). The results are mixed between ROA and ROE with LOAN and LNGRTH may also be due to differences in denominators of ROA and ROE.

This study finds that the association between SIZE and ROE is negative but insignificant in all models, suggesting that there is no empirical evidence to support that larger banks are more profitable than smaller banks in terms of ROE. In other words, shareholders of larger GCC banks are not able to benefit from diversification possibilities, and generate products lines and/or economies of scales. Thus, the hypothesized relationship between SIZE and ROE are not supported. This result is in line with the view (Athanasoglou *et al.*, 2008) that the insignificant effect of SIZE on bank profitability may be due to the fact that banks that are recently established are not profitable especially during their early years of existence. At this stage, they put more emphasis on expanding their market share instead of focusing on increasing profitability. Furthermore, smaller banks usually attempt to grow more quickly, even on the account of their profitability. This result is also consistent with results of Tan (2016), Dietrich and Wanzenried (2014, 2011), and Chen and Liao (2011) who find that the effect of SIZE on ROA and NIM is significant while its effect on ROE is not significant.

With regard to GDP growth, as shown in model four which involves all the main variables in the model of this study, estimation results find no evidence that the growth rate of GDP has any significant effect on ROE of all GCC banks. Thus, the hypotheses of the relationship between GDP and ROE are not supported. These findings are in line with the results of Tan (2016) and Chen and Liao (2011) who find that the relationship of GDP with ROA and NIM are significant while its association with ROE are not significant. The effect of the main variables on ROE does not change after incorporating the dummy variable of listed banks (LISTED_Dummy). The significant effect of LISTED_Dummy implies that ROE of listed banks is higher/better than those of unlisted banks.

The variable of foreign banks (FOREIGN_Dummy) has a positive and significant impact on the ROE of GCC bank, suggesting that foreign banks are more profitable than domestic banks, which may due to the fact that the domestic banks are less competitive. Moreover, the higher profitability of the foreign banks may be the result of higher profitability of the parent banks in the home country. This result in line with the results of Pennathur and Vishwasrao (2014), Claessens and van Horen (2012), Chen and Liao (2011), Havrylchyk and Jurzyk (2011), Kosmidou *et al.* (2007), and Claessens *et al.* (2001) who argue that foreign banks in developing economies provide a wider range of products and financial services of high quality. This is also consistent with the home field advantage hypothesis (Berger *et al.*, 2000) that argues that foreign banks have comparative advantages like they use more advanced technologies that lead to better performance. In other words, foreign banks in developing economies seem to overcome any informational disadvantage relative to domestic banks through superior banking techniques.

Incorporating FOREIGN_ DUMMY in column six affects the main findings of LOAN and GDP. The ratio of LOAN is positive and highly significant with regard to the foreign banks' profitability (ROE), suggesting that higher degree of loan exposure (lower liquidity) enhances the profitability of foreign banks. This reflects that the foreign banks are more efficient in managing their loan portfolios compared to the domestic banks in GCC economies. Pasiouras and Kosmidou (2007) and Kosmidou *et al.* (2006) have similar results. The coefficient of GDP is negative but significant, implying that foreign banks in GCC economies with higher GDP tend to have less ROE when compared to domestic banks. Pasiouras and Kosmidou (2007) argues that the coefficient of the relationship of GDP and profitability of foreign and domestic banks is opposite as they cater to different clientele groups who may respond differently under the economic environment.

Including CRISIS as a dummy variable in column seven affects the findings of GDP, RIR, and DCPS. The average GDP growth of GCC economies falls from almost 14.86 percent before the crisis 2000-2007 to 4.05 percent during the crisis 2008-2009 (Table 2.1). The ROE of their banks is negatively affected: the sign of the coefficient is negative and significant at the level of five percent. The insignificant coefficient of the RIR variable suggests that RIR does not affect GCC banks' ROE during the crisis period. The positive and significant effect of DCPS on ROE may due to the financial supports from GCC governments to their respective financial sectors in 2008, which led to an increase of the average DCPS from 40.83 percent before the crisis period 2000-2007 to 57.77 percent during the crisis period 2008-2009 (Table 2.7) as well as stricter control and monitoring of the credit growth by the GCC authorities during this period.

Table 5.9
Summary of Empirical Results for ROE

		Model 4	Model 5	Model 6	Model 7	Model 8
Independent Variables	Expected sign	Full Model (sign)	With Listed Dummy (sign)	With Foreign Dummy (sign)	With Crisis Dummy (sign)	With Country Dummy (sign)
$LROE_{it-1}$		Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
COST	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
NIR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
OPC	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	**Insignificant (+)**
LR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
DMDEP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
MR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
NPLs	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
LLPs	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
CAR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LOAN	+/-	Significant (-)	Significant (-)	**Significant (+)**	Significant (-)	Significant (-)
LNGRTH	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
SIZE	+/-	**Insignificant (-)**	**Insignificant (-)**	**Insignificant (-)**	**Insignificant (-)**	**Insignificant (-)**
OBSs	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
GDP	+/-	**Insignificant (-)**	**Insignificant (+)**	Significant (-)	Significant (-)	**Insignificant (-)**
INF	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
RIR	+/-	Significant (-)	Significant (-)	Significant (-)	**Insignificant (-)**	Significant (-)
FDI	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
OIL	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
HHI	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
MARKE_CAP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
DCPS	+/-	Significant (-)	Significant (-)	Significant (-)	**Significant (+)**	Significant (-)
LISTED_Dummy			Significant (+)			
FOREIGN_Dummy				Significant (+)		
CRISIS	+/-				Significant (-)	
Dummy_BHR						Significant (+)
Dummy_KWT						Significant (+)
Dummy_OMN						Significant (-)
Dummy_QAT						Significant (-)
Dummy_SAU						Significant (+)

The negative and statistically significant relationship of the country dummy for Oman and Qatar suggest that the ROE of banks in those countries are lower than that of UAE. Further, the result demonstrates that controlling the effect of country dummies has caused the main variable of OPC to become insignificant. This may suggest that the differences in the banking structure, regulatory environments, and economic and political background may influence the way banks manage their reserves. The summary of the empirical results for ROE is presented in Table 5.9.

5.6.1.3. Empirical Results for the NIM

Similar to the earlier analysis on ROA and ROE, the NIM hypothesis is also estimated using the two-step GMM estimator. Table 5.10 presents an analysis of the third profitability measure NIM using the full sample that contains GCC banks performance. Again, Table 5.10 consists of eight models which include the same columns in Tables 5.6 and 5.8.

The Wald-test shows the joint significance of the variables, while the Sargan test shows no evidence of over-identifying restrictions suggesting that the instruments used in the NIM analysis are valid. Though the equations display that the first-order autocorrelation is present, this does not imply that the estimates are inconsistent. Inconsistency would be implied if the second-order autocorrelatiou is present (Arellano & Bond, 1991), but this case is rejected by the test of AR(2) errors. This implies that the GMM estimator used to analyse the NIM as a measure of bank profitability in this study is consistent.

Table 5.10

Regression Results for NIM as a Dependent Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
$LNIM_{it-1}$	.7609	.7706	.7643	.7689	.7479	.7642	.7590	.7702
	(.00192)***	(.00229)***	(.00222)***	(.00223)***	(.0025)***	(.0025)***	(.00173)***	(.00352)***
Bank-specific factors								
COST	-.0039	-.0037	-.0035	-.0034	-.0035	-.0033	-.0035	-.0028
	(.00012)***	(.00016)***	(.00009)***	(.00023)***	(.0002)***	(.00021)***	(.00022)***	(.00014)***
NIR	-.00029	-.0002	-.0003	-.00026	-.00035	-.00017	-.00027	-.00025
	(.00001)***	(.00001)***	(.00001)***	(.00001)***	(.00002)***	(.00002)***	(.00001)***	(.00001)***
OPC	**.3307**	**.3736**	**.4099**	**.1614**	**.1353**	.32591	.2341	**.0698**
	(.25251)	**(.21258)**	**(.31363)**	**(.11902)**	**(.1319)**	(.1495) **	(.1260)*	**(.1981)**
LR	.00051	.00078	.0005	.00063	.00051	.00043	.00075	.00099
	(.00006)***	(.00019)***	(.00008)***	(.00032)*	(.00021) **	(.00014)**	(.00025)***	(.00031)***
DMDEP	.0135	.0140	.0141	.0132	.0161	.0163	.01246	.01165
	(.00028)***	(.00066)***	(.00042)***	(.00093)***	(.0011)***	(.0012)***	(.00073)***	(.00102)***
MR	-.01201	-.0144	-.0125	-.0145	-.0195	-.0161	-.0129	-.02312
	(.00076)***	(.00135)***	(.00122)***	(.00154)***	(.0018)***	(.0019)***	(.00201)***	(.00220)***
NPLs	-.0097	-.0084	-.0091	-.0078	-.0089	-.0078	-.00796	-.00737
	(.00014)***	(.00022)***	(.00017)***	(.00024)***	(.0002)***	(.0002)***	(.00028)***	(.00025)***
LLPs	-.0552	-.0562	-.0545	-.0573	-.0623	-.0578	-.0587	-.0519
	(.00053)***	(.00057)***	(.00068)***	(.00084)***	(.00083)***	(.0009)***	(.0006)***	(.00123)***
CAR	.0385	.0406	.0379	.03999	.0306	.0306	.04124	.0379
	(.00053)***	(.00081)***	(.00070)***	(.00088)***	(.0010)***	(.0012)***	(.00066)***	(.00112)***
LOAN	.0183	.0188	.0205	.02197	.0275	.0286	.02102	.02901
	(.00042)***	(.00135)***	(.00077)***	(.00153)***	(.0017)***	(.0015)***	(.0012)***	(.00228)***
LNGRTH	.0017	.00139	.0011	.0010	.0012	.0013	.00098	.00099
	(.00006)***	(.00010)***	(.00010)***	(.00009)***	(.0001)***	(.0001)***	(.0001)***	(.00016)***
SIZE	.1482	.02629	.1106	.04941	.1249	.1308	.0599	.10492
	(.00878)***	(.01309)**	(.00879)***	(.01771)**	(.0256)***	(.0213)***	(.0150)***	(.0259)***
OBSs	-.00026	-.00030	-.00028	-.00029	-.00036	-.00038	-.00029	-.00047
	(.00004)***	(.00005)***	(.00005)***	(.00006)***	(.00005)***	(.00005)***	(.00006)***	(.00007)***
Macroeconomic indicators								
GDP		.0024		.0054	.0092	.0104	.0073	.00414
		(.0013)*		(.00157)***	(.0021)***	(.0018)***	(.0015)***	(.0019)**
INF		-.0264		-.0208	-.0265	-.0279	-.0298	-.03196
		(.0017)***		(.00171)***	(.0018)***	(.0022)***	(.0020)***	(.00202)***
RIR		-.0133		-.01631	-.0129	-.0116	-.0170	-.01409
		(.00122)***		(.00117)***	(.0010)***	(.0014)***	(.0013)***	(.00148)***
FDI		-.0302		-.0631	-.0851	-.0707	-.0754	-.0495
		(.00559)***		(.00540)***	(.0068)***	(.0066)***	(.0056)***	(.00892)***
OIL		.00302		.0028	.00303	.0036	.0031	.0037
		(.00022)***		(.00022)***	(.0003)***	(.00029)***	(.0002)***	(.00033)***
Financial structure indicators								
HHI			-.00041	-.00033	**-.00010**	-.00018	-.00025	**-.000041**
			(.00008)***	(.00010)**	**(.0001)**	(.0001) **	(.0001)**	**(.00012)**
MARKE_CAP			.0018	.00296	.0035	.0035	.00354	.0033
			(.00013)***	(.00025)***	(.0002)***	(.0002)***	(.0002)***	(.00027)***
DCPS			-.0043	-.00574	-.0015	**-.00005**	**.0041**	-.0017
			(.00055)***	(.00075)***	(.0007)**	**(.0007)**	**(.0007)*****	(.0008)**
LISTED_Dummy					-5.5934			
					(.3057)***			
FOREIGN_Dummy						4.1647		
						(.1395)***		
CRISIS							-.1622	
							(.0217)***	
Dummy_BHR								-.5919
								(.3098)*
Dummy_KWT								3.0884
								(.3228)***
Dummy_OMN								2.8157
								(.5240)***
Dummy_QAT								**.7209**
								(.4845)
Dummy_SAU								-3.1156
								(.6405)***

Constant	2.9529 (.1485)***	.9041 (.1873)***	2.4712 (.1442)***	.9990 (.3541)**	4.4282 (.4446)***	-.8762 (.3941)**	.6358 (.2829)**	-.0141 **(.0015)**
No. of observations	2157	2138	2157	2138	2138	2138	2138	2138
Number of banks	170	170	170	170	170	170	170	170
Number of instruments	137	142	140	145	146	146	146	145
Wald-test X^2	18800***	93800***	749000***	12200***	243000***	18800***	72700***	54500***
Sargan test (p-value)	0.9223	0.9213	0.9287	0.9448	0.9348	0.9222	0.9540	0.9673
AB test AR(1) (p-value)	0.0072	0.0056	0.0071	0.0053	0.0052	0.0050	0.0050	0.0053
AB test AR(2) (p-value)	0.1714	0.1663	0.1702	0.1555	0.1438	0.1649	0.1560	0.1739

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance using two-step GMM estimations by Arellano and Bover (1995). The dependent variable is the net-interest margin NIM. COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; LISTED_Dummy is a dummy takes a value of 1 for listed banks and 0 otherwise; FOREIGN_Dummy is a dummy takes a value of 1 for foreign banks and 0 otherwise; CRISIS is a dummy crisis takes a value of 1 for the years 2008–2009 and 0 otherwise; Dummy_BHR is equal to one if the bank nationality is that of the Bahrain and zero otherwise; Dummy_KWT is equal to one if the bank nationality is that of the Kuwait and zero otherwise; Dummy_OMN is equal to one if the bank nationality is that of the Oman and zero otherwise; Dummy_QAT is equal to one if the bank nationality is that of the Qatar and zero otherwise; Dummy_SAU is equal to one if the bank nationality is that of the Saudi and zero otherwise. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

For the lagged impact of profitability measured by NIM with a lag of one period NIM_{it-1} presents a positive and significant coefficient with the dependent variable NIM in all models, which confirms the dynamic character of model specification. This study finds that a significant coefficient of NIM_{it-1} close to 0.763. This suggests that the presence of market power in the GCC economies' banking sectors with a very large deviation from perfect competition. A weaker evidence of profit persistence is found in the case of banks in Switzerland by Dietrich and Wanzenried (2011), for MENA banks by Naceur and Omran (2011), for Asian banks by Lee and Hsieh (2013), and for banks in China by Tan (2016).

Analyzing the determinants of the NIM helps to better understand some of the results of the ROA and ROE specifications. The findings for the NIM variable largely confirm the findings from the ROA and ROE estimations discussed earlier in this chapter. Therefore, researcher focuses on highlighting some relevant differences between the three regression findings. In contrast to the outcomes for the profitability measures ROA and ROE, differences exist with regard to the opportunity cost (OPC) variable. As shown in model four, the OPC has no impact on GCC bank profitability as a whole when measured by the NIM. This finding is similar to results by Maudos and Guevara (2004) and Ho and Saunders (1981) who use NIM as dependent variables of bank profitability. Thus, the hypotheses of the relationship between OPC and NIM are not supported.

Contrary to ROA and ROE, the OBSs activities have a negative and significant effect on NIM in all estimated models at one percent level of significance, suggesting that banks with high levels of OBSs (nontraditional) activities tend to have lower intermediation margins. Banks that engage in various non-lending activities adjust their pricing of loan products to cross-subsidize (Valverde & Fernández, 2007; Lepetit *et al.*, 2008). This result is also similar to results by Chen and Liao (2011) and Rogers and Sinkey (1999) who use NIM as a dependent variable and argue that since traditional intermediation activities are less beneficial for the banks, they seem to be benefitting from the profits arrising out of diversification to non-traditional activities.

The negative and significant coefficient of LISTED_Dummy with NIM in column five displays that there are no changes in the main variables excepting HHI. The estimation results show that listed banks tend to have lower NIM than unlisted banks in GCC region, suggesting that listed banks do not compete quite well with unlisted banks in relation to the interest rate on loans. Furthermore, the effect of the market concentration or HHI is negative but insignificant confirming that the competitiveness of listed banks with unlisted banks is very weak with regard to NIM. This is also a possible reason for the negative association between the OBSs activities and bank profitability when measured by NIM.

Incorporating FOREIGN_Dummy in column six affects the main findings of OPC and DCPS. The positive and significant coefficient of FOREIGN_Dummy implies that foreign banks tend to have higher NIM than domestic banks. This suggests that of foreign banks are more competitive than domestic banks with regard to an interest rate of loans. This may due to their better experiences and skills to use superior banking techniques and their ability to provide diversified products and banking services. The OPC is positive and significant related to the foreign banks' NIM, suggesting that foreign banks maintaining higher reserve generate higher NIM compared to domestic banks. In other words, foreign banks make customers pay prices more than the OPC of reserves compared to domestic banks in GCC countries. The coefficient of DCPS has no significant effect on NIM of foreign banks.

Furthermore, including the dummy variable of global financial turmoil (CRISIS) in column seven affects the results of OPC and DCPS. The relationship between OPC and NIM at the overall level of GCC banks is positive and significant (at the level of 10 percent), suggesting that keeping more reserves enhanced the profitability of GCC banks during the crisis period 2008-2009. Similar to the findings of ROE, DCPS have a positive and significant effect on NIM during the crisis period.

Table 5.11
Summary of Empirical Results for NIM

Independent Variables	Expected sign	**Model 4** Full Model (sign)	**Model 5** With Listed Dummy (sign)	**Model 6** With Foreign Dummy (sign)	**Model 7** With Crisis Dummy (sign)	**Model 8** With Country Dummy (sign)
$LNIM_{it-1}$		Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
COST	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
NIR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
OPC	+/-	**Insignificant (+)**	**Insignificant (+)**	Significant (+)	Significant (+)	**Insignificant (+)**
LR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
DMDEP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
MR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
NPLs	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
LLPs	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
CAR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LOAN	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LNGRTH	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
SIZE	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
OBSs	+/-	**Significant (-)**	**Significant (-)**	**Significant (-)**	**Significant (-)**	**Significant (-)**
GDP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
INF	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
RIR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
FDI	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
OIL	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
HHI	+/-	Significant (-)	**Insignificant (-)**	Significant (-)	Significant (-)	**Insignificant (-)**
MARKE_CAP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
DCPS	+/-	Significant (-)	Significant (-)	**Insignificant (-)**	**Significant (+)**	Significant (-)
LISTED_Dummy			Significant (-)			
FOREIGN_Dummy				Significant (+)		
CRISIS	+/-				Significant (-)	
Dummy_BHR						Significant (-)
Dummy_KWT						Significant (+)
Dummy_OMN						Significant (+)
Dummy_QAT						**Insignificant (+)**
Dummy_SAU						Significant (-)

Column eight is controlled for country dummies. The results demonstrate that controlling for country dummies does not alter the main findings with the variables. The insignificant effect of HHI suggests that no evidence to support the SCP hypothesis. The negative and statistical significance of the Bahrain and Saudi Arabia dummies suggest that the NIM of banks in both countries is lower than that of UAE. Furthermore, the positive and significant of Kuwait and Oman dummies indicate that the NIM of banks in both countries is higher than that of UAE, while no difference is found between the NIM of banks in Qatar and UAE. The summary of the regression results for NIM is presented in Table 5.11.

5.6.2. Empirical Results for the Market-Based performance (Tobin's Q)

Similar to ROA, ROE, and NIM, this study uses the two-step GMM dynamic system panel estimator proposed by Blundell and Bond (2000) and Areliano and Bover (1995), which is usually more efficient than the one-step estimator, especially for the system GMM (Lee & Hsieh, 2013). Table 5.12 reports the empirical findings of the market-based performance measured by Tobin's Q using the sample of only listed banks in GCC stock exchanges. This study uses Tobin's Q to evaluate shareholder value for GCC listed banks. In Table 5.12, there are six columns: Column one reports the results of bank-specific characteristics; Column two displays the findings of bank-specific and macroeconomic factors; Column three examines the effect of bank-specific and financial structure indicators; Column four presents the findings of bank-specific, macroeconomic, and financial factors; Column five reports the results of the full model with the CRISIS as a dummy variable; and Column six reports the outputs that are controlled for country dummies.

The Wald-test ratifies the goodness of fit, while the Sargan test for over- identifying restrictions fails to reject the null hypothesis in all models, indicating that the performance measured by Tobin's Q is valid. Moreover, the *p*- value for AR(2) in all models fails to reject the null hypothesis suggesting that there is no serial correlation. This also means that the GMM estimator used to analyse Tobin's Q hypotheses in this study is consistent.

Table 5.12

Regression Results for Tobin's Q as Dependent Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
LTobin's Q_{it-1}	.4546 (.011)***	.4253 (.015)***	.3421 (.012)***	.3328 (.015)***	.3106 (.017)***	.2875 (.019)***
Bank-specific factors						
COST	-.0014 (.0004)**	-.0019 (.0005)**	.0004 (.0003)	.0002 (.0002)	.00055 (.00043)	.00029 (.00023)
NIR	.0014 (.0003)***	.0024 (.0003)***	.0001 (.0002)	.0007 (.0003)**	.0013 (.0003)**	.00083 (.00039)**
OPC	.0999 (.047)**	.0841 (.081)	.4444 (.073)***	.4649 (.099)***	.6158 (.099)***	.74169 (.18925)***
LR	.0003 (.0005)	.0000 (.0006)	.0028 (.0005)***	.0023 (.0009)**	.0033 (.0014) **	.00449 (.00118)***
DMDEP	.0047 (.0007)***	.0057 (.0008)***	.0036 (.0007)**	.0033 (.0011)**	.0015 (.001) *	.00363 (.00113)***
MR	.0072 (.0007)***	.0077 (.0009)***	.0008 (.0008)	.0002 (.001)	.0011 (.0012)	-.00199 (.00170)
NPLs	-.0059 (.001)***	-.0038 (.0009)***	-.0011 (.0007)	-.0015 (.0007)*	-.0011 (.001) *	-.00192 (.00027)***
LLPs	-.0032 (.0003)***	-.0026 (.0004)***	.0007 (.0005)	-.0031 (.0016)*	-.0011 (.0006)*	.00095 (.00049)*
CAR	-.0009 (.001)	-.0062 (.0018)**	-.0011 (.0009)	-.0037 (.0012)**	-.0028 (.0014)**	-.00296 (.00147)**
LOAN	-.0001 (.0001)	-.0002 (.0002)	-.0006 (.0002)***	-.0003 (.0002)	-.00014 (.0002)	-.00032 (.00020)
LNGRTH	-.0004 (.0001)***	-.0005 (.0001)***	-.0001 (.00004)**	-.0001 (.00004)**	-.00017 (.00004)***	-.000095 (.00007)
SIZE	-.0940 (.006)***	-.0927 (.0099)***	-.0458 (.009)***	-.0001 (.00005)***	-.0433 (.012)***	-.08739 (.01116)***
OBSs	-.0001 (.0001)	-.0002 (.0001)	-.0001 (.0002)	-.00004 (.0004)	-.00004 (.0003)	-.00064 (.00035)
Macroeconomic indicators						
GDP		.0045 (.001)***		.0055 (.0008)***	.0031 (.0011)**	.00204 (.00101)**
INF		-.0149 (.0013)***		-.0032 (.0011)**	-.0025 (.0013)*	-.00326 (.00128)**
RIR		-.0005 (.0004)		-.0019 (.0003)***	-.0016 (.0004)***	-.00087 (.00032)***
FDI		.0488 (.005)***		.0341 (.003)***	.0313 (.006)***	.01002 (.00486)**
OIL		.0012 (.0001)***		.0011 (.0001)***	.00088 (.0001)***	.00065 (.00015)***
Financial structure indicators						
HHI			-.0003 (.0001)***	-.0440 (.009)**	-.0003 (.0001)*	-.00012 (.00004)***
MARKE_CAP			.0041 (.0001)***	.0041 (.0002)***	.0038 (.0002)***	.00387 (.00016)***
DCPS			-.0016 (.0002)***	-.0025 (.0003)***	-.0014 (.0005)**	-.00088 (.00040)**
LISTED_Dummy	....	....	....	....	....	....
FOREIGN_Dummy	....	....	....	....	....	....
CRISIS					-.019 (.009)**	
Dummy_BHR						-.17106 (.20649)
Dummy_KWT						-.21324 (.11678)*
Dummy_OMN						.13144 (.12371)
Dummy_QAT						.00840 (.16213)
Dummy_SAU						.14199

						(.13346)
Constant	1.252 (.118)***	.200 (.220)	1.421 (.174)***	-.730 (.212)**	.595 (.203)**	2.16137 (.29982)***
No. of observations	832	812	832	812	832	832
Number of banks	67	67	67	67	67	67
Number of instruments	51	56	54	59	60	59
Wald-test X^2	3775.42***	2424.71***	4908.53***	2556.46***	1907.54***	6836.44***
Sargan test (p-value)	0.9914	0.9968	0.999	0.9967	0.9994	0.9997
AB test AR(1) (p-value)	0.0299	0.0279	0.0253	0.0175	0.0218	0.0181
AB test AR(2) (p-value)	0.1557	0.1804	0.1676	0.2277	0.2086	0.2135

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance using two-step GMM estimations by Arellano and Bover (1995). The dependent variable is the Tobin's Q. COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; LISTED_Dummy is a dummy takes a value of 1 for listed banks and 0 otherwise; FOREIGN_Dummy is a dummy takes a value of 1 for foreign banks and 0 otherwise; CRISIS is a dummy crisis takes a value of 1 for the years 2008–2009 and 0 otherwise; Dummy_BHR is equal to one if the bank nationality is that of the Bahrain and zero otherwise; Dummy_KWT is equal to one if the bank nationality is that of the Kuwait and zero otherwise; Dummy_OMN is equal to one if the bank nationality is that of the Oman and zero otherwise; Dummy_QAT is equal to one if the bank nationality is that of the Qatar and zero otherwise; Dummy_SAU is equal to one if the bank nationality is that of the Saudi and zero otherwise. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

Table 5.12 shows that lagged one period of Tobin's Q (Tobin's Q_{it-1}) exhibits a positive and significant coefficient (at one percent level) with market-based performance Tobin's Q as a dependent variable in all models. This suggests that the improvements in bank efficiency last year leads to improvement in the shareholder value of banks next year. The significance level of coefficient of Tobin's Q is found to be close at average level 0.36, suggesting that GCC banks should focus on ways and means to increase shareholders value rather than only NIM differential (NIM_{it-1} = 0.76).

In general, the findings for the listed banks' performance measured by Tobin's Q confirm the results of the performance measured by ROA, ROE, and NIM of all GCC banks with the exception of some of the independent variables. For instance, as shown in model four, the association between COST and Tobin's Q is positive but insignificant, which means that the enhanced cost efficiency has not significantly added to shareholders' value for listed banks in the GCC region. This result is consistent with the results of Fu *et al.* (2014b) and Karim and Alam (2013) who find a positively insignificant relationship between Tobin's Q and COST. This result does not support the hypothesis of COST with Tobin's Q.

Referring to non-interest revenue (NIR), this study finds that the NIR has a positive and significant effect on GCC listed banks' performance measured by Tobin's Q, implying that the higher income from non-traditional activities enhances the shareholder value of the listed GCC banks. This suggests that listed banks in GCC markets have the necessary technical competence to offer relevant services to generate NIR which leads to increase in the shareholders' value of banks. Similar results are also found by Fiordelisi and Molyneux (2010).

As shown in column four of Table 5.12, market risk (MR) exposure has a positive but insignificant effect on bank performance measured by Tobin's Q. This implies that, on average, there is no clear evidence to support that listed banks which are more engaged in investing in securities could enhance the shareholders' value. The proxy for the credit risk in bank's loan portfolio, total loans to total assets (LOAN), is also found to be negative but insignificant, meaning that there is insufficient evidence to suggest that the loan portfolio risk determines the shareholder value for the GCC listed banks. This result is in line with results of García-Meca *et* *al.* (2014) who find that the effect of LOAN on Tobin's Q is negative but insignificant. Thus, these results do not support the hypotheses of MR and LOAN with Tobin's Q. Fu *et al.* (2014b) argue that the positive/negative relationship between MR/LOAN and Tobin's Q may due to the fact that shareholders may take a positive view of their MR exposure but take a relatively negative view about the credit risk exposure.

Regarding capital adequacy ratio (CAR), finding of the study suggest that the effect of CAR on Tobin's Q is negative and significant; indicating that shareholder value of GCC banks is affected negatively by CAR. This finding has confirmed the results of Al-Saidi and Al-Shammari (2013) who use Tobin's' Q as dependent variables of bank performance and find that the link between the CAR and Tobin's Q is negative and significant and argue that various efforts by Central Bank of Kuwait to review the capital of financial sector did not improve the shareholder value of Kuwait banks. This result is also in line with the 'moral hazard' hypothesis; the higher the level of capital of the shareholders has at risk, the stronger are their incentives to monitor management and assure that the institution operates efficiently. Empirically, GCC banks are not able to translate the increase in their equity capital to increase the shareholders value: where CAR of GCC banks has witnessed an increase from 16.52 percent in 2008 to 18.85 percent in the end of 2015; in contrast, value of shareholders equity has observed a decline from 16.45 to 13.05 during the same period.

For SIZE, this study finds a strong negative effect of SIZE on listed banks' performance measured by Tobin's Q, meaning that the smaller the listed banks, the better the performance (higher shareholders' value). Similar results are found by Fu *et al.* (2014b) for 14 Asian Pacific banking sectors, Liang *et al.* (2013) for European banks, as well as with Al-Saidi and Al-

Shammari (2013) for Kuwait banks. Fu *et al.* (2014b) argue that the negative effect of SIZE on Tobin's Q suggests that shareholders may give more value to the synergistic effects derived from expansion at the early stage. The negative association may be due to the higher LLPs of the larger listed banks in GCC stock markets. This result is in line with the view that the smaller listed banks are easier to control and manage and their managers can focus on fewer activities, which leads to better performance.

The association between the OBSs activities and listed bank performance (Tobin's Q) is negative but insignificant; this means that there is no clear evidence to suggest that the more OBSs activities a bank undertake, there will be a corresponding decline in shareholder value. Hence, this does not support the hypothesis of OBSs with Tobin's Q. This also in line with Khediri *et al.* (2015) who find that listed banks in GCC stock markets are less engaged in OBSs activities.

FDI inflow into GCC region has a positive and significant impact on the shareholder value of listed banks measured by Tobin's Q. This finding is in agreement with the view that higher FDI inflow enhances the economic growth by human capital formation, technology diffusion and so on. Higher FDI inflow in an economy may result in better performance expectations which get reflected in the higher level of stock market performance including bank stocks.

As shown in column five, incorporating the crisis dummy (CRISIS) does not alter the main findings of this study. The CRISIS is negatively and significantly associated with Tobin's Q, indicating that shareholder value of listed banks in GCC economies is lower during the global financial turmoil. Fu *et al.* (2014b) find similar findings between CRISIS and Tobin's Q of 14 banking sectors in Asia Pacific. The results in Column six illustrate that controlling the country-specific effects have caused the main variable of LNGRTH to become insignificant. This may indicate that the variations in economic, political and regulatory environments, as well as banking structure, may affect the style banks in which manage their market-based performance (Tobin's Q). The negative and significant effect of Dummy_KWT indicates that shareholder value (Tobin's Q) of banks in Kuwait is lower than that of UAE banks. Table 5.13 presents the summary of empirical findings for Tobin's Q.

Table 5.13
Summary of Empirical Results for Tobins'Q

		Model 4	Model 5	Model 6
Independent Variables	Expected sign	Full Model (sign)	With Crisis Dummy (sign)	With Country Dummy (sign)
LTobin's Q_{it-1}		Significant (+)	Significant (+)	Significant (+)
COST	+/-	**Insignificant (+)**	**Insignificant (+)**	**Insignificant (+)**
NIR	+/-	Significant (+)	Significant (+)	Significant (+)
OPC	+/-	Significant (+)	Significant (+)	Significant (+)
LR	+/-	Significant (+)	Significant (+)	Significant (+)
DMDEP	+/-	Significant (+)	Significant (+)	Significant (+)
MR	+/-	**Insignificant (+)**	**Insignificant (+)**	**Insignificant (-)**
NPLs	+/-	Significant (-)	Significant (-)	Significant (-)
LLPs	+/-	Significant (-)	Significant (-)	Significant (-)
CAR	+/-	Significant (-)	Significant (-)	Significant (-)
LOAN	+/-	**Insignificant (-)**	**Insignificant (-)**	**Insignificant (-)**
LNGRTH	+/-	Significant (-)	Significant (-)	**Insignificant (-)**
SIZE	+/-	Significant (-)	Significant (-)	Significant (-)
OBSs	+/-	**Insignificant (-)**	**Insignificant (-)**	**Insignificant (-)**
GDP	+/-	Significant (+)	Significant (+)	Significant (+)
INF	+/-	Significant (-)	Significant (-)	Significant (-)
RIR	+/-	Significant (-)	Significant (-)	Significant (-)
FDI	+/-	Significant (+)	Significant (+)	Significant (+)
OIL	+/-	Significant (+)	Significant (+)	Significant (+)
HHI	+/-	Significant (-)	Significant (-)	Significant (-)
MARKE_CAP	+/-	Significant (+)	Significant (+)	Significant (+)
DCPS	+/-	Significant (-)	Significant (-)	Significant (-)
LISTED_Dummy		....	....	....
FOREIGN_Dummy		....	....	....
CRISIS	+/-		Significant (-)	
Dummy_BHR				**Insignificant (-)**
Dummy_KWT				Significant (-)
Dummy_OMN				**Insignificant (+)**
Dummy_QAT				**Insignificant (+)**
Dummy_SAU				**Insignificant (+)**

5.6.3. Empirical Results for the Bank Risk-Taking Behavior

This section discusses the results for the measures of bank risk taking behavior which are standard deviation of ROA (SDROA) and standard deviation of ROE (SDROE).

5.6.3.1. Empirical Results for the SDROA

Table 5.14 reports the empirical results of the bank risk-taking behavior measured by SDROA using the full sample of GCC banks in this study. Similar to Table 5.6, 5.8, and 5.10, there are eight columns in Table 5.14 and the same set of independent variables is used in the regression of SDROA. Column one presents the outcomes of bank-specific determinants. Column two shows regression results with the bank-specific factors and macroeconomic factors. Column three displays the results of bank-specific and financial structure indicators. Column four exhibits the results of bank-specific, macroeconomic, and financial structure indicators. Columns five, six, seven and eight report the estimation results that are controlled by the listed dummy, foreign bank, financial crisis, and country dummies respectively.

As presented in Table 5.14, Wald-test shows that overall, the model is found to be statistically significant, indicating a relationship between a set of independent variables and SDROA (fine goodness of fit). The Sargan tests for over-identifying restrictions do not reject the null hypothesis in all columns, indicating that the instruments used in the SDROA are valid. In addition, the p-value for AR(2) in all columns do not reject the null hypothesis of the absence of second-order serial autocorrelation. This means that the GMM estimator used to analyse the SDROA in this study is consistent.

Table 5.14

Regression Results for SDROA as Dependent Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
$LSDROA_{it-1}$	.73140	.70689	.68344	.67199	.66161	.65454	.69391	.63088
	(.00074)***	(.00090)***	(.00116)***	(.00121)***	(.0011)***	(.0014)***	(.00142)***	(.0028)***
Bank-specific factors								
COST	.00132	.00113	.00182	.00142	.00154	.00167	.00091	.00166
	(.00002)***	(.000028)***	(.00002)***	(.000034)***	(.00003)***	(.00003)***	(.00003)***	(.00004)***
NIR	.00006	.000054	.000073	.00007	.000099	.00013	**-.00552**	.00038
	(.00002)**	(.000007)***	(.000004)***	(.00001)***	(.00001)***	(.00001)***	**(.00001)*****	(.00001)***
OPC	1.0445	1.2338	1.1853	1.5592	1.6050	1.6329	1.3812	.95678
	(.03651)***	(.04759)***	(.02554)***	(.05578)***	(.0655)***	(.0742)***	(.06428)***	(.0510)***
LR	-.0037	-.0034	-.00314	-.00312	-.0033	-.00346	-.00312	-.00479
	(.00004)***	(.00004)***	(.00005)***	(.00008)***	(.0001)***	(.00008)***	(.00006)***	(.0001)***
DMDEP	-.0174	-.0151	-.01398	-.01358	-.0124	-.01095	-.01388	-.02037
	(.00030)***	(.00052)***	(.00031)***	(.00072)***	(.0006)***	(.0007)***	(.00051)***	(.0008)***
MR	.07161	.0683	.07225	.07096	.0702	.06958	.07264	.06134
	(.00026)***	(.00055)***	(.00049)***	(.00068)***	(.0006)***	(.0007)***	(.00058)***	(.0008)***
NPLs	.00971	.01011	.01122	.01042	.0104	.01034	.01104	.01214
	(.00006)***	(.00007)***	(.00004)***	(.00007)***	(.0001)***	(.00008)***	(.0001)***	(.0002)***
LLPs	.18497	.1827	.17833	.17964	.17951	.17743	.17433	.18474
	(.00059)***	(.00068)***	(.00039)***	(.00093)***	(.0011)***	(.0011)***	(.0012)***	(.0017)***
CAR	-.02320	-.02669	-.0272	-.02857	-.02981	-.03356	-.02531	-.04076
	(.00024)***	(.00057)***	(.00037)***	(.00049)***	(.0004)***	(.0004)***	(.0006)***	(.0007)***
LOAN	.01156	.0126	.00676	.01154	.01343	.01347	.00792	**-.00455**
	(.00063)***	(.00055)***	(.00057)***	(.00105)***	(.0010)***	(.0008)***	(.0009)***	**(.0012)****
LNGRTH	.00281	.00089	.00362	.00149	.00135	.00129	.00143	.00178
	(.00005)***	(.00007)***	(.00006)***	(.00007)***	(.0001)***	(.00008)***	(.0001)***	(.0001)***
SIZE	-.56037	-.7692	-.72336	-.90233	-.88632	-.84102	-.73732	-1.02066
	(.00713)***	(.00850)***	(.01004)***	(.01394)***	(.0136)***	(.0118)***	(.0147)***	(.0212)***
OBSs	.00068	.000072	.00007	.00021	.00023	.00024	.000141	.000216
	(.00003)***	(.00003)**	(.00003)**	(.00004)***	(.00004)***	(.00004)***	(.00004)***	(.00005)***
Macroeconomic indicators								
GDP		-.0438		-.02359	-.02301	-.02433	-.01291	-.01835
		(.00086)***		(.00138)***	(.0016)***	(.0018)***	(.0012)***	(.0013)***
INF		.0981		.09037	.09002	.08807	.03402	.07585
		(.00096)***		(.00140)***	(.0016)***	(.0017)***	(.0016)***	(.0023)***
RIR		.01794		.01242	.01265	.01295	.00172	.00789
		(.00038)***		(.00038)***	(.0004)***	(.0004)***	(.0004)***	(.0004)***
FDI		.1092		.12263	.12523	.12401	.08392	.07946
		(.00508)***		(.00376)***	(.0033)***	(.0034)***	(.0052)***	(.0059)***
OIL		.00322		.00317	.00349	.00366	.00299	.00256
		(.00015)***		(.00019)***	(.0001)***	(.0002)***	(.0003)***	(.0001)***
Financial structure indicators								
HHI			**-.00004**	**.00009**	**.0002**	**.00012**	**-.00012**	**.00002**
			(.00003)	**(.00006)**	**(.0001)**	**(.00007)**	**(.00011)**	**(.00009)**
MARKE_CAP			-.00081	-.00166	-.00157	-.00135	**.00055**	-.00263
			(.00012)***	(.00018)***	(.0002)***	(.0002)***	**(.0002)****	(.00019)***
DCPS			.02502	.02204	.02063	.01832	.00737	.03143
			(.00027)***	(.00043)***	(.0005)***	(.0006)***	(.00069)***	(.0006)***
LISTED_Dummy					-.81081			
					(.0394)***			
FOREIGN_Dummy						1.3631		
						(.0600)***		
CRISIS							.8245	
							(.0252)***	
Dummy_BHR								-.51081
								(.2609)**
Dummy_KWT								4.5246
								(.3651)***
Dummy_OMN								-3.6404
								(.5105)***
Dummy_QAT								9.8097
								(.8907)***
Dummy_SAU								5.9742
								(.5520)***

Constant	8.8388 (.0921)***	9.5192 (.1661)***	10.234 (.1299)***	10.0547 (.1596)***	10.288 (.1381)***	8.9350 (.1427)***	9.1480 (.2260)***	12.4301 (.4644)***
No. of observations	1965	1939	1965	1939	1939	1939	1939	1939
Number of banks	163	163	163	163	163	163	163	163
Number of instruments	137	142	140	145	146	146	146	145
Wald-test	124000***	146000***	56700***	1540000***	27800***	531000***	936000***	48700***
Sargan test (p-value)	0.9566	0.9577	0.9501	0.9635	0.9706	0.9720	0.9786	0.9693
AB test AR(1) (p-value)	0.0211	0.0194	0.018	0.0202	0.0202	0.0205	0.0208	0.0194
AB test AR(2) (p-value)	0.5837	0.6542	0.6735	0.6813	0.6655	0.6710	0.6447	0.6863

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance using two-step GMM estimations by Arellano and Bover (1995). The dependent variable is the Standard deviation of return on assets SDROA. COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; LISTED_Dummy is a dummy takes a value of 1 for listed banks and 0 otherwise; FOREIGN_Dummy is a dummy takes a value of 1 for foreign banks and 0 otherwise; CRISIS is a dummy crisis takes a value of 1 for the years 2008–2009 and 0 otherwise; Dummy_BHR is equal to one if the bank nationality is that of the Bahrain and zero otherwise; Dummy_KWT is equal to one if the bank nationality is that of the Kuwait and zero otherwise; Dummy_OMN is equal to one if the bank nationality is that of the Oman and zero otherwise; Dummy_QAT is equal to one if the bank nationality is that of the Qatar and zero otherwise; Dummy_SAU is equal to one if the bank nationality is that of the Saudi and zero otherwise. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

As expected, lagged one period of SDROA ($SDROA_{it-1}$) exhibits a positive and significant relationship the dependent variable (SDROA) in all the columns, suggesting that the risk in the previous period will be enhanced in the next period. The coefficients on the lagged SDROA takes a value of approximately 0.68, implying that there exists a high degree of bank risk persistence which justifies the dynamic nature of study model specification.

In all the regressions, present study finds that the COST has a positive and significant effect on SDROA with the coefficient of significance at the one percent level. This implies that banks which are less cost-efficient (higher COST) are more risky (higher SDROA). This result is consistent with the results of Saghi-Zedek and Tarazi (2014) and Barry *et al.* (2011) who find that banks with lower managerial efficiency are more risky. For NIR, this study finds that the effect of NIR on SDROA is positive and significant at the one percent level, suggesting that higher NIR is associated with higher volatility (SDROA). These findings are consistent with the view that more reliance on non-traditional activities results in higher risk (Saghi-Zedek & Tarazi, 2014; Goddard *et al.*, 2008; Lepetit *et al.*, 2008; Mercieca *et al.*, 2007; DeYoung & Roland, 2001). In other words, the profits from non-traditional activities are less stable than those from lending activities.

With respect to the opportunity cost of reserves (OPC), the results in Tables 5.14 show that the relationship between OPC and SDROA are highly positive and significant at the one percent level with an average coefficient 1.32. This suggests that the higher the reserves, the higher are the risk (SDROA). These findings are consistent with the view that the OPC are an implicit tax that erodes bank profitability (Naceur & Omran, 2011). The liquidity risk (LR) has a negative and significant effect on SDROA with the coefficient of significance at the one percent level, suggesting that the higher the ratio of loan to total deposits and short-term funding, the lower are the volatility of returns (lower risk). It reflects that the managers of GCC banks have the capability to manage and monitor their loans and deposit and funding mix, which result in to decrease the bank risks. Similar results are found by Bedendo and Bruno (2012).

The coefficient of demand deposit to total deposits ratio (DMDEP) is found to be negative and significant with SDROA, implying that higher demand deposit leads to lowering the risk of banks due to their lower costs. In contrast, market risk (MR) exposure of banks has a significant and positive relationship with SDROA, indicating that banks that are more engaged in securities investment are at higher risk (volatility of returns). It also reflects the view that banks that generate higher returns on their investments face higher systematic risks (Jones *et al.*, 2013).

Regarding NPLs, the present study observes that the association between NPLs and SDROA is positive and significant, implying that the higher the NPLs higher are the risk and hence the volatility of returns. These findings are in line with the results of Bedendo and Bruno (2012) who find that banks with higher NPLs are at more default risk. Similarly, the effect of LLPs on SDROA is positive and significant with: the coefficient 0.181 implies that a one percent increase in LLPs raises volatility of assets return by 0.18. It also reflects the fact that banks with a large portion of loans provisions are more-risky.

For capital adequacy ratio (CAR), the findings suggest that the equity to asset ratio has a negative and significant relationship with SDROA, implying thereby that the banks with higher equity show lower returns volatility. This may be due to the fact that banks with higher CAR are more conservative in traditional lending activities, which, in turn, results in the lower volatility in profits. This result supports the argument that banks with higher capital ratios are safer and take less risk (Keeley, 1990). Lepetit *et al.* (2008b) for European banks, and Goddard *et al.* (2008) and Cebenoyan and Strahan (2004) for U.S.A banks find similar results.

The estimated coefficients on LOAN are positive and significant in the regressions for SDROA, suggesting that banks with a higher share of LOAN are more risky. These results are consistent with Cebenoyan and Strahan (2004), Mercieca *et al.* (2007), Goddard *et al.* (2008), and Lee and Hsieh (2013) who find that banks that are more involved in loan sales have a higher percentage of NPLs on their balance sheets. Likewise, this study finds that loan growth (LNGRTH) is one of the significant determinants of bank risk. The finding is in line with Bedendo and Bruno (2012), Köhler (2012), Keeton (1999), and Foos *et al.* (2010) which report that banks with higher LNGRTH are more risky. In a high LNGRTH environment, banks may sanction loans to clients who were either rejected earlier or reduce their credit standards in approving credit thereby add to the riskiness of their loan portfolio. Higher LNGRTH than their rivals may attract clients who could not get loans from other banks because they are provided the loans without sufficient collateral related to the credit quality or require a very low-interest rate on loans (Foos *et al.*, 2010).

Regarding SIZE, the coefficient of SIZE has a negative and significant effect on SDROA, suggesting that banks with larger size are less risky (lower returns volatility). This result supports the argument that larger banks experience economies of scale and scope. This also may due to the fact that larger banks in GCC economies are less aggressive which, in turn, reduce the volatility of their returns. These findings are in line with Saghi-Zedek and Tarazi (2014), Goddard *et al.* (2008), Lepetit *et al.* (2008), and Mercieca *et al.* (2007) who find that larger banks experience lower return's volatility.

The empirical results display that bank's risk or volatility of returns on assets measured by SDROA is positively associated with OBSs activities and is significant at the one percent level, indicating that banks with a higher level of OBSs activities are at higher risk. These results are in line with the moral hazard hypothesis that states that OBS activities increase risk (Angbazo, 1997). Aktan *et al.* (2013), Haq and Heaney (2012), and Wagster (1996) also conclude that

OBSs activities are positively associated with numerous measures of bank risk. Köhler (2012) stress that banks that are more engaged in OBSs activities like securitization are more risky due to the fact that these activities attract low or few regulatory capitals, employ higher financial leverage.

In terms of macroeconomic indicators, the coefficients of GDP on bank risk (SDROA) are negative and significant in all models, suggesting that the higher the GDP, the lower the volatility of returns (lower risk). In other words, banks located in economies with faster growth in GDP tend to have lower volatility in their financial performance. This may be due to the fact that the rates of insolvency and unemployment are lower during periods of economic prosperity, which decrease banks' credit risk and make banks' loan portfolios less risky. Moreover, during the phase of healthy economic growth, there is an increase in the number of investment projects. The anticipated net present value of such projects result in lowering the total risk of banks (Kashyap, Sten, & Wilcox, 1993). Similar results are found by Saghi-Zedek and Tarazi (2014), Lee and Hsieh (2013), Soedarmono *et al.* (2013), and Goddard *et al.* (2008) who find that economic development will reduce banks' risk.

The present study finds that the inflation rate (INF) has a positive and significant effect on banks' volatility of returns (SDROA), implying that the higher the INF, the higher are the bank risks. This result is consistent with the argument that higher inflation can make debt servicing easier by reducing (erodes) the real value of loan repayments and also the real income of the borrowers (Castro, 2013). Lee and Hsieh (2013) and Soedarmono *et al.* (2013) find similar results between INF and SDROA for Asian banking sector.

This study finds that the association of RIR is positive and significant on bank risk (SDROA), suggesting that the banks with higher RIR have more volatile returns. These results are in line with Unite and Sullivan (2003), Quagliariello (2007), Castro (2013), and Köhler (2012) who argue that the positive effect of higher RIR on bank risk mostly comes through lower leverage risk. Furthermore, higher RIR can increase problems of adverse selection and moral hazard (Bohachova, 2008). This also may due to the fact that rise in the debt burden due to high RIR leads to a higher rate of NPLs (Louzis *et al.*, 2012).

FDI inflows into GCC countries have a positive and significant effect on the risk (SDROA) of overall GCC banks, suggesting that the higher the FDI inflows the higher the volatility of GCC bank returns. These results may due to the tougher competition domestic banks face from the foreign banks. The largest foreign bank subsidiaries in GCC region are from USA and UK, which have better expertise and techniques, and a strong capacity to compete in the region. Most of the foreign banks in GCC economies are small and from countries without having significant FDI in GCC.

The results show that the impact of oil price shocks (OIL) on bank risk or returns volatility of banks (SDROA) is positive and significant at the level of one percent. These findings indicate that OIL is in fact related to banks volatility of returns in GCC economies. These findings are consistent with the fact that higher OIL would generate higher loan demand and a corresponding appetite of banks to sanction loans. However, this may also result in banks sanctioning loan to more-risky projects.

Turning to financial structure indicators, the study hypothesized that there is a relationship between market concentration (HHI) and SDROA. However, the findings show that the relationship between HHI and SDROA is insignificant, which means that the hypotheses of the association of HHI with SDROA are not supported. This also implies that market concentration does not increase bank risk-taking behaviors that ultimately result in volatility in ROA at the overall level of GCC banks. The possible interpretation is that market concentration results in the better ability of banks to manage their assets, control operating expenses, determine the appropriate mix of funds to raise, decrease the bank's tax liabilities, and pricing bank services, which have smoothening effects on banks' ROA.

The coefficient of the effect of stock market development (MARKE_CAP) on SDROA (bank risk-taking) is negative and significant, suggesting that higher stock market development leads to lower bank risk (returns volatility). This can be interpreted by the view that a well-developed stock market provides appropriate information to the banks' management about borrowing firms' credit situation, which significantly decreases the cost of monitoring risk and results in a decrease in their returns volatility. The relationship between domestic credit to private sector as a percentage of GDP (DCPS) and SDROA is positive and significant, suggesting that banks with higher DCPS are more risky. This study finds evidence that DCPS is a major determinant of bank risk at the country level. This is in line with the previous studies that confirm that higher the DCPS higher is the risk which is the result of the higher level of competition in the financial environment (Lee & Hsieh, 2013; Köhler, 2012).

As shown in column five, including the dummy variable of listed banks (LISTED_Dummy) has not affected the main findings of the variables. The negative and significant coefficient of LISTED_Dummy with SDROA suggests that listed banks are less risky (lower SDROA) than unlisted banks. This may due to that market forces may dampen the risk-taking behavior of listed banks.

In column six, incorporating FOREIGN_Dummy has not influenced the results of the main variables. The significant positive relationship of foreign banks to SDROA indicates that foreign banks are more risky (SDROA) than domestic banks. The possible explanation for these results could be due to the distance between the parent banks and their subsidiaries in the host markets. Local outfits have a higher degree of freedom to manage their equity, which gives them more flexibility to invest in risky projects in the anticipation of higher expected return. The mean value of foreign banks' NIR is 65.98 compared to 37.43 for domestic banks (Table 5.1), which suggests that foreign banks more engaged on non-traditional activities which are risky than domestic banks. Availability of relevant skills and expertise to reflects the risk-taking behavior of foreign banks.

The dummy CRISIS has a positive and significant coefficient in column seven holding all main variables constant with exception NIR and MARKE_CAP. The negative and significant coefficient of CRISIS variable suggests that GCC banks' returns are more volatile during the financial crisis period. Furthermore, the association between NIR and SDROA is negative and significant, suggesting that banks that are more involved in non-traditional activities are less risky during the crisis period, which means also that non-traditional activities help banks to reduce the risk of the financial crisis. Moreover, banks with higher stock market development (MARKE_CAP) are also more risky during the financial turmoil period due to the strong correlation and interconnectedness with the global financial markets.

Table 5.15
Summary of Empirical Results for SDROA

Independent Variables	Expected sign	**Model 4** Full Model (sign)	**Model 5** With Listed Dummy (sign)	**Model 6** With Foreign Dummy (sign)	**Model 7** With Crisis Dummy (sign)	**Model 8** With Country Dummy (sign)
$LSDROA_{it-1}$		Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
COST	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
NIR	+/-	Significant (+)	Significant (+)	Significant (+)	**Significant (-)**	Significant (+)
OPC	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
DMDEP	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
MR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
NPLs	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LLPs	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
CAR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
LOAN	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	**Significant (-)**
LNGRTH	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
SIZE	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
OBSs	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
GDP	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
INF	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
RIR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
FDI	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
OIL	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
HHI	+/-	Insignificant (+)	Insignificant (+)	Insignificant (+)	Insignificant (-)	Insignificant (+)
MARKE_CAP	+/-	Significant (-)	Significant (-)	Significant (-)	**Significant (+)**	Significant (-)
DCPS	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LISTED_Dummy			Significant (-)			
FOREIGN_Dummy				Significant (+)		
CRISIS	+/-				Significant (+)	
Dummy_BHR						Significant (-)
Dummy_KWT						Significant (+)
Dummy_OMN						Significant (-)
Dummy_QAT						Significant (+)
Dummy_SAU						Significant (+)

Controlling the country dummies has only affected on the findings of LOAN variable. LOAN has a negative and significant effect on SDROA which may due to the differences in lending policies for GCC banks. The significant coefficients of country dummies on SDROA show that Bahraini and Omani banks are less risky than banks in UAE, while banks in Kuwait, Qatar, and

Saudi Arabia are more risky than in UAE. Table 5.15 presents the summary of empirical findings for SDROA.

5.6.3.2. Empirical Results for the SDROE

Table 5.16 presents an analysis of the second bank risk-taking measure SDROE using the full sample in the study. Similar to the empirical analysis on SDROA in Table 5.14, Table 5.16 also consists of the same eight models.

The Wald-test shows the joint significance of the variables, while the Sargan test for over-identifying restrictions fails to reject the null hypothesis in all columns, indicating that the instruments used in the SDROE analysis are valid. In addition, the *p*- value for AR(2) in all columns fails to reject the null hypothesis of the absence of second-order serial autocorrelation. This means that the GMM estimator used to analyse the SDROE in this study is consistent. Furthermore, the positive significant coefficients of lagged one period of $SDROE_{it-1}$ in all columns imply that there exists a high degree of bank risk persistence which justifies the dynamic nature of study model specification.

The empirical findings of the dependent variable of SDROE mostly confirm the results from the estimation of SDROA in the study with some exceptions. For example, the association between OPC and SDROE is negative and significant, suggesting that the keeping more reserves lead to reduced volatility of bank equity returns (lower risk). This may due to the fact that efficient banks are able to make their customers pay more than their OPC which in turn reduce bank risk measured by SDROE.

Table 5.16

Regression Results for SDROE as Dependent Variable

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
$LSDROE_{it-1}$	.83601 (.00007)***	.83971 (.00016)***	.82968 (.00011)***	.83357 (.00019)***	.83417 (.0002)***	.86193 (.0002)***	.83455 (.0002)***	.81307 (.0003)***
Bank-specific factors								
COST	.02531 (.00012)***	.02756 (.00042)***	.02299 (.00028)***	.02592 (.00049)***	.02589 (.0003)***	.03075 (.0008)***	.02792 (.0005)***	.02346 (.0006)***
NIR	.00527 (.00004)***	.00531 (.00007)***	.00491 (.00004)***	.00504 (.00008)***	.00589 (.00010)***	.00638 (.0001)***	.00538 (.0001)***	-.00312 (.0001)***
OPC	**-8.2158** **(.05228)*****	**-10.3128** **(.31978)*****	**-6.8028** **(.16095)*****	**-7.8677** **(.37919)*****	**-8.9827** **(.3258)*****	**-11.558** **(.4712)*****	**-8.8205** **(.4696)*****	**-12.4185** **(1.027)*****
LR	**.016771** **(.00077)*****	**.01791** **(.00143)*****	**.01577** **(.00125)*****	**.018857** **(.00215)*****	**.01819** **(.0016)*****	**.01716** **(.0020)*****	**.01828** **(.0016)*****	**.01326** **(.0022)*****
DMDEP	-.30266 (.00149)***	-.30011 (.00436)***	-.30896 (.00296)***	-.30577 (.00511)***	-.30246 (.0066)***	-.30175 (.0076)***	-.29960 (.0057)***	-.35931 (.0010)***
MR	.08644 (.00203)***	.14410 (.00278)***	.06797 (.00301)***	.11504 (.00376)***	.10797 (.0042)***	.11723 (.0053)***	.10832 (.0052)***	.12701 (.0056)***
NPLs	.04373 (.00050)***	.04710 (.00068)***	.04077 (.00057)***	.04784 (.00111)***	.04683 (.0010)***	.04075 (.0012)***	.04461 (.0011)***	.04722 (.0016)****
LLPs	.90862 (.00380)***	.87797 (.00769)***	.90796 (.00417)***	.88114 (.00736)***	.88405 (.0090)***	.81764 (.0121)***	.85853 (.0069)***	.89243 (.0097)***
CAR	-.77096 (.00074)***	-.75354 (.00281)***	-.75123 (.00241)***	-.74302 (.00371)***	-.74456 (.0051)***	-.67105 (.0056)***	-.72854 (.0036)***	-.82161 (.0064)***
LOAN	**-.09489** **(.08176)**	**-.11422** **(.11414)**	**-.10526** **(.11379)**	**-.10808** **(.09565)**	**-.14726** **(.0860)**	**-.13823** **(.0185)**	**-.14771** **(.0957)**	**-.15561** **(.0907)**
LNGRTH	**-.00381** **(.00229)**	**-.00810** **(.00668)**	**-.01028** **(.00949)**	**-.00343** **(.00272)**	**-.00433** **(.0030)**	**-.00403** **(.0027)**	**-.00500** **(.0037)**	**-.00281** **(.0019)**
SIZE	-1.6985 (.01521)***	-2.0298 (.04751)***	-1.9044 (.02111)***	-2.1928 (.04320)***	-1.9209 (.0473)***	-2.5461 (.0464)***	-1.5391 (.0452)***	-5.5222 (.1002)***
OBSs	.00254 (.00013)***	.00119 (.00016)***	.00303 (.00027)***	.00195 (.00035)***	.00229 (.0003)***	.00203 (.0004)***	.00168 (.0003)***	.00174 (.0004)***
Macroeconomic indicators								
GDP		-.09446 (.00315)***		-.02009 (.00398)***	-.02036 (.0044)***	-.02292 (.0068) ***	-.02877 (.0063)***	-.08082 (.0088)***
INF		.68599 (.00887)***		.59377 (.00944)***	.57107 (.0097)***	.44955 (.0085)***	.31921 (.0072)***	.56377 (.0166)***
RIR		.00497 (.00161)***		.00667 (.00210)***	.00878 (.0019)***	.04562 (.0026)***	.05391 (.0025)***	.05348 (.0033)***
FDI		.76996 (.02221)***		.68638 (.02533)***	.75759 (.0313)***	.55682 (.0251)***	.89607 (.0312)****	.70345 (.0344)***
OIL		.01445 (.0003368)***		.01231 (.00043)***	.01162 (.0005)***	.00943 (.00085)***	.01143 (.0007)***	.03215 (.0009)***
Financial structure indicators								
HHI			.00007 (.00021)	.00131 (.00031)***	**.00060** **(.00051)**	.00224 (.0003)***	.00647 (.0003)***	.00162 (.0005)***
MARKE_CAP			-.0239 (.00024)***	-.01923 (.00041)***	-.01807 (.0004)***	-.02724 (.0008)***	-.00671 (.00043)***	-.02420 (.0008)***
DCPS			.03616 (.00158)***	.03901 (.00248)***	.04214 (.0026)***	.05936 (.0034)***	**-.02138** **(.0031)*****	.11889 (.0040)***
LISTED_Dummy					**9.2922** **(8.1550)**			
FOREIGN_Dummy						-15.7813 (.4577)***		
CRISIS							3.9549 (.0585)***	
Dummy_BHR								-27.4712 (1.397)***
Dummy_KWT								20.350 (1.425)***
Dummy_OMN								-10.655 (2.0767)***
Dummy_QAT								-3.0411 (1.6711)*
Dummy_SAU								14.801

								(1.629)***
Constant	69.247 (.22265)***	91.2992 (.51439)***	72.1757 (.41225)***	89.6794 (.80991)***	82.077 (.819)***	96.574 (.8696)***	88.1922 (.7470)***	149.137 (2.3553)***
No. of observations	1965	1939	1965	1939	1939	1939	1939	1939
Number of banks	163	163	163	163	163	163	163	163
Number of instruments	137	142	140	145	146	146	146	145
Wald-test	23800***	4970***	6020***	4400***	2710***	148000***	3330***	18200***
Sargan test (p-value)	0.9762	0.9649	0.9615	0.9719	0.9670	0.9867	0.9801	0.9730
AB test AR(1) (p-value)	0.2724	0.2618	0.2715	0.2714	0.2710	0.2722	0.2694	0.2700
AB test AR(2) (p-value)	0.2737	0.2727	0.285	0.2991	0.2977	0.3092	0.3632	0.3722

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance using two-step GMM estimations by Arellano and Bover (1995). The dependent variable is the Standard deviation of return on equity SDROE. COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; LISTED_Dummy is a dummy takes a value of 1 for listed banks and 0 otherwise; FOREIGN_Dummy is a dummy takes a value of 1 for foreign banks and 0 otherwise; CRISIS is a dummy crisis takes a value of 1 for the years 2008–2009 and 0 otherwise; Dummy_BHR is equal to one if the bank nationality is that of the Bahrain and zero otherwise; Dummy_KWT is equal to one if the bank nationality is that of the Kuwait and zero otherwise; Dummy_OMN is equal to one if the bank nationality is that of the Oman and zero otherwise; Dummy_QAT is equal to one if the bank nationality is that of the Qatar and zero otherwise; Dummy_SAU is equal to one if the bank nationality is that of the Saudi and zero otherwise. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

Regarding with LR, the effect of LR is positive and significant, implying that banks which are more liquid (lower loans to deposit ratio) are normally accompanied by lower risk. This result is consistent with Lee and Hsieh (2013) who find that LR for Asian banks has opposite pattern with bank risk-taking measured by SDROA and SDROE.

The estimation results of this study show that loan to total assets (LOAN) and loan growth (LNGRTH) are insignificant with SDROE, which implies that the hypotheses of LOAN and LNGRTH to SDROE are not supported. The insignificant association between LOAN and LNGRTH to SDROE in this study may be due to the ability of the banks in controlling their expenses (such as reducing the interest rate on deposits, non-deposit borrowings, different operating expenses, shift banks funding sources toward less costly deposits, reduce workers, LLPs and overhead). Rose and Hudgins (2010) suggest that reduction in expenses will create a big gap between expenses and revenue of banks and therefore will improve banks income.

In line with Mercieca *et al.* (2007), this study finds a highly significant and positive association between HHI and SDROE as reported in columns four, suggesting that banks with higher market concentration show higher returns volatility due to less competition. This may due to the fact that in banking markets with higher concentration/less competition have less credit rationing and larger loans, which eventually increase the probability of bank failure. In other words, as competition intensifies, borrower risk decreases and the LOAN increases. As LOAN increases, banks build up knowledge and expertise to monitor loans portfolio which in turn reduces the risk of loan defaults.

Incorporating the LISTED_Dummy in column five and FOREIGN_Dummy in Column six have not affected the main findings of the variables. The insignificant result of LISTED_Dummy to SDROE indicates that listed banks do not reduce bank risk-taking behavior. The probable explanation for the insignificant result may due to the inefficiency of GCC listed banks in translating their equity to generate profits. Moreover, the effect of the HHI is insignificant confirming that the competition between listed banks and unlisted banks is very weak in regard to SDROE.

The negative and significant association of FOREIGN_Dummy with SDROE suggests that foreign banks are able to better manage their risk and are able to reduce volatility in ROE (lower

SDROE) than domestic banks in GCC countries. These results are in line with the prior studies that indicate that better technology, better expertise, and larger capital base decrease the risk of foreign banks. Furthermore, foreign banks are usually subsidiaries of large banking institutions that have better access to global financial markets, quality risk management team and better capacity to diversify risks. Higher level of expertise and better technology in foreign banks lead to improvement in their profits and performance and are able to control their risk-taking behavior.

Including the CRISIS dummy in column seven and countries dummy in column eight have not altered the main findings of the analysis of SDROE with exception of DCPS. DCPS has a negative and significant effect on SDROE during the crisis period 2008-2009. Higher DCPS reduce bank risk-taking (SDROE) as all the sectors of the economy are not strongly sensitive to changes in the financial markets conditions, whereby any downturn in the financial markets may not necessary affect banks' returns in GCC economies. In other words, increase in DCPS rather than investing in financial markets help GCC banks to reduce the risk of global financial crisis in 2008. The summary of empirical results for SDROA is presented in Table 5.17.

The summary of the regression results of bank-specific characteristics, macroeconomic and financial structure indicators, as well as the dummy variables of listed banks, foreign banks and CRISIS on bank performance measured by ROA, ROE and NIM for bank profitability; Tobin's Q for market-based shareholder value; and SDROA and SDROE for bank risk-taking are showed in Table 5.18. Moreover, the results of the testing of hypotheses are provided in Table 5.19. Robustness test of the findings and the empirical results are reported in next section.

Table 5.17
Summary of Empirical Results for SDROE

Independent Variables	Expected sign	Model 4 Full Model (sign)	Model 5 With Listed Dummy (sign)	Model 6 With Foreign Dummy (sign)	Model 7 With Crisis Dummy (sign)	Model 8 With Country Dummy (sign)
$LSDROE_{it-1}$		Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
COST	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
NIR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
OPC	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
LR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
DMDEP	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
MR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
NPLs	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
LLPs	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
CAR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
LOAN	+/-	**Insignificant (+)**	**Insignificant (+)**	**Insignificant (+)**	**Insignificant (-)**	**Insignificant (+)**
LNGRTH	+/-	**Insignificant (+)**	**Insignificant (+)**	**Insignificant (+)**	**Insignificant (-)**	**Insignificant (+)**
SIZE	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
OBSs	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
GDP	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
INF	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
RIR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
FDI	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
OIL	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
HHI	+/-	Significant (+)	**Insignificant (+)**	Significant (+)	Significant (+)	Significant (+)
MARKE_CAP	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (-)
DCPS	+/-	Significant (+)	Significant (+)	Significant (+)	**Significant (-)**	Significant (+)
LISTED_Dummy			**Insignificant (+)**			
FOREIGN_Dummy				Significant (-)		
CRISIS	+/-				Significant (+)	
Dummy_BHR						Significant (-)
Dummy_KWT						Significant (+)
Dummy_OMN						Significant (-)
Dummy_QAT						Significant (-)
Dummy_SAU						Significant (+)

Table 5.18

Summary of Regression Results of Independent Variables on Bank Performance

Independent Variables	**Expected sign**	**Bank Profitability**			**Market-Based Performance**	**Bank Risk Taking**	
		ROA (sign)	ROE (sign)	NIM (sign)	Tobin's Q (sign)	SDROA (sign)	SDROE (sign)
Lag_{it-1}	N/A	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
COST	+/-	Significant (-)	Significant (-)	Significant (-)	**Insignificant (+)**	Significant (+)	Significant (+)
NIR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (+)	Significant (+)	Significant (+)
OPC	+/-	Significant (+)	Significant (+)	**Insignificant (+)**	Significant (+)	Significant (+)	Significant (-)
LR	+/-	Significant (-)	Significant (+)	Significant (+)	Significant (+)	Significant (-)	Significant (+)
DMDEP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (-)	Significant (-)
MR	+/-	Significant (-)	Significant (-)	Significant (-)	**Insignificant (+)**	Significant (+)	Significant (+)
NPLs	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (+)	Significant (+)
LLPs	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (+)	Significant (+)
CAR	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (-)	Significant (-)	Significant (-)
LOAN	+/-	Significant (+)	Significant (-)	Significant (+)	**Insignificant (-)**	Significant (+)	**Insignificant (+)**
LNGRTH	+/-	Significant (-)	Significant (+)	Significant (+)	Significant (-)	Significant (+)	**Insignificant (+)**
SIZE	+/-	Significant (+)	**Insignificant (-)**	Significant (+)	Significant (-)	Significant (-)	Significant (-)
OBSs	+/-	Significant (+)	Significant (+)	Significant (-)	**Insignificant (-)**	Significant (+)	Significant (+)
GDP	+/-	Significant (+)	**Insignificant (-)**	Significant (+)	Significant (+)	Significant (-)	Significant (-)
INF	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (+)	Significant (+)
RIR	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (+)	Significant (+)
FDI	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (+)	Significant (+)	Significant (+)
OIL	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (+)
HHI	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	**Insignificant (+)**	Significant (+)
MARKE_CAP	+/-	Significant (+)	Significant (+)	Significant (+)	Significant (+)	Significant (-)	Significant (-)
DCPS	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (+)	Significant (+)
LISTED_Dummy		Significant (+)	Significant (+)	Significant (-)	________	Significant (-)	**Insignificant (+)**
FOREIGN_Dummy		**Insignificant (-)**	Significant (+)	Significant (+)	________	Significant (+)	Significant (-)
CRISIS	+/-	Significant (-)	Significant (-)	Significant (-)	Significant (-)	Significant (+)	Significant (+)

Table 5.19
Summary of Hypotheses Testing Results of Independent Variables on Bank Performance

Hypotheses	Bank Profitability		
	ROA	ROE	NIM
H1: There is a difference between the performance of foreign and domestic banks in GCC countries.	**Not supported**	Supported	Supported
H2a: There is a relationship between the COST and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H3a: There is a relationship between NIR and bank profitability (ROA, ROE, and NIM)	Supported	Supported	Supported
H4a: There is a relationship between OPC and bank profitability (ROA, ROE, and NIM).	Supported	Supported	**Not supported**
H5a: There is a relationship between LR and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H6a: There is a relationship between DMDEP and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H7a: There is a relationship between MR and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H8a: There is a relationship between NPLs ratio and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H9a: There is a relationship between LLPs ratio and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H10a: There is a relationship between CARs ratio and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H11a: There is a relationship between LOAN and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H12a: There is a relationship between LNGRTH and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H13a: There is a relationship between SIZE and bank profitability (ROA, ROE, and NIM).	Supported	**Not supported**	Supported
H14a: There is a relationship between OBSs activities and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H15a: There is a relationship between GDP and bank profitability (ROA, ROE, and NIM).	Supported	**Not supported**	Supported
H16a: There is a relationship between INF and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H17a: There is a relationship between RIR and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H18a: There is a relationship between FDI and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H19a: There is a relationship between OIL price and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H20a: There is a relationship between HHI and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H21a: There is a relationship between MARKE_CAP and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H22a: There is a relationship between DCPS and bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported
H23a: Listed banks have higher profitability (ROA, ROE, and NIM) than unlisted banks.	Supported	Supported	**Not supported**
H24a: The CRISIS has an effect on bank profitability (ROA, ROE, and NIM).	Supported	Supported	Supported

Table 5.19 (Continued)

Hypotheses	Market-Based Performance (Tobin's Q)
H2b: There is a relationship between the COST and market-based performance (Tobin's Q).	**Not supported**
H3b: There is a relationship between NIR and market-based performance (Tobin's Q).	Supported
H4b: There is a relationship between OPC and market-based performance (Tobin's Q).	Supported
H5b: There is a relationship between LR and market-based performance (Tobin's Q).	Supported
H6b: There is a relationship between DMDEP and market-based performance (Tobin's Q).	Supported
H7b: There is a relationship between MR and market-based performance (Tobin's Q).	**Not supported**
H8b: There is a relationship between NPLs ratio and market-based performance (Tobin's Q).	Supported
H9b: There is a relationship between LLPs ratio and market-based performance (Tobin's Q).	Supported
H10b: There is a relationship between CARs ratio and market-based performance (Tobin's Q).	Supported
H11b: There is a relationship between LOAN and market-based performance (Tobin's Q).	**Not supported**
H12b: There is a relationship between LNGRTH and market-based performance (Tobin's Q).	Supported
H13b: There is a relationship between SIZE and market-based performance (Tobin's Q).	Supported
H14b: There is a relationship between OBSs activities and market-based performance (Tobin's Q).	**Not supported**
H15b: There is a relationship between GDP and market-based performance (Tobin's Q).	Supported
H16b: There is a relationship between INF and market-based performance (Tobin's Q).	Supported
H17b: There is a relationship between RIR and market-based performance (Tobin's Q).	Supported
H18b: There is a relationship between FDI and market-based performance (Tobin's Q).	Supported
H19b: There is a relationship between OIL price and market-based performance (Tobin's Q).	Supported
H20b: There is a relationship between HHI and market-based performance (Tobin's Q).	Supported
H21b: There is a relationship between MARKE_CAP and market-based performance (Tobin's Q).	Supported
H22b: There is a relationship between DCPS and market-based performance (Tobin's Q).	Supported
H24b: The CRISIS has an effect on market-based performance (Tobin's Q).	Supported

Table 5.19 (Continued)

Hypotheses	Bank Risk Taking	
	SDROA	**SDROE**
H1: There is a difference between the performance of foreign and domestic banks in GCC countries.	Supported	Supported
H2c: There is a relationship between the COST and bank risk-taking (SDROA and SDROE).	Supported	Supported
H3c: There is a relationship between NIR and bank risk-taking (SDROA and SDROE).	Supported	Supported
H4c: There is a relationship between OPC and bank risk-taking (SDROA and SDROE).	Supported	Supported
H5c: There is a relationship between LR and bank risk-taking (SDROA and SDROE).	Supported	Supported
H6c: There is a relationship between DMDEP and bank risk-taking (SDROA and SDROE).	Supported	Supported
H7c: There is a relationship between MR and bank risk-taking (SDROA and SDROE).	Supported	Supported
H8c: There is a relationship between NPLs ratio and bank risk (SDROA and SDROE).	Supported	Supported
H9c: There is a relationship between LLPs ratio and bank risk (SDROA and SDROE).	Supported	Supported
H10c: There is a relationship between CARs ratio and bank risk-taking (SDROA and SDROE).	Supported	Supported
H11c: There is a relationship between LOAN and bank risk-taking (SDROA and SDROE).	Supported	**Not supported**
H12c: There is a relationship between LNGRTH and bank risk-taking (SDROA and SDROE).	Supported	**Not supported**
H13c: There is a relationship between SIZE and bank risk-taking (SDROA and SDROE).	Supported	Supported
H14c: There is a relationship between OBSs activities and bank risk-taking (SDROA and SDROE).	Supported	Supported
H15c: There is a relationship between GDP and bank risk-taking (SDROA and SDROE).	Supported	Supported
H16c: There is a relationship between INF and bank risk-taking (SDROA and SDROE).	Supported	Supported
H17c: There is a relationship between RIR and bank risk-taking (SDROA and SDROE).	Supported	Supported
H18c: There is a relationship between FDI and bank risk-taking (SDROA and SDROE).	Supported	Supported
H19c: There is a relationship between OIL price and bank risk-taking (SDROA and SDROE).	Supported	Supported
H20c: There is a relationship between HHI and bank risk-taking (SDROA and SDROE).	**Not supported**	Supported
H21c: There is a relationship between MARKE_CAP and bank risk-taking (SDROA and SDROE).	Supported	Supported
H22c: There is a relationship between DCPS and bank risk-taking (SDROA and SDROE).	Supported	Supported
H23b: Listed banks are more risky (SDROA and SDROE) than unlisted banks.	**Not supported**	**Not supported**
H24c: The CRISIS has an effect on bank risk-taking (SDROA and SDROE).	Supported	Supported

5.6.4 Robustness Check

In order to further confirm the robustness of the above-mentioned results, this study provides several robustness checks, which are the following:

5.6.4.1. Regress Bank-Specific Factors with FDI Inflow and Oil Price Shocks

To get more robust findings, this study considers alternative models with a smaller number of parameters. In order to distinguish between the direct and indirect impacts of oil prices shocks and FDI inflow, the study examines the relationship of bank-specific factors with FDI inflow in Model 1 and bank-specific factors with oil price (proposed by Poghosyan & Hesse, 2009) in Model 2. If the impact of oil prices and FDI remains significant when macroeconomic variables (GDP, INF, and RIR) and financial structure indicators (HHI, MARKE_CAP, and DCPS) are excluded from the model specification, then this study would confirm that oil prices shocks and FDI inflow have a direct impact on bank performance.

Table 5.20 shows that the effect of FDI inflow and oil price on all measures of bank performance (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) remain significant when the other macroeconomic and financial indicators (country-specific) are excluded from the specification, confirming that oil price shocks and FDI inflow have direct impact on GCC banks performance. Moreover, the results confirm that irrespective of the inclusion or exclusion of macroeconomic and financial indicators have not affected the main findings with the exception of COST and MR with Tobin's Q. COST has a negative and significant effect on Tobin's Q, while the effect of MR on Tobin's Q is positive and significant.

Table 5.20

*Regression Results for **Bank-Specific Factors with Oil Price and FDI Inflow** on Bank Performance Measures (Robustness Check 1)*

	Bank Profitability						Market-Based Performance		Bank-Risk-Taking			
	ROA		ROE		NIM		Tobin's Q		SDROA		SDROE	
Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Lag$_{it-1}$	.146	.129	.0213	.0257	.7607	.7626	.4013	.4217	.7167	.7310	.8355	.8356
	(.0004)***	(.001)***	(.0001)***	(.0001)***	(.0015)***	(.0019)***	(.011)***	(.010)***	(.0008)***	(.0007)***	(.0001)***	(.0001)***
COST	-.024	-.023	-.0501	-.0518	-.004	-.0038	-.0021	-.0015	.0011	.0012	.0249	.0252
	(.0001)***	(.0001)***	(.0007)***	(.0004)***	(.0000)***	(.0001)***	(.0005)***	(.0004)***	(.00001)***	(.0000)***	(.0001)***	(.0012)***
NIR	-.00041	-.0003	-.0022	-.0023	-.0003	-.0003	.0016	.0016	.0002	.0002	.00514	.0052
	(.0000)***	(.0000)***	(.0001)***	(.0001)***	(.00001)***	(.00001)***	(.0003)***	(.0002)***	(.0000)**	(.0001)*	(.0001)***	(.0000)***
OPC	1.95	3.22	3.272	5.383	.4215	.380	.0252	.1051	1.557	.9611	-9.455	-8.404
	(.0844)***	(.081)***	(.640)***	(.683)***	(.0617) *	(.060)*	(.056)*	(.055)*	(.0363)***	(.0282)***	(.096)***	(.137)***
LR	-.0021	-.003	.0759	.0675	.0004	.0005	.0017	.0009	-.0037	-.0036	.01665	.0171
	(.0001)***	(.0001)***	(.0027)***	(.0026)***	(.0001)***	(.00006)***	(.0005)**	(.0004)**	(.0000)***	(.0000)***	(.0007)***	(.0006)***
DMDEP	.015	.019	.587	.609	.0134	.0129	.0036	.005	-.0175	-.0169	-.2985	-.2995
	(.0008)***	(.0006)***	(.0057)***	(.0058)***	(.0003)***	(.0004)***	(.0007)***	(.0007)***	(.0004)***	(.0003)***	(.002)***	(.0023)***
MR	-.019	-.015	-.0248	-.0660	-.0133	-.0139	.0007	.0063	.0759	.0717	.0975	.0908
	(.001)***	(.001)***	(.007)***	(.0111)***	(.0007)***	(.0008)***	(.0004)*	(.0033)*	(.0004)***	(.0003)***	(.0023)***	(.0029)***
NPLs	-.020	-.024	-.256	-.2597	-.0097	-.0086	-.005	-.003	.0091	.0096	.0437	.0439
	(.0002)***	(.0002)***	(.002)***	(.0016)***	(.0001)***	(.0001)***	(.001)***	(.001)***	(.0001)***	(.0001)***	(.0005)***	(.0003)***
LLPs	-.392	-.393	-1.209	-1.224	-.0558	-.0542	-.004	-.003	.1888	.1845	.9036	.9073
	(.001)***	(.001)***	(.009)***	(.0097)***	(.0005)***	(.0004)***	(.0003)***	(.0003)***	(.0006)***	(.0007)***	(.0067)***	(.0049)***
CAR	.221	.230	.0637	.0554	.0389	.040	-.0036	-.0002	-.0258	-.02321	-.7658	-.7667
	(.001)***	(.001)***	(.006)***	(.0032)***	(.0005)***	(.0002)***	(.002)**	(.0001)*	(.0003)***	(.0002)***	(.0015)***	(.0012)***
LOAN	.094	.104	-.116	-.1932	.0172	.0198	-.0003	-.0001	.0145	.0107	.1037	.1000
	(.001)***	(.001)***	(.008)***	(.0010)***	(.0004)***	(.0010)***	(.0002)	(.0001)	(.0007)***	(.0006)***	(.0027)***	(.0022)***
LNGRTH	-.0006	-.002	.0045	.0039	.0017	.0009	-.0003	-.0003	.0028	.0028	.0044	.0041
	(.0001)***	(.0001)***	(.002) **	(.0020)*	(.0001)***	(.0001)***	(.0001)***	(.0001)**	(.0001)***	(.0001)***	(.0004)**	(.0003)***
SIZE	.713	.567	-7.710	-6. 648	.132	.0797	-.1149	-.087	-.6765	-.5446	-1.410	-1.7339
	(.008)***	(.013)***	(.137)	(.088)	(.010)***	(.0012)***	(.007)***	(.007)***	(.006)***	(.010)***	(.0207)***	(.0146)***
OBSs	.0009	.002	.0149	.0174	-.0003	-.0002	-.0002	-.0001	.0004	.0003	.0018	.00245
	(.0001)***	(.000)***	(.0010)***	(.0010)***	(.000)***	(.0000)***	(.0001)	(.0001)	(.0000)***	(.0000)***	(.0001)***	(.0002)***
FDI	-.0907		-1.957		-.0201		.0365		.1396		.4063	
	(.0044)***		(.036)***		(.0028)***		(.0047)***		(.0037)***		(.0129)***	
OIL		.0217		.0387		.0049		.0011		.0008		.00064
		(.0002)***		(.0007)***		(.0002)***		(.0001)***		(.0003)***		(.0002)***
Constant	7.44	2.33	134.64	168.27	3.243	1.757	1.252	1.130	7.367	8.622	75.46	69.89
	(.213)***	(.236)***	(2.068)***	(1.53)***	(.159)***	(.162)***	(.118)***	(.170)***	(.054)***	(.1326)***	(.354)***	(.226)***
No. of observations	2266	2266	2266	2266	2157	2157	832	832	1965	1965	1965	
Number of banks	171	171	171	171	170	170	67	67	163	163	163	163
Number of instruments	139	139	139	139	138	138	52	52	138	138	138	138
Wald-test X^2	11500***	68300***	3970***	22200***	84100***	5280***	5137.27***	2605.78***	133000***	88200***	837000***	931000***
Sargan test (p-value)	0.8818	0.8594	0.8775	0.8460	0. 9311	0.8609	0.9982	0.9971	0.9383	0.9627	0. 9621	0.9440
AB test AR(1) (p-value)	0. 0439	0.0425	0.2648	0.2639	0. 0068	0.0065	0. 0019	0.0079	0. 0224	0.0209	0. 2727	0.2724
AB test AR(2) (p-value)	0. 4631	0.5436	0.1621	0.1841	0. 1689	0.1781	0. 1477	0.1404	0. 5665	0.5914	0. 2591	0.2723

The table describes results of the effects of bank-specific factors with oil Price and FDI on bank performance using two-step GMM estimations by Arellano and Bover (1995). The dependent variables are the ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE. COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue. OPC is opportunity cost measured by liquid reserves to total assets, LR is liquidity risk measured by loans divided by customers and short-term funding. DMDEP is demand deposit to total deposits. MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans. LLPs is loan less provision to total loans; CAR is capital adequacy ratio measured by equity to total assets. LOAN is loans to total assets. LNGRTH is loan growth measured by annual growth rate of total loan. SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets. FDI is FDI inflow measured by the natural logarithm of the FDI inflows value. OIL is oil price measured by annual oil spot price change (Dollars per Barrel). The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano-Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation)

5.6.4.2. Exclusion of Bank Size Variable

Given the large differences between the size of domestic banks and foreign banks in each of the GCC countries on the one hand, as well as between banks as a whole in the GCC countries on the other hand, this study checks the robustness by running regressions to check as to whether the findings of the study change when the banks' size variable is excluded from the analysis. Table 5.21 shows the results for the sample of all banks and of listed banks. Overall, Table 5.21 shows that the results are similar to the main results excepting the coefficient of HHI which is found to be not significant with ROA, NIM, and SDROE when SIZE is excluded from the specification.

5.6.4.3 Regress using the ROAA, ROAE, SDROAA and SDROAE

Following the previous studies of Dietrich and Wanzenried (2011, 2014), Mirzaei *et al.* (2013), and Mercieca *et al.* (2007), this study also re-run these tests for selection bias with the four other dependent variables that capture average ROE, average ROA, and the two corresponding risk-taking behavior measures. In other words, this study also estimates the models by using the average of dependent variables ROAA, ROAE, SDROAA and SDROAE rather than ROA, ROE, SDROA, and SDROE in order to estimate how study findings are sensitive to the average measures used. Table 5.22 confirms that the regression results remain consistent when the study replaces the dependent variable of bank profitability from ROA and ROE to ROAA and ROAE as well as for bank risk taking from SDROA and SDROE to SDROAA and SDROAA.

Table 5.21

Regression Results when the Study ***Excludes the Variable of Bank Size*** *(Robustness Check 2)*

	Bank Profitability			**Market-Based Performance**	**Bank Risk-Taking**	
Variables	**ROA**	**ROE**	**NIM**	**Tobin's Q**	**SDROA**	**SDROE**
Lag_{t-1}	.0574	0209	.7691	.3527	.7529	.8368
	(.0013)***	(.0003)***	(.0023)***	(.0123)***	(.0011)***	(.00015)***
COST	-.0165	-.0194	-.0033	.0004	.0013	.0258
	(.0001)***	(.0015)***	(.0002)***	(.0003)	(.00003)***	(.0005)***
NIR	-.00057	-.0040	-.00026	.0006	.00023	.0046
	(.00002)***	(.0001)***	(.00001)***	(.0003)*	(.0001)***	(.00004)***
OPC	1.2098	6.762	.0311	.2866	1.8827	-7.073
	(.169)***	(1.443)***	(.1374)	(.0931)**	(.0553)***	(.2579)***
LR	-.0039	.0810	.00087	.0022	-.0027	.0146
	(.0001)***	(.0075)***	(.0002)**	(.0006)***	(.0001)***	(.0011)***
DMDEP	.0245	.6080	.0133	.0031	-.0171	-.3241
	(.0014)***	(.0127)***	(.0008)***	(.0009)**	(.0006)***	(.0023)***
MR	-.0410	-.0465	-.0131	.0006	.0798	.0933
	(.0018)***	(.0160)***	(.0016)***	(.0010)	(.0007)***	(.0051)***
NPLs	-.0398	-.2609	-.0079	-.0015	.0092	.0546
	(.0003)***	(.0039)***	(.0002)***	(.0008)*	(.0001)***	(.0089)***
LLPs	-.3926	-1.0461	-.05798	-.0028	.1838	.8948
	(.0027)***	(.0167)***	(.0007)***	(.0006)*	(.0007)***	(.0040)***
CAR	.2420	.1863	.0388	-.0004	-.01955	-.7613
	(.0013)***	(.0069)***	(.0007)***	(.0002)*	(.0001)***	(.0051)***
LOAN	.0819	-.5173	.0228	-.00006	.0073	-.1255
	(.0016)***	(.0162)***	(.0011)***	(.0001)	(.0006)***	(.0044)
LNGRTH	-.0032	.0186	.0014	-.0001	.0011	-.0053
	(.0003)***	(.0023)***	(.0002)***	(.00004)**	(.00003)***	(.0007)
SIZE	....	....	....	....	....	....
OBSs	.0009	.0266	-.0005	-.00017	.00043	.0022
	(.0002)***	(.0015)***	(.0001)***	(.0003)	(.00004)***	(.00036)***
GDP	.1658	-.0250	.0071	.0049	-.0219	-.0099
	(.0038)***	(.0180)	(.0019)***	(.0008)***	(.0015)***	(.0050)*
INF	-.0678	-1.2217	-.0247	-.0043	.0970	.5839
	(.0029)***	(.0430)***	(.0018)***	(.0008)**	(.0016)***	(.0084)***
RIR	-.0352	-.1701	-.0153	-.0020	.0155	.0066
	(.0016)***	(.0107)***	(.0013)***	(.0003)***	(.00034)***	(.0022)***
FDI	-.3453	-1.213	-.0555	.0236	.0346	.8737
	(.0081)***	(.0823)***	(.0046)***	(.0033)***	(.0053)***	(.0257)***
OIL	.0029	.0622	.0031	.0012	.00316	.0110
	(.0006)***	(.0027)***	(.0002)***	(.0001)***	(.00015)***	(.0004)***
HHI	-.00007	-.0316	-.0001	-.0004	.00003	.00005
	(.0003	(.0023)***	(.0001)	(.0001)***	(.00002)	(.0005)
MARKE_CAP	.0288	.1640	.0031	.0041	-.0011	-.0152
	(.0004)***	(.0018)***	(.0001)***	(.0002)***	(.0002)***	(.0005)***
DCPS	-.0768	-.1940	-.0083	-.0023	.0085	.0265
	(.0015)***	(.0099)***	(.0005)***	(.0003)**	(.00041)***	(.0018)***
Constant	5.096	68.055	.8795	-.2823	-1.668	62.079
	(.393)***	(2.424)***	(.1577)***	(.1351)**	(.1111)***	(.7896)***
No. of observations	2238	2238	2138	812	1939	1939
Number of banks	171	171	170	67	163	163
Number of instruments	145	145	144	58	144	144
Wald-test X^2	36100***	8275.23***	9710***	3343.11***	113000***	600000***
Sargan test (p-value)	0.8588	0.9010	0.9474	0.9991	0.9643	0.9585
AB test AR(1) (p-value)	0. 0281	0.2600	0.0053	0.0211	0.0194	0.2707
AB test AR(2) (p-value)	0.2959	0.2284	0.1581	0.2249	0.6933	0.3067

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors (except bank size) on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans, LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation)

Table 5.22

Regression Results when the study ***Replaces ROA, ROE, SDROA, and SDROE by ROAA, ROAE, SDROAA and SDROAE*** *(Robustness Check 3)*

	Bank Profitability		Bank Risk-Taking	
Variables	**ROAA**	**ROAE**	**SDROAA**	**SDROAE**
Lag_{it-1}	.1183 (.0021)***	.0161 (.0008)***	.5596 (.0023)***	.7685 (.0021)***
COST	-.0145 (.00013)***	-.1598 (.0035)***	.00204 (.00005)***	.0166 (.0005)***
NIR	-.00089 (.00004)***	-.0315 (.00019)***	.00071 (.00008)***	.01578 (.0005)***
OPC	2.3107 (.2075)***	58.569 (1.429)***	2.3888 (.0821)***	-17.628 (.4787)***
LR	-.00045 (.0002)**	.0912 (.0050)***	-.0027 (.00007)**	-.00346 (.0015)***
DMDEP	.00827 (.0011)***	.0746 (.0138)***	-.0146 (.00050)***	-.5013 (.0053)***
MR	-.0033 (.0018)*	-.3586 (.0092)***	.0732 (.00085)***	.2428 (.00402)***
NPLs	-.0263 (.00022)***	-.1403 (.0021)***	.0033 (.00012)***	.0308 (.00063)***
LLPs	-.2749 (.0022)***	-1.9517 (.0245)***	.1453 (.0014)***	.6125 (.0071)***
CAR	.2341 (.0014)***	.1549 (.0115)***	-.0180 (.0006)***	-.1348 (.0037)***
LOAN	.0819 (.0018)***	-.9306 (.0179)***	.0026 (.0010)**	-.1973 (.0065)
LNGRTH	-.0022 (.0003)***	.0438 (.0036)***	.00256 (.0001)***	.00389 (.00043)
SIZE	.2309 (.0173)***	-1.485 (.1775	-1.0437 (.0175)***	-2.4437 (.1107)***
OBSs	.00135 (.00021)***	.0391 (.00167)***	.00025 (.00005)***	.0242 (.0037)***
GDP	.18815 (.0029)***	-.0091 (.0194)	-.06194 (.00214)***	-.03836 (.0109)***
INF	-.0771 (.00314)***	-.4084 (.0285)***	.1059 (.0021)***	.0904 (.0121)***
RIR	-.0352 (.0019)***	-.0108 (.0084)***	.01432 (.00067)***	.0309 (.0031)***
FDI	-.4183 (.0097)***	-.9325 (.0622)***	.17194 (.0059)***	1.4163 (.0522)***
OIL	.0021 (.00059)***	.0865 (.00366)***	.0053 (.00018)***	.00303 (.00098)***
HHI	-.00071 (.00026)**	-.0159 (.00173)***	.000079 (.000049)	.00161 (.00069)***
MARKE_CAP	.0343 (.00044)***	.1678 (.00396)***	-.00167 (.00025)***	-.0363 (.00142)***
DCPS	-.0464 (.00132)***	-.0845 (.0106)***	.0252 (.0010)***	.00941 (.0037)***
Constant	.4812 (.0018)***	-14.676 (1.6732)***	10.578 (.27113)***	63.6225 (1.630)***
No. of observations	2235	2235	1822	1822
Number of banks	171	171	163	163
Number of instruments	146	146	145	145
Wald-test X^2	29200***	49100***	5440***	13400***
Sargan test (p-value)	0.8985	0.9004	0.1963	0.1707
AB test AR(1) (p-value)	0.0059	0.7635	0.0045	0.0933
AB test AR(2) (p-value)	0.8698	0.2462	0.3918	0.2056

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROAA, ROAE, SDROAA, and SDROAE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank's total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

5.6.4.4 Exclusion of Bahrain and UAE Banks Sample

Since Bahrain and UAE banks account for 39 and 24 percent of the sample population respectively, this study provides three robustness tests in order to check as to whether the study results suffer from any sample bias. In panel A, the study excludes the sample of Bahraini banks from the dataset. In Panel B, this study reruns the analysis excluding the sample of UAE banks. Panel C shows the results when the sample of Bahraini and UAE banks are simultaneously excluded.

Table 5.23 shows that the main results remain unchanged when Bahraini and UAE banks are excluded from the sample. However, there are three findings that are noteworthy: Panel A and C shows that the coefficients on NIR and OBSs are significant but positive with all measures of bank profitability (ROA, ROE, and NIM) and negative significant with bank risk (SDROA and SDROE) when Bahrain is excluded from the sample. Bahraini banks are more engaged in non-traditional activities during the period of 2000-2009 which is linked to their lower profitability. After the financial crisis, this association is reversed: lesser involvement in non-traditional activities result in improved profitability of Bahrain banks. This evidence suggests that Bahraini banks are responsible for the negative and significant association between NIR and bank profitability. Furthermore, the coefficients on COST and MR becomes significant with Tobin's Q, suggesting that the Bahraini listed banks are less efficient in managing their costs and less engaged in securities investments, which has contributed to making the relationship of COST and MR with Tobin's Q being insignificant.

Furthermore, Panel A and C indicate that the coefficient of FDI inflow is positive (negative) and significant with bank profitability (risk) when Bahrain banks are excluded from the sample. This may due to the fact that Bahrain has witnessed higher competition from foreign banks compared to other GCC countries. In the end of 2015, the foreign assets concentration in Bahrain was 74 percent, compared to 50 percent in Kuwait, 29 percent in Oman, 68 percent in Qatar and 36 percent in Saudi Arabia. Moreover, during the last five years, the number of foreign commercial banks in Bahrain is 57 banks compared to 46 domestic commercial banks.

This indicates that Bahrain contributes largely to the significant negative (positive) association between FDI inflow and bank profitability (risk). In other words, the defensive expansion theory is applicable in the banking sectors of Oman, Saudi Arabia, UAE, Qatar and Kuwait while in Bahrain banking sector it is not applicable. The defensive expansion theory argues that foreign banks follow their customers into the host country in order to maintain (defend) their bank-customer relationship and they find that FDI increases the profit of foreign banks.

Table 5.23

Regression Results when the Study ***Excludes the Bahrain and UAE Banks Sample*** *(Robustness Check 4)*

Panel A: Excludes the Bahrain Banks Sample

	Bank Profitability			Market-Based Performance	Bank Risk-Taking	
Variables	**ROA**	**ROE**	**NIM**	**Tobin's Q**	**SDROA**	**SDROE**
Lag_{it-1}	.0287	.0017	.6903	.1375	.6441	.8541
	(.0045)***	(.0006)***	(.0106)***	(.0055)***	(.0038)***	(.0004)***
COST	-.0294	-.36584	-.01203	-.00393	.00177	.1029
	(.0004)***	(.0094)***	(.00025)***	(.0007)***	(.0001)***	(.0021)***
NIR	.0336	.5194	.01404	.00104	-.0036	-.1870
	(.0007)***	(.0122)***	(.00052)***	(.00043)***	(.00033)***	(.0031)***
OPC	2.3639	24.2461	1.5646	.4499	1.156	-17.712
	(.3711)***	(3.3572)***	(.2050)*	(.2203)**	(.1348)***	(1.424975)***
LR	-.0034	.0151	.00072	.0089	-.00352	.00458
	(.0001)***	(.0085)*	(.0002)***	(.0026)***	(.00014)***	(.0027)***
DMDEP	.01408	1.9161	.04703	.0156	-.01398	-.6366
	(.0022)***	(.0825)***	(.0015)***	(.0033)***	(.0009)***	(.03347)***
MR	-.055724	-.4272	-.01115	.0078	.06107	.35703
	(.0038)***	(.0429)***	(.0022)***	(.0025)***	(.0011)***	(.01194)***
NPLs	-.0372	-.2582	-.00207	-.00497	.01804	.01838
	(.0005)***	(.0029)***	(.0003)***	(.00137) **	(.0001)***	(.0020)***
LLPs	-.3437	-1.1682	-.01953	-.00164	.08348	.97569
	(.0079)***	(.0562)***	(.0011)***	(.0048)**	(.00262)***	(.0325)***
CAR	.2595	1.7825	.00645	-.00521	-.04317	-.75762
	(.0029)***	(.0749)***	(.0011)***	(.0025)**	(.00095)***	(.0255)***
LOAN	.1163	-.2118	.03869	.00069	.00139	.30723
	(.0038)***	(.0364)***	(.0022)***	(.0047)	(.0018)*	(.0133)
LNGRTH	-.0049	.0477	.00099	-.00045	.00442	-.01366
	(.0006)***	(.0067)***	(.00043)*	(.00022)*	(.00029)***	(.0024)
SIZE	.7902	-7.3290	.10811	-.08003	-1.0199	-1.1146
	(.0319)***	(.3551)	(.0225)***	(.0173)***	(.0224)***	(.1418)***
OBSs	.00164	.00624	.00013	-.00037	-.00021	-.00113
	(.00023)***	(.0008)***	(.00007)**	(.00037)	(.00004)***	(.0007) **
GDP	.21945	-.0492	.01241	.00766	-.0344	-.1011
	(.0061)***	(.0312)	(.0024)***	(.0014)***	(.0014)***	(.0111)***
INF	-.00707	-.8981	-.0082	-.0029	.06334	.65570
	(.0043) **	(.0611)***	(.0034)**	(.0015)*	(.0016)***	(.0180)***
RIR	-.00775	-.0433	-.00187	-.00103	.00419	.0036
	(.0018)***	(.0159)**	(.00095)**	(.0004)***	(.0004)***	(.0044)
FDI	.65543	.76438	.05234	.04285	-.17494	-.93163
	(.0166)***	(.17748)***	(.01006)***	(.0073)***	(.0061)***	(.0592)***
OIL	.00502	.0687	.00178	.00104	.0006	.0127
	(.0006)***	(.0055)***	(.00034)***	(.0001)***	(.0002)***	(.0013)***
HHI	-.00138	-.0088	-.0015	-.0004	.00028	.00590
	(.0004)***	(.0022)**	(.0001)**	(.0001)***	(.00009)***	(.0015)***
MARKE_CAP	.0218	.0751	.00043	.00385	-.00343	-.01939
	(.0008)***	(.0036)***	(.0002)**	(.0003)***	(.00026)***	(.0014)***
DCPS	-.04581	-.1527	-.0075	-.00432	.03474	.02335
	(.0029)***	(.0208)***	(.0016)***	(.0004)***	(.0009)***	(.0067)***
Constant	-8.2238	319.890	4.362	1.7956	11.925	125.865
	(.7873)***	(9.016)***	(.3246)***	(.5313)***	(.2307)***	(2.6083)***
No. of observations	1225	1225	1225	668	1191	1191
Number of banks	103	103	103	56	92	92
Number of instruments	82	82	82	45	80	80
Wald-test X^2	7200***	20600***	5980***	4514.40***	7740***	21000***
Sargan test (p-value)	0.9991	0.9999	0.9996	1.0000	0.9997	0.8588
AB test AR(1) (p-value)	0.1024	0.2855	0.0135	0.0292	0.0505	0.2803
AB test AR(2) (p-value)	0.8514	0.1195	0.3335	0.3182	0.4435	0.9699

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel), HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

Table 5.23 *Continued (Robustness Check 4)*

Panel B: Excludes the UAE Banks Sample

	Bank Profitability			Market-Based Performance	Bank Risk-Taking	
Variables	**ROA**	**ROE**	**NIM**	**Tobin's Q**	**SDROA**	**SDROE**
$Lag_{(t-1)}$	.0112	.0070	.7300	.1574	.7491	.8322
	(.0031)***	(.0004)***	(.0044)***	(.0081)***	(.0025)***	(.0003)***
COST	-.0126	-.0143	-.0037	.0002	.0016	.0220
	(.0001)***	(.0031)***	(.0002)***	(.0002)	(.0001)***	(.0005)***
NIR	-.0019	-.0043	-.0006	.0003	0011	.0049
	(.0000)***	(.0004)***	(.0000)***	(.0001)*	(.0000)***	(.0001)***
OPC	.1178	7.825	.5624	.0633	.7549	-8.368
	(.0024)***	(2.857)***	(.2121)***	(.3261)	(.1306)***	(.9149) **
LR	-.0062	.1288	.0029	.0044	-.0011	.0180
	(.0006)***	(.0246)***	(.0007)***	(.0019)**	(.0002)***	(.0080)**
DMDEP	.0384	.5930	.0103	.0090	-.0128	-.4009
	(.0035)***	(.0416)***	(.0020)***	(.0020)***	(.0010)***	(.0114)***
MR	-.0255	-.1941	-.0075	.0024	.0584	.1208
	(.0035)***	(.0421)***	(.0027)***	(.0023)	(.0011)***	(.0117)***
NPLs	-.0388	-.2758	-.0082	-.0012	.0078	.0513
	(.0007) ***	(.0048)***	(.0003)***	(.0006)*	(.0002)***	(.0021)***
LLPs	-.3958	-1.129	-.0735	-.0018	.1883	.9747
	(.0049)***	(.0487)***	(.0014)***	(.0007)**	(.0015)***	(.0103)***
CAR	.2907	.3178	.0475	-.0045	-.0065	-.8077
	(.0033)***	(.0254)***	(.0019)***	(.0010)***	(.0007)***	(.0103)***
LOAN	.0906	-.5477	.0268	.0049	.0039	.0824
	(.0060)***	(.0591)***	(.0029)***	(.0045)	(.0014)**	(.0176)***
LNGRTH	-.0021	.0179	.0006	-.0001	.0011	.0032
	(.0004)***	(.0033)***	(.0002)***	(.00007)*	(.0001)***	(.0011)**
SIZE	.3068	-.1190	.0987	-.0393	-.6049	-1.5659
	(.0461)***	(.6115)	(.0279)***	(.0143)**	(.0138)***	(.1159)***
OBSs	.0274	.0184	-.0028	-.0012	.0037	.1010
	(.0028) ***	(.0093)**	(.0010)**	(.0005)*	(.0011)***	(.0078)***
GDP	.1845	.2252	.0104	.0033	-.0233	-.0303
	(.0081)***	(.0305)***	(.0028)***	(.0014)**	(.0021)***	(.0087)***
INF	-.1349	-2.201	-.0369	-.0107	.0761	.6692
	(.0089)***	(.1011)***	(.0029)***	(.0014)***	(.0034)***	(.0310)***
RIR	-.0151	-.3332	-.0104	-.0026	.0128	.0241
	(.0021)***	(.0180)***	(.0016)***	(.0003)***	(.0009)***	(.0039)***
FDI	-.3553	-2.381	-.0819	.0297	.1101	.8413
	(.0212)***	(.1580)***	(.0101)***	(.0038)***	(.0089)***	(.0501)***
OIL	.0104	.1098	.0045	.0015	.0022	.0129
	(.0007)***	(.0065)***	(.0003)***	(.0001)***	(.0004)***	(.0013)***
HHI	-.0008	-.0293	-.0004	-.0027	.00004	.0022
	(.0001)***	(.0030)***	(.0001)**	(.0006)**	(.00003)	(.0005)***
MARKE_CAP	.0236	.1287	.0009	.0041	-.0019	-.0255
	(.0007)***	(.0030)***	(.0003)***	(.0002)***	(.0003)***	(.0007)***
DCPS	-.1061	-.2294	-.0078	-.0033	.0097	.1040
	(.0030)***	(.0212)**	(.0016)***	(.0004)***	(.0010)***	(.0049)***
Constant	.8594	116.14	.0361	.7545	4.8476	85.230
	(.0801)***	(9.534)***	(.3543)***	(.3309)**	(.2215)***	(1.282)***
No. of observations	1715	1715	1635	582	1463	1463
Number of banks	131	131	130	48	123	123
Number of instruments	99	99	98	35	97	97
Wald-test X^2	5752***	1190***	8414***	1891***	119000***	174000***
Sargan test (p-value)	0.9995	0.9998	1.0000	1.0000	1.0000	1.0000
AB test AR(1) (p-value)	0.0574	0.0624	0.0082	0.0439	0.0391	0.0722
AB test AR(2) (p-value)	0.1807	0.1650	0.1398	0.3940	0.7004	0.2875

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate, INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank's total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

Table 5.23 *Continued (Robustness Check 4)*

Panel C: Exclude both Bahrain and UAE Banks Sample

	Bank Profitability			Market-Based Performance	Bank Risk-Taking	
Variables	**ROA**	**ROE**	**NIM**	**Tobin's Q**	**SDROA**	**SDROE**
Lag_{it-1}	-.0476	-.0189	.7241	.1089	.7181	.8491
	(.0141)***	(.0017)***	(.0299)***	(.0161)***	(.0092)***	(.0008)***
COST	-.0194	-.4098	-.0167	-.0031	.0043	.1603
	(.0009)***	(.0281)***	(.0008)***	(.0012)**	(.0003)***	(.0075)***
NIR	.0300	.5645	.0206	.0027	-.0028	-.2559
	(.0010)***	(.0429)***	(.0014)***	(.0009)***	(.0005)***	(.0103)***
OPC	1.0564	2.9722	1.4514	.2297	.3142	-15.330
	(.5593)***	(1.0042) **	(.4918)***	(.0997)**	(.1213)**	(3.488)***
LR	-.0046	.0716	.0011	.0104	-.0011	.0108
	(.0012)***	(.0373)**	(.0005)**	(.0056)**	(.0006)*	(.0047)**
DMDEP	.0066	2.1785	.0473	.0047	-.0477	-.8844
	(.0011)***	(.2142)***	(.0045)***	(.0018)**	(.0033)***	(.0555)***
MR	-.0164	-.0815	-.0157	.0036	.0314	.4268
	(.0079)**	(.0394)**	(.0041)***	(.0013)**	(.0018)***	(.0421)***
NPLs	-.0331	-.2377	-.0015	-.0034	.0141	.0314
	(.0010)***	(.0087)***	(.0003)***	(.0017)**	(.0002)***	(.0042)***
LLPs	-.3083	-.8586	-.0192	-.0072	.1155	1.2317
	(.0250)***	(.1546)***	(.0034)***	(.0038)*	(.0066)***	(.0920)***
CAR	.3248	2.4153	.0026	-.0058	-.0088	-.8621
	(.0102)***	(.2147)***	(.0021)***	(.0012)***	(.0022)***	(.0445)***
LOAN	.1484	-.3401	.0314	.0009	.0249	.1867
	(.0109)***	(.1193)***	(.0072)***	(.0085)	(.0031)***	(.0348)***
LNGRTH	-.0051	.0549	.0026	-.0005	.0064	-.0215
	(.0018)**	(.0177)***	(.0006)***	(.0003)*	(.0005)***	(.0167)
SIZE	.3508	5.3011	.1098	-.0606	-.9742	-.3299
	(.0875)***	(1.234)***	(.0642)**	(.0218)***	(.0676)***	(.1053)***
OBSs	.0194	.2011	.0019	-.0002	-.0206	-.0587
	(.0032)***	(.0345)***	(.0009)**	(.0006)	(.0013)***	(.0195)***
GDP	.1778	-.1778	.0106	.0059	-.0315	-.0868
	(.0172)***	(.1560)	(.0028)***	(.0018)***	(.0025)***	(.0243)***
INF	-.0259	-1.3339	-.0149	-.0034	.0402	.4344
	(.0098)***	(.2354)***	(.0052)***	(.0017)**	(.0054)***	(.0636)***
RIR	-.0082	-.0818	-.0029	-.0013	.0036	.0008
	(.0026)***	(.0328)***	(.0015)*	(.0004)***	(.0009)***	(.0099)
FDI	.4551	.4194	.0577	.0357	-.1578	-.7934
	(.0311)***	(.0819)***	(.0167)***	(.0081)***	(.0102)***	(.1112)***
OIL	.0085	.0304	.0111	.0014	.0029	.0242
	(.0015)***	(.0131)***	(.0005)***	(.0002)***	(.0004)***	(.0047)***
HHI	-.0025	-.0095	-.0006	-.0002	.0004	.0047
	(.0009)**	(.0047)**	(.0003)**	(0000)**	(.0001)***	(.0024)*
MARKE_CAP	.0159	.0433	.0009	.0034	-.0047	-.0091
	(.0013)***	(.0107)***	(.0003)***	(.0004)***	(.0005)***	(.0034)***
DCPS	-.1025	-.3921	-.0041	-.0036	.0401	.1093
	(.0084)***	(.0445)***	(.0016)**	(.0009)***	(.0025)***	(.0185)***
Constant	-6.352	298.73	5.272	1.0039	8.2840	115.886
	(1.661)***	(15.63)***	(1.109)***	(.9153)	(.7917)***	(6.405) ***
No. of observations	916	916	880	424	809	809
Number of banks	70	70	70	35	68	68
Number of instruments	55	55	53	25	53	43
Wald-test X^2	5020***	3186***	13568***	481***	10200***	55600***
Sargan test (p-value)	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
AB test AR(1) (p-value)	0.1555	0.2890	0.0244	0.0801	0.1058	0.2845
AB test AR(2) (p-value)	0.9268	0.9677	0.4548	0.3340	0.6068	0.9029

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank' s total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

5.6.4.5 Replace HHI by Concentration ratio, Lerner Index and Boone indicator

This study also conduct robustness checks following the methods of Khan *et al.* (2016) Tan (2016), Kasman and Kasman (2015), Fu *et al.* (2014a), and Chen and Liao (2011) by replacing HHI by the concentration ratio, Lerner Index as well as Boone indicator. In panel A, the study replaces the HHI by concentration ratio of the five largest banks assets. In Panel B, this study reruns the analysis replacing the HHI by the Lerner index. Panel C shows the results when the study replaces Boone indicator rather than HHI (Table 5.24).

5.6.4.5.1 Concentration Ratio

The concentration ratio shows the degree of competition in the banking sector. Following the study of Kasman and Kasman (2015) and Khan *et al.* (2016), the concentration ratio is measured as the ratio of the assets, loans, or deposits of the five largest banks divided by the total assets, loans, or deposits of the banking sector in each country (CR5).

5.6.4.5.2 Lerner Index

Following the methods of Chen and Liao (2011), Kasman and Kasman (2015), Khan *et al.* (2016), and Tan (2016), the Lerner index is calculated on the difference between a bank's price revenue and marginal costs divided by a bank's price revenue which can be written as follows:

$$\textbf{Lerner index} = \frac{\text{Bank's Price - Marginal Costs}}{\text{Bank's Price}} \ldots\ldots\ldots\ldots\ldots(5.1)$$

A higher value of the Lerner index indicates higher market power and less bank competition, while a low Lerner index suggests a highly competitive market with the lower level of performance. The price is calculated as the ratio of total revenue to total assets. The marginal cost is estimated on the basis of a translog cost function with one output (total assets) and three input prices: price of funds ($PRICE_1$) measured by interest expenses to total deposits; price of labor ($PRICE_2$) measured by personnel expenses to total assets; and price of fixed capital ($PRICE_3$) measured by other non-interest expenses to total assets (other operating and administrative expenses/total assets). Similar to Chen and Liao (2011), the cost function is estimated as follows:

$$\mathbf{Ln(COST_{it})=\beta_1 Ln(ASSETS_{it})+\frac{1}{2}\beta_2 [Ln\ (ASSETS_{it})]^2+\sum_{K=1}^{3} \alpha_{kt}\ Ln(PRICE_{kit})+\sum_{K=1}^{3} \gamma_{kt}\ Ln(ASSETS_{it})*Ln(PRICE_{kit})}$$

$$\mathbf{+\sum_{k}^{3}\sum_{j}^{3} \alpha_{kt}\ Ln(PRICE_{kit})*Ln(PRICE_{jit})+ \epsilon_{it}} \quad \text{........ } \mathbf{(5.2)}$$

Where, COST is the total cost of the bank (interest expenses plus non-interest expenses).

$$\mathbf{Marginal\ Costs_{TAit}=\frac{COST_{it}}{ASSETS_{it}}\left[\beta_1+\beta_2 Ln(ASSETS_{it})+\sum_{k=1}^{3} \gamma\ Ln(PRICE_{kit})\right]} \text{........................} \mathbf{(5.3)}$$

The $\beta 1$, β_2, and γ_{it} are the coefficients estimated from Eq. (5.2). Finally, the Lerner index is averaged over time for each bank 'i' for inclusion in the regression model. The data for this measure of competition are at the bank level and are estimated country-by-country and year-by-year.

5.6.4.5.3 Boone indicator

Boone (2008) proposes a new method for estimating the level of competition. The main idea from the Boone indicator is that efficient banks expand the market share at the cost of the less efficient ones. In other words, competition improves the performance of the efficient banks and decreases the performance of the inefficient ones. The higher the effect, the higher is the competition. Following Khan *et al.* (2016), this study estimates the Boone indicator by using the following model:

$$\mathbf{ln(Profit)_i = \alpha + \beta ln(Marginal\ Costs)_i + \epsilon_i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5.4)$$

'β' indicates the Boone indicator value. A higher negative value of Boone indicator denotes that the competition level in the banking market is high. However, a positive value indicates that the competition level is lower or the banks are competing on quality. Positive values of Boone indicator mean that the marginal costs of banks are higher, the more profits will gain.

Estimating the Boone indicator for GCC banks may be appropriate for several reasons. Foreign banks operating in GCC are 117 compared to domestic banks 113 banks. The participation of foreign banks in GCC banking markets is almost 43 percent in 2014. ROA of domestic banks and foreign banks over the sample period are 1.3 percent and 1.8 percent respectively. In 2014, the market share of domestic banks is 86.7 percent while for foreign banks it is 7.8 percent. Furthermore, banks' efficiency measured by the COST for domestic and foreign banks is 52.9 percent and 60.5 percent, respectively, over the study period.

The Boone indicator overcomes the weakness of concentration measures like HHI or CR of the largest sample banks and aim to assess the competitiveness by investigating levels of market concentration in the banking sector. Contrary to market concentration measures, the Boone indicator is effective to capture interaction between banks by focusing on their behavior. Market concentration measures may provide inaccurate results since high levels of market concentration results in low level of market competition.

Furthermore, numerous studies have used the Panar-Rosse H-statistic to analysis the competition in the banking market. However, H statistic requires some restrictive assumptions on the banking industry which cannot be realized in this study: long-run equilibrium required by the analysis cannot be realized because of the entry and exit from the market (Kasman & Kasman, 2015). Moreover, H statistics model only analyzes the competitive nature of the entire banking market and not for a particular activity.

The Boone indicator is an innovative model from which one can measure the competition in the banking market as a whole as well as different market segments, such as commercial banks, investment banks, and loan market. Unlike H statistics and Bresnahan models, the Boone indicator requires relatively small data and it allows estimating the competition on an annual basis (Leuvensteijn *et al.*, 2011). Lerner index is not able to seize the level of product substitutability. The Boone indicator does not require the hypotheses of long-run equilibrium and it also does not suffer from product substitutability problem. Lerner index is simple and easy to apply however the Boone model has a solid technical basis.

As shown in Table 5.24, Panel A and B show that the coefficient of market power measures (CR5 and Lerner index) is negative and significant with bank profitability measures (ROA, ROE, and NIM) and market-based shareholder value (Tobin's Q), while positive and significant with bank risk taking behavior (SDROA and SDROE), suggesting more market power leads to decrease in bank profitability and shareholders' value and increase the risk-taking behavior of GCC banks.

Furthermore, Panel C reports that the impact of Boone indicator on ROA, ROE, NIM, and Tobin's Q is also significantly negative, but it is significantly positive with SDROA and SDROE, indicating that competition leads to increase the bank profitability and shareholders' value and decreases the risk of GCC banks because of that lower/higher values of the Boone indicator mean more/less competition. On other words, the more negative/positive of the Boone indicator, the banking market is more/less competitive. Results indicate that more competition (lower market power) in the banking industry enhances the performance and decreases the risk of banks in the GCC region.

Results support the main findings of the study, which shows that higher market concentration (higher HHI) leads to lower the bank profitability and shareholders' value and increase the risk-taking behavior of GCC bank. In other words, excessive concentration leads to bank fragility. These findings are not in line with SCP hypothesis but they are consistent with the view that banking markets with less competition (more market power) may lead to larger loans and lower credit rationing, which result in increased the probability of banks failure (Caminal & Matutes, 2002; Khan *et al.*, 2016). In addition, banks hold more capital buffers when operating in a higher competitive environment and competitive banking markets are less likely to witness a systemic crisis. Overall, the findings for all other main variables remain unchanged.

Table 5.24

Regression Results when the Study Replaces ***HHI by CR, Lerner Index and Boone Indicator*** *(Robustness Check 5)*

	Bank Profitability								
	ROA			ROE			NIM		
	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C
Variables	**CR5**	**Lerner**	**Boone**	**CR5**	**Lerner**	**Boone**	**CR5**	**Lerner**	**Boone**
Lag_{it-1}	.0633 (.0012)***	.0517 (.0020)***	.0319 (.0026)***	.0225 (.0002)***	.0256 (.0003)***	.0247 (.0003)***	.7266 (.0019)***	.7937 (.0018)***	.7273 (.0019)***
COST	-.0159 (.0001)***	-.0137 (.0000)***	-.0162 (.0001)***	-.0236 (.0014)***	-.0189 (.0012)***	-.0196 (.0011)***	-.0041 (.0001)***	-.0029 (.0001)***	-.0040 (.0001)***
NIR	-.0003 (.0000)***	-.0006 (.0000)***	-.0003 (.0000)***	-.0048 (.0001)***	-.0058 (.0001)***	-.0051 (.0001)***	-.0003 (.0000)***	-.0002 (.0000)***	-.0003 (.0000)***
OPC	1.1587 (.1751)***	.6670 (.1441)***	.3901 (.1936)**	13.275 (1.729)***	8.5781 (1.324)***	18.114 (.9704)***	.2768 (.1153)**	.7460 (.0968)***	.1478 (.0405)**
LR	-.0038 (.0001)***	-.0028 (.0001)***	-.0023 (.0002)***	.0905 (.0110)***	.1041 (.0083)***	.1042 (.0054)***	.0009 (.0002)***	.0015 (.0003)***	.0014 (.0002)***
DMDEP	.0317 (.0016)***	.0321 (.0017)***	.0097 (.0022)***	.6071 (.0209)***	.5740 (.0149)***	.5775 (.0156)***	.0134 (.0007)***	.0097 (.0006)***	.0106 (.0008)***
MR	-.0430 (.0016)***	-.0418 (.0017)***	-.0395 (.0016)***	-.0598 (.0176)***	-.0409 (.0146)***	-.0674 (.0209)***	-.0143 (.0016)***	-.0159 (.0014)***	-.0153 (.0015)***
NPLs	-.0410 (.0003)***	-.0428 (.0002)***	-.0425 (.0002)***	-.2884 (.0021)***	-.2868 (.0020)***	-.2745 (.0019)***	-.0089 (.0001)***	-.0060 (.0001)***	-.0093 (.0002)***
LLPs	-.3902 (.0022)***	-.4154 (.0024)***	-.3667 (.0052)***	-1.0217 (.0177)***	-1.0451 (.0184)***	-1.0280 (.0171)***	-.0661 (.0008)***	-.0621 (.0012)***	-.0708 (.0007)***
CAR	.2428 (.0014)***	.2500 (.0015)***	.2653 (.0025)***	.1567 (.0102)***	.1371 (.0066)***	.1397 (.0076)***	.0425 (.0006)***	.0403 (.0007)***	.0451 (.0009)***
LOAN	.0855 (.0019)***	.0813 (.0022)***	.0850 (.0017)***	-.4545 (.0223)***	-.5774 (.0158)***	-.5157 (.0142)***	.0229 (.0011)***	.0171 (.0010)***	.0221 (.0012)***
LNGRTH	-.0049 (.0002)***	-.0041 (.0003)***	-.0042 (.0003)***	.0098 (.0026)***	.0163 (.0028)***	.0091 (.0020)***	.0012 (.0001)***	.0009 (.0001)***	.0014 (.0001)***
SIZE	.4675 (.0164)***	.7751 (.0168)***	.8380 (.0355)***	5.2016 (.2604)***	6.4880 (.2171)***	5.7642 (.2095)***	.0356 (.0144)**	.0868 (.0163)***	.0148 (.0059)**
OBSs	.0005 (.0001)**	.0004 (.0001)***	.0021 (.0002)***	.0289 (.0016)***	.0285 (.0008)***	.0258 (.0010)***	-.0001 (.0000)***	-.0005 (.0001)***	-.0002 (.0000)***
GDP	.1920 (.0045)***	.2025 (.0045)***	.2390 (.0054)***	.0666 (.0109)***	.0457 (.0180)**	.0372 (.0144)**	.0031 (.0014)**	.0075 (.0016)***	.0042 (.0015)**
INF	-.0892 (.0039)***	-.1092 (.0042)***	-.0531 (.0048)***	-1.1944 (.0410)***	-.6295 (.0373)***	-1.2825 (.0462)***	-.0295 (.0018)***	-.0325 (.0036)***	-.0271 (.0016)***
RIR	-.0438 (.0018)***	-.0554 (.0019)***	-.0490 (.0021)***	-.1834 (.0089)***	-.1515 (.0117)***	-.2603 (.0104)***	-.0135 (.0010)***	-.0145 (.0011)***	-.0113 (.0011)***
FDI	-.4734 (.0087)***	-.4395 (.0104)***	-.6401 (.0185)***	-1.9638 (.0761)***	-1.2817 (.1390)***	-1.5729 (.0947)***	-.0485 (.0075)***	-.1055 (.0070)***	-.0656 (.0057)***
OIL	.0077 (.0005)***	.0134 (.0006)***	.0120 (.0006)***	.0603 (.0029)***	.0795 (.0032)***	.0761 (.0039)***	.0033 (.0003)***	.0049 (.0003)***	.0052 (.0002)***
CR5	-.0364 (.0014)***			**-.0544** **(.0076)*****			**-.0027** **(.0009)****		
Lerner Index		**-2.9551** **(.3085)*****			**-53.691** **(2.372)*****			**-1.4209** **(.1855)*****	
Boone Indicator			**-2.6244** **(.6229)*****			**-33.527** **(6.690)*****			**-3.7337** **(.6023)*****
MARKE_CAP	.0297 (.0004)***	.0336 (.0004)***	.0456 (.0008)***	.1479 (.0016)***	.1692 (.0028)***	.1574 (.0048)***	.0015 (.0001)***	.0043 (.0002)***	.0012 (.0002)***
DCPS	-.0695 (.0016)***	-.0724 (.0026)***	-.0523 (.0024)***	-.0623 (.0100)***	-.0296 (.0154)*	-.0827 (.0137)***	-.0061 (.0007)***	-.0112 (.0009)***	-.0088 (.0008)***
Constant	2.3368 (.3972)***	-3.730 (.4209)***	-6.237 (.6058)***	114.014 (4.565)***	118.74 (3.738)***	125.849 (3.812)***	.5333 (.2797)*	1.272 (.3099)***	.6118 (.2995)**
No. of observations	2238	2238	2238	2238	2238	2238	2138	2138	2138
Number of banks	171	171	171	171	171	171	170	170	170
Number of instruments	146	146	146	146	146	146	145	145	145
Wald-test X^2	7420***	14400***	12700***	14900***	1710***	65173***	9030***	6050***	7040***
Sargan test (p-value)	0.8893	0.5969	0.5557	0.9180	0.5970	0.6482	0.9780	0.6594	0.6889
AB test AR(1) (p-value)	0.0286	0.0200	0.0219	0.2603	0.2597	0.2583	0.0050	0.0049	0.0044
AB test AR(2) (p-value)	0.3025	0.3190	0.3794	0.2308	0.2463	0.2761	0.1521	0.1518	0.1607

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); CR5 is the 5-bank concentration ratio and measure of market power; Lerner Index is the market power index; Boone indicator is the banking competition index ; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

Table 5.24 *Continued (Robustness Check 5)*

	Market-Based Performance			**Bank Risk-Taking**					
	Tobin's Q			**SDROA**			**SDROE**		
	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C
Variables	**CR5**	**Lerner**	**Boone**	**CR5**	**Lerner**	**Boone**	**CR5**	**Lerner**	**Boone**
Lag_{k-1}	.1670	.1721	-.1602	.6527	.6834	.7166	.8334	.9124	.8616
	(.0054)***	(.0044)***	(.0056)***	(.0015)***	(.0022)***	(.0020)***	(.0001)***	(.0003)***	(.0001)***
COST	-.0004	-.0005	-.0005	.0011	.0022	.0006	.0255	.0204	.0231
	(.0002)**	(.0001)***	(.0001)***	(.0000)***	(.0000)***	(.0000)***	(.0005)***	(.0004)***	(.0006)***
NIR	.0001	.0002	.0001	.0001	.0002	.0002	.0050	.0042	.0044
	(.00001)**	(.0000)***	(.0000)***	(.0000)***	(.0000)***	(.0000)***	(.0001)***	(.0001)***	(.0001)***
OPC	.3588	.1558	.2572	1.6804	1.7412	1.9303	-7.4735	-8.0857	-5.8576
	(.1728)**	(.0643)**	(.0816)***	(.0628)***	(.0900)***	(.0592)***	(.4237)***	(.5194)***	(.2956)***
LR	.0026	.0056	.0034	-.0029	-.0046	-.0042	.0169	.0125	.0155
	(.0009)***	(.0010)***	(.0009)***	(.0001)***	(.0001)***	(.0001)***	(.0013)***	(.0017)***	(.0017)***
DMDEP	.0051	.0061	.0040	-.0124	-.0178	-.0079	-.3093	-.2791	-.2635
	(.0012)***	(.0010)***	(.0008)***	(.0005)***	(.0005)***	(.0006)***	(.0051)***	(.0082)***	(.0058)***
MR	.0002	-.0013	-.0012	.0685	.0620	.0548	.1166	.1845	.1585
	(.0013)	(.0008)	(.0007)	(.0005)***	(.0009)***	(.0008)***	(.0050)***	(.0059)***	(.0031)***
NPLs	-.0021	-.0022	-.0021	.0102	.0159	.0188	.0481	.0068	.0209
	(.0003)***	(.0002)***	(.0002)***	(.0001)***	(.0001)***	(.0001)***	(.0009)***	(.0008)***	(.0006)***
LLPs	-.0004	-.0009	-.0009	.1784	.1833	.1660	.8807	.9208	.8320
	(.0002)*	(.0005)*	(.0005)*	(.0010)***	(.0010)***	(.0012)***	(.0077)***	(.0169)***	(.0142)***
CAR	-.0053	-.0038	-.0032	-.0313	-.0215	-.0078	-.7480	-.7091	-.7426
	(.0011)***	(.0013)***	(.0011)***	(.0005)***	(.0004)***	(.0006)***	(.0029)***	(.0058)***	(.0040)***
LOAN	.0003	.0063	.0021	.0106	.0234	.0151	.1003	.0289	.0609
	(.0016)	(.0015)***	(.0014)	(.0007)***	(.0009)***	(.0014)***	(.0052)***	(.0062)***	(.0030)***
LNGRTH	-.0001	-.0003	-.0002	.0013	.0009	.0027	.0037	.0060	.0042
	(.0000)***	(.0000)***	(.0000)***	(.0001)***	(.0001)***	(.0001)***	(.0006)***	(.0007)***	(.0007)***
SIZE	-.0733	-.0401	-.0489	-1.0166	-1.1823	-1.2533	-2.4697	-1.6694	-2.1135
	(.0096)***	(.0073)***	(.0066)***	(.0102)***	(.0143)***	(.0131)***	(.0486)***	(.0666)***	(.0451)***
OBSs	-.00002	.0004	-.0004	.0001	.0002	.0001	.0014	.0006	.0007
	(.0003)	(.0003)	(.0003)	(.0000)**	(.0000)***	(.0000)***	(.0003)***	(.0003)**	(.0002)***
GDP	.0042	.0031	.0038	-.0117	-.0290	-.0365	-.0089	-.0495	-.0392
	(.0010)***	(.0009)***	(.0009)***	(.0012)***	(.0016)***	(.0013)***	(.0035)**	(.0079)***	(.0053)***
INF	-.0023	-.0045	-.0014	.0809	.0792	.0870	.5772	.5140	.5978
	(.0009)**	(.0008)***	(.0007)**	(.0017)***	(.0012)***	(.0016)***	(.0095)***	(.0200)***	(.0095)***
RIR	-.0009	-.0012	-.0004	.0052	.0122	.0146	.0227	.0357	.0267
	(.0002)***	(.0002)***	(.0001)***	(.0004)***	(.0007)***	(.0003)***	(.0017)***	(.0022)***	(.0016)***
FDI	.0249	.0197	.0159	.0912	.1269	.1845	.7730	.7132	.7150
	(.0037)***	(.0026)***	(.0029)***	(.0036)***	(.0046)***	(.0058)***	(.0167)***	(.0302)***	(.0305)***
OIL	.0007	.0003	.0022	.0004	.0032	.0031	.0228	.0343	.0404
	(.0001)***	(.0001)***	(.0001)***	(.0001)***	(.0002)***	(.0001)***	(.0004)***	(.0007)***	(.0007)***
CR5	**-.0027**			**.0229**			**.0544**		
	(.0001)* **			**(.0007)*** **			**(.0013)*** **		
Lerner Index		**-.5911**			**1.7408**			**12.684**	
		(.0570)* **			**(.0772)*** **			**(1.078)*** **	
Boone Indicator			**-.3124**			**2.2910**			**19.137**
			(.1522) **			**(.2279)*** **			**(1.022)*** **
MARKE_CAP	.0042	.0047	.0044	-.0014	-.0021	-.0041	-.0181	-.0195	-.0144
	(.0001)***	(.0001)***	(.0002)***	(.0001)***	(.0002)***	(.0001)***	(.0004)***	(.0011)***	(.0006)***
DCPS	-.0028	-.0031	-.0034	.0276	.0248	.0198	.0455	.0568	.0433
	(.0002)***	(.0003)***	(.0004)***	(.0005)***	(.0009)***	(.0006)***	(.0020)***	(.0027)***	(.0023)***
Constant	1.797	.7529	1.3072	13.603	14.976	13.937	98.747	89.481	89.363
	(.2749)***	(.1541)***	(.1224)***	(.1757)***	(.2245)***	(.2046)***	(.6055)***	(1.265)***	(.6661)***
No. of observations	812	812	812	1939	1939	1939	1939	1939	1939
Number of banks	67	67	67	163	163	163	163	163	163
Number of instruments	59	59	59	145	145	145	145	145	145
Wald-test X^2	3324***	2189***	1580***	66500***	2820***	110000***	111000***	24700***	353000***
Sargan test (p-value)	0.9989	0.9759	0.9965	0.9740	0.8504	0.8125	0.9494	0.8605	0.8272
AB test AR(1) (p-value)	0.0190	0.0168	0.0214	0.0206	0.0176	0.0182	0.2713	0.2518	0.2794
AB test AR(2) (p-value)	0.3175	0.2165	0.2520	0.6696	0.7271	0.5379	0.2972	0.2417	0.3189

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); CR5 is the 5-bank concentration ratio and measure of market power; Lerner Index is the market power index; Boone indicator is the banking competition index ; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP, DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

5.6.4.6 Exclude the Financial Crisis Period 2007-2009

This study also provides another robustness test by limiting the sample period of the study by excluding the years 2007, 2008 and 2009 to isolate the impact of the 2008 global financial crisis. Looking at the all six estimations in Table 5.25, it can be seen that the results are not affected with this time-truncation and the main conclusions remain valid despite the study drops a large number of observations.

5.6.4.7 Using Alternative Measures of Bank Risk-Adjusted Performance

In line with Stiroh and Rumble (2006), Mercieca *et al.* (2007), Lepetit *et al.* (2008), Goddard *et al.* (2008), Barry *et al.* (2011), Köhler (2012), Soedarmono *et al.* (2013), and Kasman and Kasman (2015), this study evaluates bank risk through six indicators to further check the robustness of the results and to get additional insights into the possible drivers of bank risk-taking behavior.

The study considers six alternatives dependent variables to measure bank risk-taking behavior: two for bank risk (NPLs and LLPs), and four for bank stability or insolvency risk using two types of Z-score measures based on ROE represented by ZROE, and ROA represented by ZROA. In literature, the NPLs and LLPs are usually used to measure the loan quality of banks. These variables are also used to measure bank risk taking behavior as in this study.

ZROA indicates the number of standard deviations that ROA of banks have to fall below its forecasted value before equity is depleted. Therefore, higher values of ZROA imply lower probabilities of failure. In other words, higher values of ZROA indicate that banks are more stable. For a bank i and time t, NPLs, LLPs, ZROE, and ZROA are computed as follows:

$$NPLs_{it}=\frac{NPLs_{it}}{\text{Total Loans}_{it}} \quad \text{......(5.5)}$$

$$LLPs_{it}=\frac{LLPS_{it}}{\text{Total Loans}_{it}} \quad \text{......(5.6)}$$

$$ZROE_{it}=\frac{1+ROE_{it}}{SDROE_{it}} \quad \text{......(5.7)}$$

$$ZROA_{it}=\frac{ROA_{it}+EQTA_{it}}{SDROA_{it}} \quad \text{......(5.8)}$$

$$ZROA1_{it}=\frac{ROA_{it}}{SDROA_{it}} \quad \text{......(5.9)}$$

$$ZROA2_{it}=\frac{EQTA_{it}}{SDROA_{it}} \quad \text{......(5.10)}$$

Where, EQTA is equity to total assets ratio. NPLs and LLPs are a measure of bank risk-taking behavior, while ZROA and ZROE are measure of default risk, ZROA1 is a measure of bank portfolio risk, and ZROA2 is a measure of leverage risk. The results with six alternative indicators of bank risk are presented in Table 5.26.

Table 5.25

Regression Results when the Study ***Excludes the Financial Crisis Period 2007-2009*** *(Robustness Check 6)*

	Bank Profitability			Market-Based Performance	Bank Risk-Taking	
Variables	**ROA**	**ROE**	**NIM**	**Tobin's Q**	**SDROA**	**SDROE**
Lag_{t-1}	.0567 (.0047)***	.0506 (.0088)***	.6545 (.0136)***	.2425 (.0279)***	.6241 (.0048)***	.6231 (.0011)***
COST	-.0260 (.0006)***	-.0399 (.0084)***	-.0009 (.0005)*	-.0024 (.0008)**	.0029 (.0001)***	.0431 (.0045)***
NIR	-.0008 (.0000)***	-.0028 (.0004)***	-.0002 (.0000)***	.0002 (.0000)***	.0002 (.0000)***	.0057 (.0002)***
OPC	3.1785 (.2952)***	40.627 (3.822)***	.9766 (.1509)***	.4701 (.1512)***	.8566 (.0938)***	-5.1620 (.8933)***
LR	-.0111 (.0004)***	.1599 (.0122)***	.0011 (.0004)**	.0027 (.0015)*	-.0014 (.0001)***	.0491 (.0056)***
DMDEP	.1367 (.0030)***	.2411 (.0427)***	.0188 (.0014)***	.0037 (.0014)**	-.0072 (.0009)***	-.2499 (.0119)***
MR	-.0386 (.0031)***	-.8018 (.0722)***	-.0227 (.0028)***	-.0016 (.0015)	.0391 (.0013)***	.0468 (.0149)***
NPLs	-.0012 (.0020)***	-.1741 (.0097)***	-.0041 (.0016)**	-.0006 (.0003)*	.0424 (.0006)***	.4062 (.0064)***
LLPs	-.0973 (.0067)***	-.6390 (.0836)***	-.0049 (.0019)**	-.0036 (.0010)***	.0408 (.0018)***	.17949 (.0368)***
CAR	.1552 (.0027)***	.6611 (.0398)***	.0262 (.0016)***	-.0031 (.0018)*	-.0471 (.0007)***	-.5127 (.0071)***
LOAN	.0696 (.0038)***	-.8957 (.0550)***	.0276 (.0025)***	.0031 (.0022)	.0052 (.0020)***	.1866 (.0194)***
LNGRTH	-.0051 (.0007)***	.0091 (.0062)*	.0012 (.0004)**	.0002 (.0002)	.0007 (.0002)***	.0087 (.0030)**
SIZE	1.0210 (.0485)***	9.5247 (.7472)***	.2189 (.0324)***	-.0941 (.0191)***	-.2648 (.0173)***	-.7896 (.1456)***
OBSs	.0003 (.0001)**	.0153 (.0013)***	-.0003 (.0000)***	.0002 (.0002)	.0002 (.0000)***	.0017 (.0004)***
GDP	.0520 (.0068)***	.3452 (.0419)***	.0147 (.0030)***	.0051 (.0021)*	-.0033 (.0017)*	-.1663 (.0123)***
INF	-.1241 (.0155)***	-.8722 (.1296)***	-.0194 (.0070)***	-.0175 (.0022)***	.0059 (.0031)*	.2026 (.0388)***
RIR	-.0056 (.0047)***	-.4008 (.0476)***	-.0061 (.0021)***	-.0026 (.0013)**	.0221 (.0012)***	.5037 (.0183)***
FDI	-.1809 (.0236)***	-1.332 (.2419)***	-.0559 (.0119)***	.0653 (.0108)***	.0374 (.0071)***	.6171 (.0540)***
OIL	.0034 (.0008)***	.0349 (.0081)***	.0036 (.0004)***	.0017 (.0002)***	.0007 (.0001)***	.0477 (.0017)***
HHI	-.0005 (.0002)**	-.0240 (.0040)***	-.0003 (.0001)**	-.0003 (.0000)**	.0002 (.0001)*	.0028 (.0004)***
MARKE_CAP	.0127 (.0009)***	.1052 (.0077)***	.0004 (.0002)*	.0037 (.0003)***	-.0004 (.0002)*	-.0282 (.0012)***
DCPS	-.0075 (.0030)***	-.3659 (.0305)***	-.0069 (.0019)***	-.0003 (.0001)*	.0102 (.0012)***	.0703 (.0050)***
Constant	-7.069 (.8194)***	234.49 (11.51)***	-2.321 (.4865)***	.7651 (.3705)**	-7.2578 (.2749)***	56.539 (1.630)***
No. of observations	1775	1775	1678	661	1500	1500
Number of banks	171	171	170	67	163	163
Number of instruments	146	146	145	59	145	145
Wald-test X^2	2905***	4866***	1082***	1036***	7610***	27300***
Sargan test (p-value)	0.3345	0.2601	0.2038	0.6670	0.1550	0.1734
AB test AR(1) (p-value)	0.0122	0.4297	0.0008	0.0513	0.0268	0.2404
AB test AR(2) (p-value)	0.2203	0.1499	0.1260	0.5612	0.1943	0.7024

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); CR5 is the 5-bank concentration ratio and measure of market power; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

Table 5.26

*Regression Results when the Study **uses Alternative Measures of Bank Risk-Adjusted Performance** (Robustness Check 7)*

	Bank Risk Measures		**Bank Stability Measures**			
	Credit Risk		**Default Risk**		**Portfolio Risk**	**Leverage Risk**
Variables	**NPL**	**LLP**	**ZROE**	**ZROA**	**ZROA1**	**ZROA2**
Lag_{it-1}	.0503	.4637	.4063	.5131	.4997	.5168
	(.0005)***	(.0010)***	(.0023)***	(.0024)***	(.0020)***	(.0026)***
COST	.0241	.0145	-.0043	-.0164	-.0023	-.0120
	(.0006)***	(.0002)***	(.0008)***	(.0063)**	(.0007)***	(.0054)**
NIR	.0089	.0096	-.0013	-.0032	-.0003	-.0020
	(.0000)***	(.0000)***	(.0001)***	(.0013)**	(.0001)**	(.0011)*
OPC	-24.092	-.3406	6.3744	29.424	3.419	34.763
	(.5726)***	(.1072)***	(.8063)***	(6.360)***	(.8085)***	(4.818)***
LR	-.0079	-.0033	.0039	.0634	.0029	.0554
	(.0016)***	(.0001)***	(.0006)***	(.0092)***	(.0004)***	(.0087)***
DMDEP	-.1744	-.1074	.0221	.1176	.0117	.0994
	(.0078)***	(.0011)***	(.0075)***	(.0485)***	(.0031)***	(.0439)**
MR	.1123	.0549	-.1367	-.5059	-.0401	-.4497
	(.0046)***	(.0011)***	(.0069)***	(.0743)***	(.0097)***	(.0478)***
NPLs	------------	.0251	-.0049	-.0196	-.0046	-.0169
		(.0003)***	(.0017)***	(.0081)**	(.0005)***	(.0084)**
LLPs	.2439	------------	-.0812	-.3129	-.0578	-.1069
	(.0031)***		(.0093)***	(.1016)**	(.0118)***	(.0504)**
CAR	-.2006	-.0003	.0142	.4073	.0211	.3474
	(.0058)***	(.0001)**	(.0077)*	(.0648)***	(.0066)***	(.0495)***
LOAN	.6906	.0425	-.1210	-.5563	-.0393	-.5441
	(.0073)***	(.0015)***	(.0073)***	(.0807)***	(.0092)***	(.0643)***
LNGRTH	.0022	.0057	-.0018	-.0387	-.0043	-.0455
	(.0010)**	(.0001)***	(.0008)**	(.0117)***	(.0006)***	(.0096)***
SIZE	-6.4203	-.7832	1.5737	18.326	1.7985	16.861
	(.0790)***	(.0205)***	(.0681)***	(.6615)***	(.0528)***	(.5097)***
OBSs	.0012	.0018	-.0012	-.0099	-.0024	-.0098
	(.0003)***	(.0001)***	(.0002)***	(.0056)*	(.0008)***	(.0033)***
GDP	-.3945	-.0310	.0806	.5418	.0669	.5036
	(.0064)***	(.0017)***	(.0072)***	(.0709)***	(.0042)***	(.0406)***
INF	.0608	.0647	-.3009	-1.971	-.2571	-1.702
	(.0093)***	(.0028)***	(.0108)***	(.0688)***	(.0047)***	(.0616)***
RIR	.1050	.0105	-.0435	-.5480	-.0780	-.4755
	(.0033)***	(.0012)***	(.0021)***	(.0147)***	(.0017)***	(.0117)***
FDI	.5842	.4985	-.7370	-5.7946	-.6776	-5.405
	(.0278)***	(.0123)***	(.0376)***	(.3014)***	(.0221)***	(.3141)***
OIL	.0131	.0060	-.0297	-.3822	-.0401	-.3439
	(.0016)***	(.0003)***	(.0011)***	(.0074)***	(.0007)***	(.0060)***
HHI	.0057	.0006	-.0074	-.0038	-.0016	-.0033
	(.0011)***	(.0002)**	(.0001)***	(.0022)*	(.0002)***	(.0017)*
MARKE_CAP	-.0157	-.0132	.0066	.1385	.0103	.1275
	(.0010)***	(.0003)***	(.0008)***	(.0055)***	(.0004)***	(.0069)***
DCPS	.1374	.0026	-.1098	-.7685	-.0905	-.6931
	(.0059)***	(.0013)**	(.0026)***	(.0313)***	(.0028)***	(.0301)***
Constant	146.46	-7.129	-7.589	-65.127	-3.939	-52.797
	(1.140)***	(.3818)***	(1.795)***	(11.813)***	(1.790)***	(11.62)***
No. of observations	2153	2153	1939	1939	1939	1939
Number of banks	171	171	163	163	163	163
Number of instruments	146	146	145	145	145	145
Wald-test X^2	26800***	5340***	72400***	46700***	12400***	6650***
Sargan test (p-value)	0.9230	0.9215	0.9900	0.9865	0.9897	0.9816
AB test AR(1) (p-value)	0.4844	0.0066	0.0005	0.0898	0.1028	0.0864
AB test AR(2) (p-value)	0.2544	0.5921	0.8659	0.6719	0.3290	0.7532

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank risk (NPL, LLP, ZROE, ZROA Q, ZROA1, and ZROA2) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); CR5 is the 5-bank concentration ratio and measure of market power; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

Column one and two from the Table 5.26 confirm that the estimation results remain consistent when the study replaces the dependent variable of bank risk from SDROA and SDROE to NPLs and LLPs. Furthermore, Table 5.26 shows that the results of bank stability measures ZROE, ZROA, ZROA1, and ZROA2 have also supported the results of bank risk-taking behavior SDROA, SDROE, NPLs, and LLPs. The coefficients of the variables that have negative and significant effect on bank risk-taking behavior measures (SDROA, SDROE, NPLs, and LLPs) also have positive and significant effect on all bank stability measures (ZROE, ZROA, ZROA1, and ZROA2). The coefficients that have positive and significant effect on bank risk-taking behavior measures also have negative and significant effect on all bank stability measures. Overall, study findings also remain unchanged using these new parameters.

5.6.4.8 Controlling for the Individual and Time Fixed Effects

Differences in financial and macroeconomic environments like financial structure and the degree of development, as well as institutional factors that affect political and economic characteristics, may probably explain the profitability and risk exposures of banks. To account for these dimensions, the study incorporates the dummies of bank level fixed effects and time-invariant as independent variables in all regressions. As shown in Table 5.27, using these new variables, the main results are not altered. The coefficients on time dummy variables (not shown in the table to save space) are significant with variety signs. For 2007, 2008 and 2009, the coefficients are negative (positive) and significant with bank profitability (risk), indicating that bank profitability (risk) of GCC banks is lower (higher) during the recent global financial crisis 2008 compared to other years.

Table 5.27

*Regression Results when the Study **Incorporates the Individual and Time Fixed Effects** (Robustness Check 8)*

	Bank Profitability			Market-Based Performance	Bank Risk-Taking	
Variables	**ROA**	**ROE**	**NIM**	**Tobin's Q**	**SDROA**	**SDROE**
Lag_{n-1}	.0767 (.0081)***	.0703 (.0095)***	.4505 (.0149)***	.3115 (.0321)***	.5142 (.0165)***	.8351 (.0111)***
COST	-.0416 (.0046)***	-.0666 (.0096)***	-.0051 (.0007)***	-.0011 (.0005)*	.0067 (.0011)***	.0675 (.0087)***
NIR	-.0024 (.0004)***	-.0077 (.0015)***	-.0013 (.0002)***	.0009 (.0001)***	.0010 (.0003)**	.0099 (.0011)***
OPC	22.3881 (.4591)***	71.871 (6.344)***	2.4365 (.0511)***	.9442 (.1672)***	1.3432 (.0896)***	-9.3825 (.7561)***
LR	-.1023 (.0155)***	.2775 (.0213)***	.0055 (.0012)***	.0067 (.0027)**	-.0061 (.0013)***.	.0899 (.0110)***
DMDEP	.5412 (.0111)***	.7431 (.0253)***	.1673 (.0133)***	0432 (.0155)**	-.0167 (.0022)***	-.3516 (.0210)***
MR	-.0615 (.0101)***	-.7501 (.0444)***	-.1222 (.0192)***	-.0231 (.0177)	.0953 (.0194)***	.0865 (.0215)***
NPLs	-.0111 (.0013)***	-.1562 (.0127)***	-.0167 (.0029)***	-.0027 (.0014)*	.1331 (.0077)***	.7891 (.0134)***
LLPs	-.1873 (.0086)***	-.7891 (.1110)***	-.0376 (.0036)***	-.0210 (.0041)***	.0982 (.0112)***	.2973 (.0455)***
CAR	.2541 (.0187)***	.9672 (.0564)***	.0911 (.0106)***	-.0109 (.0055)*	-.0623 (.0011)***	-.4321 (.0101)***
LOAN	.1009 (.0144)***	-.6321 (.1002)***	.0541 (.0066)***	.0119 (.0088)	.0138 (.0047)***	.2011 (.0214)***
LNGRTH	-.0116 (.0011)***	.0186 (.0052)***	.0102 (.0024)***	.0012 (.0009)	.0038 (.0007)***	.0108 (.0022)***
SIZE	4.0521 (0.211)***	16.3213 (.5421)***	.4321 (.0542)***	-.1114 (.0201)***	-.2150 (.0133)***	-.9742 (.0989)***
OBSs	.0051 (.0009)***	.0321 (.0043)***	-.0028 (.0003)***	.0015 (.0012)	.0016 (.0002)***	.0033 (.0006)***
GDP	.1392 (.0149)***	.7651 (.1002)***	.0678 (.0096)***	.0222 (.0041)***	-.0396 (.0055)***	-.17634 (.0115)***
INF	-.3216 (.0187)***	-.7863 (.0865)***	-.1777 (.0155)***	-.0421 (.0155)**	.0295 (.0171)	.1872 (.0423)***
RIR	-.0121 (.0021)***	2176 (.0231)***	-.0231 (.0059)***	-.0014 (.0010)	.0871 (.0120)***	.0137 (.073)*
FDI	-.2120 (.0301)***	-4.2156 (.1243)***	-.1653 (.0327)***	.0.997 (.0185)***	.0.761 (.0099)***	.9812 (.1129)***
OIL	.0199 (.0024)***	.0998 (.0117)***	.0103 (.0019)***	.0052 (.0009)***	.0019 (.0004)***	.0911 (.0068)***
HHI	-.0018 (.0008)**	-.0187 (.0076)**	-.0009 (.0005)*	-.0006 (.0003)*	.0005 (.0002)*	.0039 (.0009)***
MARKE_CAP	.0491 (.0026)***	.0783 (.0106)***	.0088 (.0014)***	.0124 (.0023)***	-.0141 (.0040)***	-.0585 (.0082)***
DCPS	-.0.192 (.0052)***	-.1159 (.0505)**	-.0177 (.0069)**	-.0016 (.0005)**	.0892 (.0.101)***	.1920 (.0.280)***
Bank Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-16.110 (.2994)***	97.109 (7.431)***	-.7982 (.1204)***	.4301 (.1104)***	-13.7391 (.9832)***	117.444 (5.873)***
No. of observations	2238	2238	2138	812	1939	1939
Number of banks	171	171	170	67	163	163
Number of instruments	146	146	145	59	145	145
Wald-test X^2	4652***	9843***	2107***	2005***	9494***	49800***
Sargan test (p-value)	0.6531	0.4231	0.4077	0.9899	0.3854	0.3333
AB test AR(1) (p-value)	0.0332	0.0786	0.0077	0.0234	0.1288	0.0931
AB test AR(2) (p-value)	0.5010	0.3261	0.3897	0.8389	0.3282	0.9321

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); CR5 is the 5-bank concentration ratio and measure of market power; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

5.6.4.9 Controlling for the Arab Spring

In recent years, Arab countries have witnessed a major issue or event called the Arab Spring. Due to high oil prices, Middle Eastern countries have grown rapidly in comparison with developed countries in the West that have been affected significantly by the 2008 financial crisis. However, by the end of 2010 (on 17 December 2010), political revolutions started to emerge. These revolutions have overthrown many political systems and caused numerous Arab countries to suffer from economic problems and instability. Ghosh (2016) and Bitar *et al.* (2016) find that Arab spring revolutions have increased bank risk and decreased bank profitability. Hence, following Ghosh (2016) and Bitar *et al.* (2016), this study decides to provide another robust test by controlling for the Arab spring.

Using information from different sources, including Ghosh (2016), Bloomberg and World Bank (2011), and Wikipedia, the study classifies GCC countries into three categories: severely affected by the Arab Spring (major affected), mildly affected (minor affected), and those that are not affected (see Table 5.28). In contrast to the work of Ghosh (2016) and Bitar *et al.* (2016), this study provides three robustness tests in order to examine the impact of the Arab Spring on bank profitability, market-based shareholder value and bank risk in GCC countries that are vulnerable to the political transition and hence economic instability. In the first model, the study uses Arab Spring (ArabSpring-1) as a dummy variable that equals one if a country is affected (major and minor) by the Arab Spring and zero otherwise. In the second model, the study uses Arab Spring (ArabSpring-2) as a dummy variable that equals one if a country is only severely (major) affected by the Arab Spring and zero otherwise. The third model shows the results when the study uses Arab Spring (ArabSpring-3) as a dummy variable that equals one if a country is only mildly (minor) affected by the Arab Spring and zero otherwise. The results with three controls for the Arab Spring are presented in Table 5.29.

Table 5.28
Arab Spring for GCC Countries

Country	Outcome	Situation	Remark
Bahrain	- Economic concessions by King Hamad. - Release of political prisoners. - Negotiations with Shia representatives. - GCC intervention at the request of the Government of Bahrain. - Head of the National Security Apparatus removed from the post. - Formation of a committee to implement BICI report recommendations.	Sustained civil disorder and government changes.	Major
Kuwait	- Resignation of Prime Minister Nasser Mohammed Al-Ahmed Al-Sabah. - Dissolution of the Parliament.	Major protests and governmental changes.	Major
Oman	- Economic concessions by Sultan Qaboos. - Dismissal of ministers. - Granting of lawmaking powers to Oman's elected legislature.	Minor protests and governmental changes.	Minor
Qatar	No impact	No impact.	No impact
Saudi Arabia	- Economic concessions by King Abdullah. - Male-only municipal elections held 29 September 2011. - King Abdullah announces women's approval to vote and be elected in 2015 municipal elections and to be nominated to the Shura Council.	Minor protests.	Minor
UAE	No impact	No impact.	No impact

Sources: Ghosh (2016), Bloomberg and World Bank (2011), and Wikipedia.

In general, Models one, two, and three for each dependent variable in Table 5.29 shows that the findings for all main variables remain unchanged when the study controls the impact of Arab Spring revolutions, which lends credence to the previous results of this study.

Regarding the impact of Arab Spring on bank performance, the coefficients on Arab Spring for ROA, ROE, NIM, SDROA, and SDROE equals -4.0925, -3.2225, -.2411, 2.0129, and 5.6472 respectively and is statistically significant, suggesting that profitability levels are, on average, -

409.3, -322.3 and -24.1 percent lower, and risk levels are, on average, 201.3 and 564.7 percent higher for a country in GCC region affected by the Arab Spring. However, profitability levels (ROA, ROE, and NIM equals -4.5505, -64.444, and -1.0996 respectively) are lower and risk levels (SDROA and SDROE equals 2.0129, and 5.6472) are higher for a GCC country that is severely (major) affected by the Arab Spring compared to those that is mildly (minor) affected by the Arab Spring.

The results suggest that the Arab Spring has a negative and significant impact on all measures of bank profitability (ROA, ROE, and NIM) and market based-shareholder value (Tobin's Q). They have a positive and significant effect on bank risk-taking behavior (SDROA and SDROE), indicating that political instability has a negative effect on bank performance in GCC countries. In other words, political instability decreases bank profitability and shareholder value and increases their risk.

The profitability of GCC banks is more sensitive to political uncertainty because revolutions are usually longer. Political instability gets immediately reflected in the economic development of GCC countries. In such events, banks in GCC countries (especially those severely affected by Arab Spring) are needed to spend more money to develop the professional management team and expertise in risk management and profitability better, monitoring and supervision of loans and investment projects. Hence, these results are in line with the findings of previous studies which are found that political changes negatively affect bank performance (Bitar *et al.*, 2016; Ghosh, 2016).

Table 5.29

*Regression Results when the Study **Incorporates the Impact of the Arab Spring** (Robustness Check 9)*

Variables	**Bank Profitability**								
	ROA			**ROE**			**NIM**		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	ArabSpring-1	**ArabSprin-2**	**ArabSprin-3**	**ArabSprin-1**	**ArabSpring-2**	**ArabSpring-3**	**ArabSprin-1**	**ArabSpring-2**	**ArabSpring-3**
Lag_{t-1}	.0529	.0452	.0432	.0028	.0278	.0081	.7710	.7564	.7656
	(.0015)***	(.0016)***	(.0020)***	(.0005)***	(.0005)***	(.0003)***	(.0023)***	(.0021)***	(.0022)***
COST	-.0188	-.0185	-.0185	-.0260	-.0250	-.0248	-.0031	-.0037	-.0035
	(.0001)***	(.0001)***	(.0001)***	(.0017)***	(.0013)***	(.0015)***	(.0002)***	(.0002)***	(.0002)***
NIR	-.0002	-.0001	-.0001	-.0058	-.0086	-.0055	-.0003	-.0003	-.0003
	(.0000)***	(.0000)***	(.0000)**	(.0001)***	(.0001)***	(.0001)***	(.0000)***	(.0000)***	(.0000)***
OPC	2.1570	1.8510	1.7573	10.383	6.7629	4.7225	.0071	.1052	.0329
	(.2626)***	(.2838)***	(.2324)***	(1.324)***	(1.478)***	(1.900)**	(.1456)	(.1229)	(.1465)
LR	-.0041	-.0050	-.0049	.0855	.0863	.0809	.0009	.0008	.0008
	(.0001)***	(.0001)***	(.0001)***	(.0103)***	(.0084)***	(.0118)***	(.0001)***	(.0002)***	(.0003)***
DMDEP	.0161	.0258	.0285	.7898	.7256	.7777	.0135	.0137	.0130
	(.0021)***	(.0024)***	(.0026)***	(.0194)***	(.0203)***	(.0236)***	(.0008)***	(.0007)***	(.0008)***
MR	-.0443	-.0424	-.0352	-.1490	-.2205	-.1450	-.0123	-.0125	-.0104
	(.0025)***	(.0022)***	(.0021)***	(.0184)***	(.0232)***	(.0255)***	(.0015)***	(.0015)***	(.0019)***
NPLs	-.0408	-.0406	-.0404	-.3184	-.3266	-.3097	-.0076	-.0084	-.0073
	(.0004)***	(.0005)***	(.0005)***	(.0024)***	(.0025)***	(.0020)***	(.0002)***	(.0002)***	(.0002)***
LLPs	-.3937	-.3861	-.3857	-1.0037	-.9895	-1.0143	-.0574	-.0585	-.0569
	(.0039)***	(.0028)***	(.0033)***	(.0198)***	(.0174)***	(.0195)***	(.0006)***	(.0007)***	(.0008)***
CAR	.2649	**.2607**	**.2627**	.3213	**.1521**	**.3101**	.0394	**.0391**	**.04205**
	(.0020)***	**(.0024)*****	**(.0023)*****	(.0077)***	**(.0116)*****	**(.0101)*****	(.0008)***	**(.0010)*****	**(.0011)*****
LOAN	.0962	.0928	.0846	-.5028	-.4344	-.3915	.0227	.0269	.0242
	(.0028)***	(.0024)***	(.0030)***	(.0202)***	(.0226)***	(.0278)***	(.0014)***	(.0011)***	(.0013)***
LNGRTH	-.0021	-.0017	-.0016	.0210	.0274	.0304	.0013	.0009	.0009
	(.0003)***	(.0002)***	(.0003)***	(.0024)***	(.0034)***	(.0026)***	(.0001)***	(.0000)***	(.0001)***
SIZE	.8002	.6587	.5615	5.1729	3.8306	3.9110	.0251	.1231	.0751
	(.0403)***	(.0316)***	(.0345)***	(.2687)***	(.2829)***	(.3165)***	(.0105)**	(.0193)***	(.0179)***
OBSs	.0009	.0011	.0009	.0294	.0271	.0267	-.0004	-.0003	-.0003
	(.0001)***	(.0001)***	(.0001)***	(.0014)***	(.0014)***	(.0014)***	(.0000)***	(.0000)***	(.0000)***
GDP	.2044	.2105	.2137	.1004	.0091	.0202	.0068	.0033	.0029
	(.0049)***	(.0049)***	(.0053)***	(.0179)***	(.0164)	(.0186)	(.0016)***	(.0015)**	(.0013)**
INF	-.0553	-.0495	-.0474	-1.3230	-1.3997	-1.3462	-.0236	-.0204	-.0256
	(.0046)***	(.0032)***	(.0044)***	(.0458)***	(.0341)***	(.0463)***	(.0019)***	(.0021)***	(.0016)***
RIR	-.0323	-.0369	-.0366	-.1901	-.1784	-.1579	-.0149	-.0139	-.0147
	(.0022)***	(.0023)***	(.0017)***	(.0051)***	(.0067)***	(.0060)***	(.0012)***	(.0012)***	(.0012)***
FDI	-.5995	-.6146	-.6267	-1.9485	-2.1512	-2.092	-.0613	-.0624	-.0450
	(.0133)***	(.0139)***	(.0153)***	(.0939)***	(.0838)***	(.1085)***	(.0059)***	(.0062)***	(.0065)***
OIL	.0021	.0036	.0045	.1075	.0881	.0857	.0032	.0036	.0034
	(.0006)***	(.0007)***	(.0004)***	(.0024)***	(.0018)***	(.0028)***	(.0002)***	(.0002)***	(.0002)***
HHI	-.0007	-.0012	-.0014	-.0271	-.0208	-.0210	-.0002	-.0001	-.00001
	(.0002)**	(.0002)***	(.0002)***	(.0023)***	(.0020)***	(.0023)***	(.0001)*	(.0000)*	(.0001)***
MARKE_CAP	.0321	.0328	.0328	.1428	.1364	.1416	.0030	.0031	.0027
	(.0005)***	(.0006)***	(.0005)***	(.0024)***	(.0018)***	(.0022)***	(.0001)***	(.0001)***	(.0002)***
DCPS	-.0651	-.0565	-.0514	-.1732	-.2671	-.2619	-.0073	-.0018	-.0031
	(.0020)***	(.0019)***	(.0020)***	(.0100)***	(.0107)***	(.0119)***	(.0007)***	(.0005)***	(.0008)***
ArabSpring-1	**-4.0925**			**-3.2225**			**-.2411**		
	(.2303)***			**(1.205)*****			**(.0928)****		
ArabSpring-2		**-4.5505**			**-64.444**			**-1.0996**	
		(.4872)***			**(2.289)*****			**(.1037)*****	
ArabSpring-3			**-.6245**			**-34.360**			**-1.0148**
			(.2148)***			**(2.404)*****			**(.1346)*****
Constant	-7.4810	-1.5593	-1.048	148.57	92.042	129.36	.7279	-1.1447	-.0685
	(.7506)***	(.7809)***	(.6105)***	(3.552)***	(4.103)***	(3.166)***	(.2843)***	(.4088)***	(.3665)
No. of observations	2238	2238	2238	2238	2238	2238	2138	2138	2138
Number of banks	171	171	171	171	171	171	170	170	170
Number of instruments	147	147	147	147	147	147	146	146	146
Wald-test X^2	9590***	13800***	5040***	160000***	125000***	169000***	4050***	382000***	47200***
Sargan test (p-value)	0.8650	0.8451	0.8211	0.9217	0.9170	0.9290	0.9688	0.8965	0.9745
AB test AR(1) (p-value)	0.0296	0.0285	0.0291	0.2592	0.2621	0.2601	0.0053	0.0051	0.0050
AB test AR(2) (p-value)	0.5912	0.6191	0.5789	0.7157	0.7718	0.7282	0.1566	0.1603	0.1522

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); CR5 is the 5-bank concentration ratio and measure of market power; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; ArabSpring-1 is a dummy variable that equals 1 if a country is affected (major and minor) by the Arab Spring and 0 otherwise; ArabSpring-2 is a dummy variable that equals 1 if a country is only severely (major) affected by the Arab Spring and 0 otherwise; ArabSpring-3 is a dummy variable that equals 1 if a country is only mildly (minor) affected by the Arab Spring and 0 otherwise. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

Table 5.29 Continued *(Robustness Check 9)*

Variables	Market-Based Performance			Bank Risk-Taking					
	Tobin's Q			SDROA			SDROE		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	ArabSpring-1	**ArabSprin-2**	**ArabSprin-3**	**ArabSprin-1**	**ArabSpring-2**	**ArabSpring-3**	**ArabSprin-1**	**ArabSpring-2**	**ArabSpring-3**
Lag_{it-1}	.322 (.0163)***	.2889 (.0164)***	.3007 (.0168)***	.7256 (.0022)***	.7318 (.0033)***	.7107 (.0021)***	.8564 (.0002)***	.8566 (.0002)***	.8593 (.0002)***
COST	.0003 (.0002)	.0002 (.0001)	.0001 (.0002)	.0005 (.0000)***	.0004 (.0000)***	.0004 (.0000)***	.0272 (.0006)***	.0279 (.0005)***	.0287 (.0005)***
NIR	.0002 (.0000)***	.0002 (.0000)***	.0002 (.0000)***	.0003 (.0000)***	.0001 (.0000)***	.0004 (.0001)***	.0056 (.0001)***	.0057 (.0001)***	.0056 (.0000)***
OPC	.5568 (.1348)***	.4976 (.1341)***	.5995 (.1341)***	1.1818 (.0341)***	.7662 (.0522)***	1.3973 (.0370)***	-7.3749 (.4620)***	-7.353 (.3951)***	-9.2330 (.4170)***
LR	.0064 (.0018)***	.0047 (.0017)***	.0028 (.0015)*	-.0032 (.0000)***	-.0036 (.0000)***	-.0031 (.0001)***	.0166 (.0011)***	.0174 (.0014)***	.0180 (.0019)***
DMDEP	.0054 (.0017)***	.0042 (.0009)***	.0033 (.0014)**	-.0110 (.0006)***	-.0108 (.0006)***	-.0115 (.0005)***	-.3068 (.0064)***	-.3054 (.0059)***	-.3006 (.0056)***
MR	.0003 (.0012)	.0007 (.0013)	.0001 (.0013)	.0597 (.0008)***	.0559 (.0010)***	.0632 (.0008)***	.1002 (.0038)***	.0983 (.0061)***	.1108 (.0049)***
NPLs	-.0015 (.0004)***	-.0015 (.0003)***	-.0014 (.0003)***	.0150 (.0001)***	.0153 (.0001)***	.0147 (.0001)***	.0427 (.0009)***	.0440 (.0013)***	.0446 (.0010)***
LLPs	-.0008 (.0004)*	-.0005 (.0002)**	-.0006 (.0003)*	.1670 (.0015)***	.1687 (.0018)***	.1682 (.0013)***	.7949 (.0095)***	.7942 (.0084)***	.7999 (.0075)***
CAR	-.0025 (.0012)*	**-.0027 (.0013)****	**-.0031 (.0011)****	-.0116 (.0004)***	**-.0092 (.0006)*****	**-.0089 (.0005)*****	-.7007 (.0049)***	**-.7025 (.0048)*****	**-.6992 (.0046)*****
LOAN	.0040 (.0027)	.0017 (.0024)	-.0013 (.0022)	.0035 (.0013)**	.0088 (.0012)***	.0052 (.0013)***	.0652 (.0060)***	.0649 (.0058)***	.0965 (.0053)***
LNGRTH	-.0001 (.0000)*	-.0005 (.0003)*	-.0001 (.0000)**	.0028 (.0001)***	.0029 (.0001)***	.0025 (.0000)***	.0051 (.0008)***	.0051 (.0008)***	.0051 (.0006)***
SIZE	-.0543 (.0091)***	-.0732 (.0090)***	-.0568 (.0107)***	-1.0535 (.0129)***	-1.1913 (.0151)***	-1.1321 (.0102)***	-2.3414 (.0501)***	-2.1661 (.0570)***	-2.369 (.0281)***
OBSs	-.0002 (.0003)	-.0002 (.0003)	-.00001 (.0002)	.0002 (.0000)***	.0001 (.0000)***	.0003 (.0000)***	.0032 (.0005)***	.0029 (.0005)***	.0026 (.0004)***
GDP	.0048 (.0010)***	-.0031 (.0009)***	.0031 (.0010)***	-.0295 (.0015)***	-.0215 (.0013)***	-.0239 (.0014)***	-.0217 (.0071)**	-.0092 (.0058)*	-.0131 (.0068)*
INF	-.0047 (.0012)***	-.0029 (.0013)**	-.0039 (.0012)**	.0769 (.0013)***	.0813 (.0013)***	.0819 (.0017)***	.4351 (.0118)***	.4326 (.0084)***	.4391 (.0096)***
RIR	-.0011 (.0003)***	-.0008 (.0003)***	-.0009 (.0003)***	.0100 (.0005)***	.0078 (.0005)***	.0096 (.0004)***	.0362 (.0022)***	.0357 (.0024)***	.0378 (.0029)***
FDI	.0299 (.0048)***	.0197 (.0043)***	.0215 (.0053)***	.1552 (.0062)***	.1329 (.0049)***	.1870 (.0043)***	.3885 (.0310)***	.4032 (.0318)***	.4434 (.0337)***
OIL	.0008 (.0001)***	.0007 (.0001)***	.0008 (.0001)***	.0022 (.0001)***	.0011 (.0001)***	.0021 (.0001)***	.0052 (.0006)***	.0044 (.0005)***	.0069 (.0007)***
HHI	-.0002 (.0000)***	-.0001 (.0000)**	-.0001 (.0000)**	.0002 (.0000)***	.0004 (.0000)***	.0001 (.0000)*	.0008 (.0003)**	.0007 (.0003)**	.0011 (.0003)***
MARKE_CAP	.0041 (.0001)***	.0038 (.0001)***	.0037 (.0002)***	-.0031 (.0001)***	-.0032 (.0001)***	-.0041 (.0002)***	-.0276 (.0006)***	-.0279 (.0006)***	-.0264 (.0007)***
DCPS	-.0024 (.0003)***	-.0009 (.0003)***	-.0008 (.0003)**	.0188 (.0004)***	.0295 (.0005)***	.0252 (.0004)***	.0404 (.0035)***	.0278 (.0031)***	.0411 (.0033)***
ArabSpring-1	**-.1545 (.0598)*****			**2.0129 (.1291)*****			**5.6472 (.5614)*****		
ArabSpring-2		**-.2586 (.0341)*****			**2.6544 (.0909)*****			**4.0414 (.2081)*****	
ArabSpring-3			**-.1883 (.0125)*****			**1.5432 (.1311)*****			**.3933 (.1951)****
Constant	1.3061 (.2544)***	1.6794 (.2853)***	1.237 (.2605)***	14.006 (.3061)***	16.210 (.2628)***	12.023 (.1635)***	80.814 (.8565)***	80.960 (.9603)***	87.481 (.9927)***
No. of observations	812	812	812	1939	1939	1939	1939	1939	1939
Number of banks	67	67	67	163	163	163	163	163	163
Number of instruments	59	59	59	146	146	146	146	146	146
Wald-test X^2	3558***	7371***	5157***	40700***	15200***	12600**	384000***	2720000***	227000***
Sargan test (p-value)	0.9991	0.9991	0.9992	0.9565	0.9608	0.9817	0.9837	0.9822	0.9878
AB test AR(1) (p-value)	0.0017	0.0034	0.0030	0.0187	0.0179	0.0183	0.2722	0.2720	0.2721
AB test AR(2) (p-value)	0.3402	0.2538	0.2563	0.9965	0.9633	0.9816	0.3112	0.3109	0.3119

The table describes results of the effects of bank-specific, macroeconomic and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans. LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); CR5 is the 5-bank concentration ratio and measure of market power; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP, ArabSpring-1 is a dummy variable that equals 1 if a country is affected (major and minor) by the Arab Spring and 0 otherwise; ArabSpring-2 is a dummy variable that equals 1 if a country is only severely (major) affected by the Arab Spring and 0 otherwise; ArabSpring-3 is a dummy variable that equals 1 if a country is only mildly (minor) affected by the Arab Spring and 0 otherwise. The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level) are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

It is also noted that higher capital ratios (CAR) enhance the bank profitability and reduce the risk in GCC countries that are mildly (minor) affected by Arab Spring and it is more than that are applicable which severely affected by Arab Spring. This is in line with the opinion that banks with more capital are more prudent and employ wiser risk strategies, which leads to increased monitoring and supervision especially in the time of crisis like political uncertainty (Bitar *et al.*, 2016).

5.6.4.10 Winsorize Test

This study checks the robustness by running regressions to minimize the effect of outliers and potential data errors by using the winsorize test. Following Poghosyan and Hesse (2009), Köhler (2012, 2015), Beck *et al.* (2013), Bitar *et al.* (2016) and Olson and Zoubi (2016), this study winsorizes all variables at the 1st and 99th percentiles of their empirical distributions. Overall, Table 5.30 shows that the results remain the same when the study winsorizes all bank variables at the 1st and 99th level, indicating that outliers are not driving the results.

Table 5.30

Regression Results when the Study uses ***Winsorize Test*** *(Robustness Check 10)*

	Bank Profitability			Market-Based Performance	Bank Risk-Taking	
Variables	**ROA**	**ROE**	**NIM**	**Tobin's Q**	**ROA**	**ROE**
Lag_{it-1}	0.107***	0.0815***	0.444***	0.391***	0.757***	0.723***
	(0.00194)	(0.00207)	(0.00523)	(0.0201)	(0.00130)	(0.00100)
COST	-0.0368***	-0.133***	-0.00953***	0.000199	0.000725***	0.0647***
	(0.000172)	(0.00163)	(0.000225)	(0.000179)	(9.83e-05)	(0.000916)
NIR	-0.0562***	-0.212***	-0.0121***	0.000388*	0.0180***	0.109***
	(0.000660)	(0.00328)	(0.000357)	(0.000213)	(0.000134)	(0.00120)
OPC	3.584***	12.91***	1.599***	-0.0659	0.948***	-2.153***
	(0.133)	(0.934)	(0.134)	(0.0895)	(0.0629)	(0.705)
LR	-0.00307***	0.0153***	0.00163***	0.000307*	-0.00126***	0.00698***
	(0.000338)	(0.00118)	(0.000149)	(0.000122)	(5.39e-05)	(0.000701)
DMDEP	0.0318***	0.0824***	0.00200***	0.00214***	-0.0180***	-0.0753***
	(0.000589)	(0.00322)	(0.000312)	(0.000350)	(0.000331)	(0.00192)
MR	-0.0575***	-0.0570***	-0.0251***	0.000841	0.0210***	0.0672***
	(0.00174)	(0.00841)	(0.00116)	(0.000819)	(0.000954)	(0.00440)
NPLS	-0.0366***	-0.239***	-0.0150***	-0.000379**	0.0247***	0.270***
	(0.000820)	(0.00759)	(0.000874)	(0.000121)	(0.000316)	(0.00163)
LLPS	-0.246***	-0.832***	-0.00533***	-0.00186**	0.122***	0.418***
	(0.00227)	(0.0127)	(0.000686)	(0.000766)	(0.000917)	(0.00735)
CAR	0.134***	0.334***	0.0248***	-0.00298***	-0.0326***	-0.282***
	(0.00224)	(0.0268)	(0.000978)	(0.000979)	(0.000568)	(0.00528)
LOAN	0.0250***	-0.0938***	0.0277***	-0.00282***	0.00230***	0.116***
	(0.00185)	(0.0133)	(0.00147)	(0.000548)	(0.000580)	(0.00559)
LNGRTH	-0.00310***	0.000944	0.00260***	-0.000103	0.00144***	0.00772***
	(0.000143)	(0.00123)	(0.000113)	(7.24e-05)	(8.62e-05)	(0.000491)
SIZE	0.268***	0.0380	0.241***	-0.0190***	-0.561***	-1.936***
	(0.0377)	(0.131)	(0.0129)	(0.00646)	(0.00872)	(0.0442)
OBSS	0.000660***	0.00842***	-0.000132***	-0.000134	0.000186***	0.000662***
	(2.22e-05)	(0.000211)	(2.06e-05)	(0.000251)	(1.02e-05)	(0.000127)
GDP	0.0102***	0.116***	0.00534***	0.00752***	-0.0229***	-0.103***
	(0.00310)	(0.0184)	(0.00126)	(0.000947)	(0.000971)	(0.00948)
INF	-0.0688***	-0.0283	-0.0106***	-0.00606***	0.0847***	0.407***
	(0.00316)	(0.0213)	(0.00153)	(0.00127)	(0.00164)	(0.00986)
RIR	-0.0191***	-0.0682***	-0.00567***	-0.000929**	0.0106***	0.0264***
	(0.00116)	(0.00669)	(0.000682)	(0.000326)	(0.000421)	(0.00254)
FDI	-0.118***	-0.0198***	-0.0248***	0.0258***	0.0593***	0.440***
	(0.00706)	(0.0009)	(0.00606)	(0.00427)	(0.00379)	(0.0265)
OIL	0.00461***	0.00698***	0.00174***	0.000952***	0.00136***	0.00941***
	(0.000299)	(0.00212)	(0.000215)	(0.000106)	(0.000168)	(0.000618)
HHI	-0.00104***	-0.0111***	-0.000441**	-0.000423***	0.000354	0.000752***
	(0.000217)	(0.00173)	(0.000195)	(8.68e-05)	(0.000572)	(0.000142)
MARKE_CAP	0.00846***	0.0427***	0.00213***	0.00369***	-0.00469***	-0.00534***
	(0.000380)	(0.00263)	(0.000143)	(9.15e-05)	(0.000145)	(0.000602)
DCPS	-0.0311***	-0.153***	-0.00889***	-0.00190***	0.00821***	0.0748***
	(0.000804)	(0.00967)	(0.000796)	(0.000297)	(0.000362)	(0.00395)
Constant	-1.386**	5.189**	2.653***	0.135	7.036***	42.42***
	(0.679)	(2.149)	(0.241)	(0.159)	(0.195)	(0.924)
Observations	2238	2238	2138	812	1939	1939
Number of id	171	171	170	67	163	163
Number of instruments	146	146	146	59	145	145
Wald-test X^2	81800***	1550***	243000***	2556.46***	1540000***	4400***
Sargan test (p-value)	0.8644	0.9066	0.9348	0.9967	0.9635	0.9719
AB test AR(1) (p-value)	0.0277	0.2591	0.0052	0.0175	0.0202	0.2714
AB test AR(2) (p-value)	0.2957	0.2301	0.1438	0.2277	0.6813	0.2991

The table describes results of the effects of bank-specific, macroeconomic, and financial market factors on bank performance (ROA, ROE, NIM, Tobin's Q, SDROA and SDROE) using two-step GMM estimations by Arellano and Bover (1995). COST is cost-to-income ratio measured by operating expenses to total income; NIR is non-interest revenue to total revenue; OPC is opportunity cost measured by liquid reserves to total assets; LR is liquidity risk measured by loans divided by customers and short-term funding; DMDEP is demand deposit to total deposits; MR is market risk exposure measured by total amount of investments in security divided by total assets; NPLs is non-performing loans to total loans; LLPs is loan loss provision to total loans; CAR is capital adequacy ratio measured by equity to total assets; LOAN is loans to total assets; LNGRTH is loan growth measured by annual growth rate of total loan; SIZE is bank size measured by the natural logarithm of the total assets value; OBSs is off-balance sheet activities divided by total assets; GDP is annual GDP growth Rate; INF is current period inflation rate (consumer prices); RIR is real interest rate; FDI is FDI inflow measured by the natural logarithm of the FDI inflow value; OIL is Oil price measured by annual oil spot price change (Dollars per Barrel); HHI is Herfindahl index measured by sum of the squared each bank's total assets to total banking sector assets; MARKE_CAP is stock market capitalization measured by value of listed shares relative to GDP; DCPS is domestic credit to the private sector to GDP; The period covers the years from 2000 to 2015. Robust standard errors are in parentheses. Coefficients that are significantly different from zero at the 1%, 5%, and 10% level are marked with ***, **, and * respectively. Wald test is a test of homoscedasticity. The Sargan test is the test for over-identifying restrictions in GMM dynamic model estimation. The null hypothesis of the Sargan test is that the instruments used are not correlated with residuals. AB test AR(1) and AR(2) refer to the Arellano–Bond test that average auto-covariance in residuals of order 1 respectively of order 2 is 0 (H0: no autocorrelation i.e., no second-order serial correlation).

5.7 Summary of Chapter

This chapter provides empirical results of the relationship of bank-specific factors, macroeconomic, and financial structure indicators of bank performance in GCC economies over 1996-2015 periods. The two-step system GMM estimator proposed by Areliano and Bover (1995) and Blundell and Bond (2000) has been employed to run the main analysis for the three measures of bank profitability namely ROA, ROE, and NIM; market-based shareholder value measured by Tobin's Q; and the two measures of bank risk-taking SDROA and SDROE to test the research hypotheses as reported in Chapter Four. To further confirm the results, this study provides a number of robustness checks. Twenty-four hypotheses are developed to test the relationship between parameters with every measure of bank profitability and bank risk-taking behavior while twenty-two hypotheses are developed on the association between parameters and Tobin's Q.

The results on foreign banks show that the foreign banks are performing better than domestic banks in terms of ROE, NIM, and SDROE, but there is no significant difference between them and the domestic banks regarding ROA. Foreign banks have higher SDROE (more risky) than domestic banks. The analysis shows that there is a significant impact of oil price shocks, FDI inflows, and CRISIS on all bank performance measures. The empirical analysis also finds those bank-specific factors, macroeconomic and financial market indicators, excluding SIZE and GDP with ROE; OPC with NIM, COST, MR, LOAN, and OBSs with Tobin's Q; MARKE_CAP with SDROA; as well as LOAN and LNGRTH with SDROE, have significant impact on bank performance. Finally, listed banks have higher ROA and ROE while they have lower NIM than unlisted banks. Furthermore, listed banks have lower SDROA whereas there is no difference between them in SDROE.

Finally, regression results of the bank-specific factors with only FDI inflow or oil price changes, exclusion of banks size variable, alternative profitability, risk and stability measures, exclusion of Bahrain and UAE banks from the sample, alternative measures of bank competition, exclusion the financial crisis period 2007-2009, controlling for the individual and time fixed effects, as well as an examination of the Arab Spring period show very consistent results. Chapter Six provides a summary of the thesis and discusses the policy implication, limitations, and suggestions for future research.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the overall conclusion of the study on the relationship between bank-specific factors, macroeconomic and financial structure indicators on profitability of the banks in GCC economies, market based-shareholders' value, as well as bank risk-taking behavior. This chapter starts with a summary of findings and followed by contributions and implications of the study. Lastly, limitations of the study are discussed and suggestions for possible future research are highlighted.

6.2 Summary of the Study

The findings are summarized in this section in the sequence of the research objectives, which are as follows: (1) To identify the overall level of banks' performance in GCC countries. (2) To investigate the difference between GCC domestic and foreign banks. (3) To examine if some bank specific characteristics (COST, NIR, OPC, LR, DMDEP, MR, NPLs, LLPs, CAR, LOAN, LNGRTH, SIZE, and OBSs) have a relationship with banks' performance. (4) To examine whether macroeconomic factors (GDP, INF, RIR, FDI, and OIL) have a relationship with banks' performance. (5) To examine whether financial structure indicators (HHI, MARKE_CAP, and DCPS) have a relationship with banks' performance. (6) To investigate whether there are differences in performance of listed and unlisted banks in GCC countries. (7) To determine the impact of CRISIS on GCC banks' performance. Using 3640 observations of 100 domestic commercial banks and 82 foreign commercial banks in the GCC countries over the period 1996-

2015, the study applies two-step system GMM dynamic panel data analysis techniques to explore the possible relationships as stated in the objectives of the study above.

6.2.1 Objective Two: Difference between GCC Domestic and Foreign Banks

This study finds that there is a significant difference between GCC foreign and domestic banks in terms of ROA, ROE, NIM, SDROA, SDROE, COST, NIR, LR, DMDEP, MR, NPLs, CAR, LOAN, SIZE, and OBSs. There are however no significant differences between them with regard to OPC, LLPs, and LNGRTH. The regression results show that foreign banks are more profitable than domestic banks in terms of ROE and NIM. This may due to the less competitiveness of domestic banks, better level of competency and experience of foreign banks, better use of technology and managerial techniques by foreign banks, capital support from parent institution in their home country and the profitability of the parent institution. It also finds that foreign banks has significant and positive association with SDROA but significant and negative association to SDROE, which suggests that foreign banks engaged more on non-traditional activities than domestic banks, however, it also indicates their ability to manage risk which is reflected in lower volatility in their shareholders' return.

6.2.2 Objective Three: Bank Specific Characteristics

The empirical results show that all of the six dependent variables (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) have persistence with positive significant coefficients. NIM has the highest persistence of profit, followed by ROA and ROE, while SDROA has the largeest persistence of risk compared to SDROE. This study shows that COST is important in explaining the bank performance in GCC countries. The study also shows that GCC banks which are less cost-efficient are less profitable (ROA, ROE, and NIM) and are more risky (SDROA and SDROE). Additionally, on an overall basis, GCC banks that are highly dependent on NIR have lower profitability and are more-risky. More diversified GCC listed banks have higher market-based shareholders value with regards to Tobin's Q. Banks with more statutory reserves are more profitable (ROA and ROE), have greater shareholders value (Tobin's Q), more volatile asset returns but lower in volatility of equity returns. In line with Lee and Hsieh (2013), LR has the opposite pattern. Furthermore, this study finds that banks that are able to attract demand deposits are more profitable and create more shareholders' value and are less risky as demand deposits are less costly.

GCC banks with a higher level of investment in securities and higher NPLS and LLPs have a lower level of performance (lower profitability and more-risky). In line with moral hazard hypothesis, this study finds that GCC banks with higher capital ratio have higher profitability (ROA and NIM) and lower risk (SDROA and SDROE), but lower shareholders' value. GCC banks with better capability to monitor and manage loans are more profitable in relation to ROA and NIM but it is also more-risky in terms of ROA (SDROA). Similarly, banks with higher LNGRTH have a positive effect on ROE, NIM, and SDROA. In general, this study finds empirical evidence that larger GCC banks are more profitable and less-risky than smaller banks; however, GCC listed banks suffer from diseconomies of scale and scope with regards to Tobin's Q. Likewise, a positive (negative) and significant association between ROA, ROE, SDROA, and SDROE (NIM) of GCC banks with OBSs is found, which suggest that an increase in the level of OBSs increase bank profitability (ROA and ROE) but lower intermediation margins (NIM) and are more risky (SDROA and SDROE).

6.2.3 Objective Four: Macroeconomic Indicators

The estimation results show that macroeconomic indicators such as GDP plays an important role to explain the GCC bank performance, confirming that during the economic boom periods GCC banks are more profitable (ROA and NIM), have higher shareholders' value (Tobin's Q), and less-risky (SDROA and SDROE) due to increased demand for lending over those periods. Furthermore, the findings show that during higher inflationary environment GCC banks have lower profitability, lower shareholder value, and higher risk. Similarly, high RIR, lead to lower bank performance.

Moreover, on an overall basis, in GCC economies, increase in the FDI inflow result in lower bank profitability (ROA, ROE, and NIM) and higher bank risks (SDROA and SDROE) due to the tougher competition by foreign banks in the region. It also finds that increase in FDI inflow leads to increase the shareholder value (Tobin's Q) of the listed banks. This study also finds that the effect of oil price shocks on all bank performance measures (ROA, ROE, NIM, Tobin's Q, SDROA, and SDROE) is positive and significant, suggesting that higher oil price is related to higher liquidity resulting in higher deposits inflows which are then intermediated into lending. The robustness checks also confirm that FDI inflow and oil price shocks have a direct effect on bank profitability, shareholder value, and bank risk. Thus, macroeconomic policy parameters play an important role in explaining the performance of GCC banks.

6.2.4 Objective Five: Financial Structure Indicators

The results with financial structure indicators indicate that market concentration has a negative significant effect on bank profitability (ROA, ROE, and NIM) and Shareholders value (Tobin's

Q), while it has a positive and significant effect on bank risk (SDROE), meaning thereby that the SCP hypothesis is not confirmed, which stress that improved market power yields monopoly returns. These findings are consistent with the studies that find banks with higher market concentration have lower performance due to stiff competition in the sector. The robustness checks also confirm that excessive concentration (higher CR5 and Lerner index) leads to bank fragility, while more competition or lower Boone indicator (lower market power) enhances the performance and decreases the risk of banks in the GCC region. Stock market capitalization has a positive (negative) and significant associations with bank profitability and shareholder value (risk), meaning that banks with stock market development perform better. In contrast, higher credit to private sector leads to reduced bank performance (less profitable and shareholder value, and more-risky).

6.2.5 Objective Six: Differences between Listed and Unlisted Banks

This study also provides empirical evidence that listed banks are more profitable with regards to ROA and ROE, but also more-risky on assets returns (SDROA) than unlisted banks. This may due to the competitive pressure of performance in the stock markets, market regulation as well as the stricter corporate governance rules which lead to enhanced ROA and ROE for listed banks. In contrast, NIM of listed banks is lower than unlisted banks because GCC listed banks are less competitive in their interest rate of loans compared to unlisted banks.

6.2.6 Objective Seven: Global Financial Crisis 2008

This study finds that the impact of the CRISIS on the bank profitability (ROA, ROE, and NIM) and market-based shareholder value measured by Tobin's Q are negative and highly significant, while it is positive and significant with bank risk taking behavior measured by SDROA and SDROE. In other words, this study provides evidence that the impact of the CRISIS on the performance of the GCC banking sector is negative and significant and has severely weakened the GCC banking system. These results are also confirmed by the robustness tests when the dummies of time-invariance are incorporated as independent variables in all regressions.

The results are also robust when controlling for the Arab Spring transition period. Finally, regression results of bank-specific factors with only FDI inflow or oil price, exclusion of banks size variable, alternative profitability, risk and stability measures, exclusion of Bahrain and UAE banks sample, alternative measures of bank competition, exclude the financial crisis period 2007-2009, and controlling for the individual and time fixed effects confirm the study findings.

6.3 Contributions of the Study

This study contributes to existing empirical analyses in several ways, which are the following:

6.3.1 New Approach of Analysis and Insight

Overall, the study findings contribute some interesting new insights into the mechanisms that define the performance (profitability, risk, and market-based shareholder value) of GCC banks. First, in order to address the endogeneity problem, which may lead to inconsistent results, this study use the dynamic model of two-step system GMM by Areliano and Bover (1995) that allows for persistence of profit and risk. Second, the results confirm the findings of previous studies on bank profitability and risk. Third, this study examines a unique set of bank-specific, macroeconomic and financial structure determinants of bank performance which let researcher provide some interesting and new results. Fourth, this study provides evidence for a more recent period during which some significant events in the financial sector like the financial crisis, oil fluctuations as well as the Arab spring revolutions.

Fifth, most literature focuses largely on the determinants of either bank profitability or risk, yet seldom aim to assess the determinants of bank profitability and risk. This study discusses profitability, risk, and market-based shareholders' value together. Sixth, the study uses three measures of profitability: ROA, ROE, and NIM; two measures for risk: SDROA and SDROE; and one measure for market-based shareholder value: Tobin's Q. It also provides robustness tests to confirm that profitability and risk proxies used in the study are suitable for GCC banks. Seventh, most previous studies use sample from domestic banks only. However, this study examines the performance at the overall level of the commercial banking system in the GCC economies, including domestic and foreign banks as well as listed and unlisted banks. Banks with different ownership characteristics differ in their attitudes to managing profitability, capital, and risks. In general, this study finds that foreign banks performed better than domestic banks. Furthermore, it is found that the performance of listed banks is better than the unlisted banks.

6.3.2 New Focus Area

The existing literature has mainly focused in analysing banks performance in the U.S.A and European economies. Moreover, unlike previous Asian studies on bank profitability and bank risk taking behavior (Lee & Hsieh, 2013; Soedarmono *et al.*, 2013), bank profitability and shareholders' value (Fu *et al.*, 2014b) which pooled data from several Asian countries, this study focuses on a single region in the Asian economies, which is GCC region. This is because despite being an important economic area, it has not attracted the attention of the researchers. This study is the first comprehensive study which analyses the performance of GCC commercial banks. This study works on a panel of GCC banks over the period 1996–2015 which witness several financial reforms initiatives by the respective governments, and have fostered the balanced growth of the stock markets and the banking system in the region.

6.3.3 New Variables Tested

DMDEP and OPC are new variables are tested as bank-specific determinants with bank risk and market-based shareholder value. The study finds that banks with higher demand deposits are less-risky and have higher shareholders' value. Hence, banks that are able to attract more demand deposit would be more profitabile and less risky. Furthermore, the study finds that keeping more reserves lead to enhance the shareholder value and reduced volatility of bank equity returns (lower risk). Therefore, efficient banks are able to make their customers pay more than their OPC which in turn reduce bank risk and enhance the shareholder value. MR is also a new parameter which is examined in the study with ROE and NIM (profitability), and bank risk-taking behavior. The results suggest that banks with more investments in securities have lower profit and are more-risky. Efficient investment management would reduce bank risk. NPLs are tested to determine its effect on shareholders' value: the findings show that the higher the NPLs the lower than the shareholders' value of banks. OBSs are also examined with bank risk-taking behavior and the findings show that banks that more engaged on OBSs are more-risky. This confirms that the experience and expertise are important talent requirement in banks to reduce the risk in non-lending activities.

The importance of FDI inflow and oil prices for the economic development of all oil-exporting economies is widely acknowledged. However, the impacts of FDI inflow and oil price shocks on bank profitability, market-based shareholders' value, and bank risk have so far lacked rigorous empirical analysis. This study does not only show that FDI inflow and oil price shocks are related to bank performance, but it also carried out the robustness check to provide evidence that they have a direct effect on all bank performance proxies. This makes the present study completely different from the previous study which addresses the bank performance (bank profitability, market-based shareholders' value, and bank risk-taking behavior). Moreover, RIR, MARKE_CAP, and DCPS are three additional variables which are tested with market-based shareholders' value (Tobin's Q) and the results show a significant association between each variable and Tobin's Q.

Furthermore, MARKE_CAP and HHI are examined with bank risk-taking behavior. The study finds evidence that they have significant effect on these relationships. This study not only highlights the significant negative association between HHI and individual bank performance (concentration decreases the profitability and shareholder value, and increases the risk), but it also carried out the robustness check to provide evidence that CR5, Lerner index, and Boone indicator have negative impact on bank performance, confirming that more concentration or market power (low competition) increases bank fragility. The results also confirm that bank concentration is an insufficient measure of bank competitiveness. Finally, a major issue that has not been considered in the literature on the analysis of bank performance is the impact of Arab Spring on banking sectors (bank profitability, market-based shareholder value as well as bank risk-taking behavior). The robustness analysis of this study suggests that the Arab Spring decreases bank profitability and shareholders' value, and increases bank risk.

6.3.4 Theoretical Contribution

This study uses the financial intermediation theory, diversification theory, internalisation theory, as well as SCP hypothesis which have been used in several studies in developed economies that have more diverse environments and features than the developing economies. This study has added to the understanding of the applicability of these theories in the context of the performance of banks in six developing economies. The findings of this study regarding the determinants of the performance of commercial banks support the financial intermediation theory, which is supported by the fact that both external and internal factors influence bank profitability and risk. The findings suggest that with a stronger compliance to regulation, bank risk would decrease. The implementation of Basel III is found to be effective in mitigating the risk experienced by the commercial banks in GCC economies. The results also indicate that banks having lower costs of the transaction have achieved the same through economies of scale. Furthermore, GCC banks use depositors' money in productive and profitable lending/investments with satisfactory risk.

The results of this study support the portfolio/diversification theory in that it provide empirical evidence that more reliance on NIR is related to lower profitability and higher volatility of returns. These results are not consistent with the traditional intermediation theory which highlights the benefits of diversified revenue for bank performance, but a more active engagement of banks in highly diversified OBSs is associated with higher profitability and higher returns volatility. More specifically, as is found in the robustness tests, traditional intermediation theory that suggests diversification reduces risks is not supported in Bahrain banking sector, while it is supported in other GCC banking sectors (Oman, Qatar, Kuwait, Saudi Arabia, and UAE). The study findings also support the capital management theory and moral hazard hypothesis whereby higher capital would increase profitability and reduce risk.

It is also observed that internalisation theory (defensive expansion theory) that argues that banks go along with their clients into the host market so as to maintain the bank-customer relationship did not occur in the case of foreign banks in Bahrain but it occurs in other GCC countries such as Oman, Saudi Arabia, UAE, Qatar, and Kuwait. Moreover, the "too- big-to-fail theory" which states that larger banks are more likely to take on more risk is not supported in GCC countries as a whole. In addition, the SCP hypothesis that argues that banks with more concentration tend to have larger scales of operation, which leads to a higher (lower) degree of profit (risk), is not supported in GCC banking markets. However, the findings of this study provide support for the competition-stability theory that argues that a positive association exists between competition and stability.

6.4 Policy Implications

The empirical analysis of this study has several policy implications to GCC governments, regulatory and supervisory authority as well as bank managers and shareholders. GCC banks need to place greater emphasis on both cost and profit efficiency to boost their future performance. Recruitment of more professional staff and a continuous process of talent development may not only enable GCC banks to counter the threat of competition from foreign banks but also be able to manage their business better. The study clearly highlighted the importance of demand deposit to boost bank performance and hence propose that banks should explore ways and means to augment their base of demand deposit by providing wider and better range of product and services. Higher demand deposit would enhance the performance and reduce the risk of banks. The findings of this study indicate that strategies of income diversification are not suitable for Bahraini banks in particular. In other words, Bahraini banks do not have enough skills or necessary expertise to diversify income away from lending activities. Hence, they should limit their effort to diversify income and remain focused toward in traditional business until they build relevant capabilities to handle NIR generating business. Further, Bahraini banks being a key offshore banking center, banks in the said country need to strengthen their expertise in handling non-traditional activities.

The results also suggest that GCC banks (excluding Bahraini banks) can improve their performance by expanding their resources within their existing business lines and engage more on the non-traditional activities (OBSs activities and income diversification) where they possess distinctive comparative advantages, however, non-traditional activities of these banks should be kept under scanner by the regulatory authorities in order to guarantee safety and soundness and avoid excessive risk-taking behavior of their banks. GCC banks have to be cautions in taking excessive risk in financial markets which may destroy shareholders' value. Further, bank regulators should more closely monitor to prohibit those banks engaging in excessive risky undertakings. It is also necessary for GCC banks to have prudent risk management policies to estimate the risk premium to be charged on loans by using appropriate credit scoring systems.

The positive effects of CAR on GCC bank performance is very interesting and of great importance in the light of the current supervisory focuses on the CAR (Basel III). In other words, the regulatory authorities in the GCC countries need to improve the application of Basel III, which enhances bank profitability, efficiency and bank protection against risk particularly in periods of stress such as the financial crisis and the Arab Spring. Moreover, the negative relationship between the CAR and risk suggests that capital regulation could ensure bank soundness. Therefore, banks in GCC countries (especially those severely affected by Arab Spring) have to spend more money to develop their human resources and expertise in risk and profitability management and better monitoring and supervision of loans and investment projects.

Furthermore, there is evidence that bank profitability and risk-taking behaviour in GCC countries in general and Bahrain in particular, are significantly more affected by bank-specific determinants. This implies that regulatory authorities in GCC countries in general and Bahraini banks, in particular, should focus more on risk management systems, managerial performance, and measures to identify banks with potential impaired loans and possible financial instability. Bank managers in GCC countries should use the relevant fiscal and monetary policies to control market interest rate volatility and inflation to some extent. Strengthening the speed of development of the stock market is likely to improve transparency in banks and better screening and monitoring of banks by regulators to ensure better efficiency and performance.

6.5 Practical Implications

As GCC economies are proved to be vulnerable to oil price changes, banks should be in a position to track the changes in oil price and tread a more cautious approach while stepping up their lending activities. Bank capitalization may be linked to oil price shocks to mitigate the adverse effect of pro-cyclical bank lending behavior of banks in GCC countries. In other words, tying bank capitalization to oil price shocks can help to mitigate procyclical bank lending and allow banks to use their capital cushions created during boom periods for lending purposes during downturns.

Moreover, FDI is a vehicle for the adoption of new technologies, and therefore, the training required to prepare the labor force to work with new technologies in order to mitigate the negative effect of FDI on banks performance. Further, enhanced competition through ease of entry of foreign investments should be accommodated since their introduction to mitigate its negative effect on bank profitability and reduce the risk, especially in Bahrain.

To curb the unreasonable concentration, regulators and authorities should use a more robust approach in the evaluation and adoption merger and acquisition. There is a need for some ease of restrictions on the entry of foreign banks in domestic market and domestic banks seeking acquisitions in the Gulf countries (excepting Bahrain) because empirical evidence of the study indicates that banks are more profitable and less risky when the environment is more competitive with less concentration. In other words, results show that banks with a higher competition "enjoy" higher profits and lower risk. Therefore, promoting a more healthy banking competition should be pursued by regulators to specifically improve transparency and disclosure on banking products. Moreover, promoting the ability of banks to provide financial products and services efficiently in a stabilized and less concentrated environment is warranted rather than merely expanding the quantity of credit. Entry of wholly owned foreign banks in the GCC region is encouraging. Furthermore, policymakers should control and monitor the other developments that impact the competitive situation in the GCC banking market such as privatization and international financial integration.

6.6 Limitations of the Study

This study has some limitations: First, the study sample consists of domestic and foreign commercial banks, therefore, the outcomes from this study are not applicable to non-financial firms, investment banks, development banks and cooperative banks which are also active players in the GCC economies. Second, as the study sample consists of six countries from one region and have almost similar legal origin, the findings of this study are not generic in their application. Finally, this study uses data from 2000-2015, which represents the post-Gulf crisis period. Due to the paucity of data, this study does not cover the periods of the Asian crisis. Therefore, the findings found are confined to 2000-2015 study periods only.

6.7 Suggestions for Future Research

Though the study sample includes all commercial banks operating in the GCC countries and considers the main determinants of bank performance (bank profitability, market-based shareholder value, and bank risk-taking behavior) as well as indicators related to macroeconomic and financial markets environments, there are few relevant areas that can be considered for future research. First, profitability and risk-taking behavior of GCC banks continue to pose a major challenge to all concerned. Therefore, it is suggested that more research is conducted to identify the determinants of profitability and risk-taking behavior of GCC banks with a due focus on its possible impact on bank regulation and supervision, monetary policy indicators, and management of banks.

Second, the analysis of the effect of the merger on bank performance is a potential area of research in GCC economies. Third, it may be useful to include specific information on corporate governance in such studies. Fourth, future research can extend its scope to include the profitability and risk-taking of investment banks, cooperative banks, and development banks in those economies. Fifth, include multinational banks' variables in foreign banks using the methods of Williams (2003) and Kosmidou *et al.* (2007) will be a useful line of research in future with important policy implications.

Sixth, the analytical framework of the study can be also used in analysing the financial performance of banks in other economies. Similar study may be conducted for other regions which might perhaps provide similar or more interesting results. One can consider conducting more robustness tests to validate the relationships tested in the study. Finally, in order to get a more comprehensive analysis of bank profitability, market-based shareholder value, and bank risk, comparative analysis between GCC banks with banks from other regions may be explored. Thus, future studies can conduct a cross-country study to compare the findings of GCC banks with the other region such as Southeast Asia countries or others region in emerging or developing economies.

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