

THE IMPACT OF OWNERSHIP STRUCTURE AND MACROECONOMIC FACTORS ON CREDIT RISK: EVIDENCE FROM GULF COOPERATION COUNCIL (GCC) COUNTRIES

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Abstract: The purpose of this study is two-fold. Firstly, it attempts to examine the impact of ownership structure on credit risk. Secondly, it analyses the effect of macro-economic factors in the Gulf Cooperation Council (GCC) countries. The data was analysed using the panel data regression for both listed GCC Islamic and conventional banks for the period of 2011-2016 for 312 bank-year observations. The results revealed that foreign ownership and state ownership are significantly and negatively associated with specific loan loss provisions (LLP). It could be inferred that expertise of foreign-owned banks, as well as government support of state-owned banks, lead to a decrease in LLP. Moreover, family ownership and non-performing loans have been found to have a positive relationship with LLP while gross domestic product (GDP), the consumer price index (CPI) and money supply (M2) are insignificantly related to LLP. The most likely explanation of macro-economic results is that LLP are not responsive to the changes in GDP, CPI and M2 in the high-income economy due to low fluctuations in the economy and decisions of the borrowers may not be highly influenced by these factors. These results are confirmed by robustness tests except for state and family ownership which are partially supported in most models.

Keywords: Loan loss provisions, risk management, banking sector.

Introduction

The banking industry is one of the vital sectors, lifeblood of other sectors, and the economy as a whole. Managing credit risk in a bank is the main concern for policymakers and bank management because excess risk may lead to bank failures and the collapse of financial systems. As reported that credit risk and ownership structure are the main determinant factors of failures among the US banks (Alali & Romero, 2013; Berger *et al.*, 2016). Moreover, several authors have demonstrated that bank failures occur due to credit risk and insolvency (Shan & Xu, 2012; Eastburn & Sharland, 2017). Credit risk is defined as the risk of default on loans which would required to set aside provisions due to non-performing loans and it is deemed a nightmare for banks' managers (Al-Magharem *et al.*, 2019). Hence, it is used by

credit rating agencies and governments to assess banks and the quality of their credit facilities (Ozili & Outa, 2017). Notably, it was suggested by Eastburn and Sharland (2017) that one possible solution to bank failures is by managing and controlling credit risk through adequate lending policies and effective risk management which may reduce the level of credit risk and lead to a better banking status. Empirically, ownership structure has a major effect on banks' credit risk (Shan & Xu, 2012; ElBannan, 2015; El-Masry *et al.*, 2016; Tarchouna *et al.*, 2017; Migliardo & Forgione, 2018). It is worth noting that credit risk is considered to be relatively high in the Middle East and North Africa (MENA) counties, in which the average of non-performing loans reached around 8% (Ghosh, 2019). As a sequence, it is a critical issue which needs to identify the mechanism that decreases credit risk in the GCC countries.

In addition, macro-economic factors in terms of gross domestic product (GDP), the consumer price index (CPI) and money supply (M2) may affect banking systems and credit quality, especially during the crisis period (Laidroo & Männasoo, 2014). Previous research has shown that macro-economic factors have a significant effect on credit risk (Laidroo & Männasoo, 2014; Goczek & Malyarenko, 2015; Kjosevski & Petkovski, 2016). The approach of this paper differs from other studies, as it relates to the impact of both ownership structure and external factors on credit risk. Thus, this study focuses on the use of specific provisions which are non-discretionary provisions rather than general provisions. The latter provisions could be manipulated by banks for earnings management, signalling, capital management, and tax considerations because management may have discretionary decisions to increase general provisions based on its future assumptions. Hence, this paper will address the gap in the literature which is imperative to the banking systems as well as to policymakers to build comprehensive and stable financial institutions.

The current study emphasized the GCC countries which consist of six countries: Kingdom of Saudi Arabia, United Arab Emirates, Bahrain, Oman, Kuwait, and Qatar. These countries not only have higher economic growth but also have limited research in credit risk as well as in the banking sector (El-Masry *et al.*, 2016).

Most previous research done were mainly focused on analysing banks' performance (Peni & Vahamaa, 2012; Nimtrakoon, 2015; Achim *et al.*, 2016; Buallay *et al.*, 2017; Ghosh, 2017; Lee *et al.*, 2017; Buallay *et al.*, 2017; Ghosh, 2017; Lee *et al.*, 2017; Muhmad & Hashim, 2017; Migliardo & Forgione, 2018; Tuan Ibrahim *et al.*, 2020). However, in recent years, research on credit risk has received great attention not only because of its importance but also of the rapid increase in credit disclosure (Shan & Xu, 2012; ElBannan, 2015; El-Masry *et al.*, 2016; Tarchouna *et al.*, 2017). Thus, this study aims to examine the impact of the different types of ownership structure i.e. foreign, state, and

family ownership on credit risk. It also analyses the impact of macro-economic factors on credit risk for both listed Islamic and conventional banks in the GCC countries. It contributes to the literature in two distinct ways. Firstly, it is considered the first attempt to employ specific LLP in the GCC countries as a proxy for credit risk to the best of the knowledge of researchers. Previous research employed either general provisions or both general provisions and specific provisions (Shan & Xu, 2012; Laidroo & Männasoo, 2014; Ali *et al.*, 2015; ElBannan, 2015; Goczek & Malyarenko, 2015; Mersni & Ben Othman, 2016; Kolsi & Grassa, 2017). A plausible explanation behind the combination of general and specific LLP in the prior studies would be because of inadequate financial disclosure regarding specific LLP in which it has been observed in this study that most GCC banks are starting to disclose the specific LLP in the aftermath of the 2008 global financial crisis. Recently, Ozili (2018) examined 302 African banks, and analysed a few independent variables including GDP with specific LLP scaled by total assets, which differs from the approach of this paper that used LLP to total loans. The latter approach is deemed to be much more relevant to have a fair level of LLP than LLP to total assets due to LLP scaled by their natural types.

Secondly, it adds to the literature by analysing core banking performance, which is of interest to many stakeholders, especially in emerging markets. This study is motivated by the fact that credit risk is the current and old issue that caused financial crisis and bank failure, especially in 2008. Likewise, the MENA countries including GCC have the issue of credit risk in their banking sector (Ghosh, 2019).

In the GCC countries, the banking sector counters concentration risks in loan portfolios and credit exposures to various sectors with adequate capital to absorb potential risks (IMF, 2014). State and family ownership also have dominated while foreign investors have increased rapidly in the GCC countries (Ghosh, 2016). Foreign ownership may lead to transferring skills, expertise and modern technology in banking systems (Tian & Estrin,

2008; Alkhaldeh, 2012). Hence, foreign investors are able to enhance banking systems as well as reduce ownership concentration in financial institutions, especially in the GCC countries (Ramady, 2015; Santos, 2015).

With respect to credit risk, the GCC banking sector has adopted international standards related to limitations on large exposures to a single entity or a group of counterparties to avoid large defaults in the banking sector as well as the high level of credit risk. Bahrain, Kuwait and Oman share conservative regulations which restrict the large loan exposure to 15% which is lesser than Basel standards limited by 10% (IMF, 2014). Additionally, specific provisions on non-performing loans are in line with international best practices (IMF, 2014,).

The remainder of this paper is organized as follows. Section 2 discusses the literature review and hypotheses development, Section 3 explains the sample selection and methodology, Section 4 shows the results and provides the discussion. Finally, Section 5 ends with the conclusion.

Ownership Structure

The ownership structure is considered a crucial factor in explaining bank performance because large shareholders have the right to appoint board members including independent non-executive directors who monitor banks' activities, especially credit risk management. As documented by prior studies that the extent of concentration in different types of ownership (e.g., foreign, state, and family ownership) may have a high impact on debt concentration and bank's risk (Santos, 2015; Migliardo & Forgione, 2018).

In the GCC countries, ownership is highly concentrated with credit exposures which arise from shareholders and connected counterparties in the sense that different corporations are owned by a specific family (IMF, 2014; Santos, 2015). As reported by IMF (2014) that ownership is concentrated in family groups, financial institutions, holding companies, and public sector institutions. The latter has the

highest ownership in the GCC corporate sector (Santos, 2015).

Recently, Bahrain, Kuwait, Qatar, and Saudi Arabia have allowed foreign investors to own 100% shares in certain sectors in their countries while Oman and the UAE only 70% and 49% were allowed, respectively (European Commission, 2017). In the UAE, foreign investors are allowed to own 100% shares only for companies which operate in the free zones.

Gaps in the Existing Literature

Prior studies have examined the effect of ownership structure and macro-economic factors on credit risk. However, it may have some limitations which are as follows:

Shan and Xu (2012) examined 28 listed financial institutions over the period 1999-2009, and found that state ownership has a negative relationship with LLP while foreign ownership has no impact on LLP. Their study may be criticized as it was conducted in the pre-banking reform with relatively small sample size. Laidroo and Männasoo (2014) investigated the 11 new EU member countries in Central and Eastern Europe from 2004 to 2010, and pointed out that GDP is negatively related to LLP while CPI has an unobservable effect. Laidroo and Männasoo's study can be criticized because it includes data from the financial global crisis, especially 2007, 2008 and 2009, which may affect their results.

Elbannan (2015) examined 48 Egyptian banks over the period 2000-2011, who revealed that foreign and state ownership have a negative and positive relationship with LLP, respectively while GDP and CPI have no effect. Elbannan's study has a similar limitation to the research done by Laidroo and Männasoo (2014). Goczek and Malyarenko (2015) examined 200 Ukrainian banks over the period 2005-2013, and reported that GDP and CPI have no impact on LLP. It focuses only on Ukrainian banks.

Mersni and Ben Othman (2016) studied 20 Islamic banks in the seven MENA countries over the period 2007-2011 and documented that non-performing loans are positively associated

with LLP. The main limitation of their study is that they focused only on Islamic banks with relatively small sample size. Isa *et al.* (2018) analysed 12 banks in Malaysia over the period 1997-2014. Their study has some downsides because it focused only on the Malaysian banking systems with a relatively small sample size. They found that non-performing loans have a negative relationship with LLP. Lately, Ozili (2018) examined 302 African banks over the period 2004-2013, and examined a few independent variables including GDP with LLP. Ozili's study employed specific LLP to total assets, which differs from the approach of this paper that used LLP to total loans. The latter approach is much more relevant to have a fair level of LLP due to LLP scaled by their natural types.

In this study, family, state and foreign ownership are selected because of their vital impact on bank performance. In addition, macro-economic factors are deemed to have an effect on specific LLP which are discussed as follows:

Foreign Ownership and Credit Risk

Foreign investors recently have increased in the GCC countries which may lead to increasing efficiency and reducing credit risk (Ghosh, 2016). Previous research has indicated that foreign ownership has a significant negative effect on credit risk (Chou & Lin, 2011; ElBannan, 2015; Lassoued *et al.*, 2016). They argued that foreign investors bring new technological advances, skills, and expertise which lead to better supervision and management of credit risk. Additionally, Boudriga *et al.* (2009) concluded that foreign ownership is associated with lower credit risk in developing countries and associated with more problem loans in developed countries because of excessive risk taken by foreign-owned banks. However, Shan and Xu (2012) found no effect on the relationship between foreign ownership and credit risk. Consequently, it is hypothesized:

H₁: There exists a significant negative relationship between foreign ownership and credit risk.

State Ownership and Credit Risk

The literature on state-owned banks has shown mixed results. Chou and Lin (2011), Elbannan (2015), El-Masry *et al.* (2016), Haque and Shahid (2016), and Lassoued *et al.*, (2016) have found that state ownership is associated with more credit risk. It can be inferred from positive results that state-owned banks often act in social interest and may have ineffective lending policies. On the other hand, Shan and Xu (2012) have suggested that state-owned banks have a negative relationship with credit risk. Their findings are quite surprising because state-owned banks may have a bureaucratic and a restricted lending policy. Therefore, based on the above-mentioned discussions, mixed results are found which needed to be examined with specific LLP, so the following hypothesis is expressed:

H₂: There exists a significant positive relationship between state ownership and credit risk.

Family Ownership and Credit Risk

Family ownership and state ownership dominate banking sectors in the GCC region (Ghosh, 2016). It may lead to reducing efficiency and raising credit risk. Quite recently, considerable attention has been paid to family ownership which has revealed a positive relationship with firm credit ratings (Alkhalaf, 2012). The most likely explanation of the positive result is that family-owned banks are more conservative which aim to protect their reputations in business. Moreover, prior research has indicated a positive relationship between a higher proportion of credit and bank lending corruption in both non-developed and developed economies in family-owned banks which implied more credit risk (Barry *et al.*, 2016).

Pertaining to the literature review, to date, there is no study that examines this relationship with credit risk especially specific LLP. Therefore, it is proposed that:

H₃: There exists a significant positive relationship between family ownership and credit risk.

Non-performing Loans and Credit Risk

Non-performing loans (NPL) can be defined as loans that are past due or unpaid for more than three months. NPL can be categorized into three types which are substandard, doubtful and bad loans (IMF, 2014). Theoretically, the increase in NPL is likely to result in an increase in LLP as LLP are calculated based on the balance of outstanding NPL. As reported by Mersni and Ben Othman (2016) NPL have a significantly positive relationship with LLP because NPL have a straightforward relationship with credit risk in the sense that LLP depend upon the level of NPL. Thus, the following hypothesis is formulated.

H₄: There exists a significant positive relationship between NPL and credit risk.

Gross Domestic Product and Credit Risk

Previous empirical research has found a negative relationship between economic growth and credit risk (Al-Khoury, 2011; Al-Smadi, 2011; Laidroo & Männasoo, 2014; Otašević, 2015; Grassa, 2016; Kjosevski & Petkovski, 2016). They have argued that higher GDP growth leads to an increase in lending with lower bank risk due to high income and solvency. However, ElBannan (2015) and Ozili (2018) revealed a non-significant association between GDP and LLP. This may be explained by the fact that the decisions of individuals or firms that have loans from banks are not influenced by GDP growth because of the increase of the income and solvency.

Since GDP growth basically affects and enhances real performance in banks, it is hypothesized that:

H₅: There exists a significant negative relationship between GDP and credit risk.

Consumer Prices and Credit Risk

Prior empirical studies have indicated that the consumer price index (CPI) has a significant negative effect on credit risk (Du, 2011; Talavera *et al.*, 2012; Castro, 2013; Agrawal & Maheshwari, 2014; Otašević, 2015). A plausible

justification of the significant negative result is that higher CPI increases the interest rate on lending which makes it difficult for customers to borrow from banks and in turn leads to a decline in bank portfolios as well as credit risk. On the one hand, Tirapat and Nittayagasetwat (1999), Koopman *et al.* (2009), and Kjosevski and Petkovski (2016) have shown contradicting results in which higher CPI is significantly associated with higher risk. Their results may be explained by the fact that high inflation declines the capacity for repayment and increases insolvency which leads to an increase in credit risk. On the other hand, Laidroo and Männasoo (2014) revealed that CPI has no impact on credit risk. Therefore, the following hypothesis is formulated:

H₆: There exists a significant positive relationship between CPI and credit risk.

Money Supply and Credit Risk

Prior studies have demonstrated that an increase in money supply (M2) declines credit risk which supports theoretical views that an increase in M2 could lead to a decrease of credit risk due to the borrowers are able to get lower costs of loans in terms of low-interest rates (Talavera *et al.*, 2012). Nevertheless, studies by Ahmad and Ariff (2007) and Koopman *et al.* (2009) have shown that M2 has a positive effect on credit risk. With respect to specific LLP, the relationship has not been investigated. As a sequence, the following hypothesis is proposed to be empirically tested:

H₇: There exists a significant negative relationship between M2 and credit risk.

Control Variables

Bank age and return on assets (ROA) are widely used as control variables (Shan & Xu, 2012; Mansor *et al.*, 2013; El-Masry *et al.*, 2016). It is assumed that oldest banks have more experience and robust policies for risk management which lead to mitigating credit risk. ROA is considered a pertinent variable to credit risk in which the higher the quality of assets, particularly loans, the higher the ROA ratio.

Sample Selection and Methodology

Sample Selection

This study employs panel data for both listed Islamic banks and conventional banks in the GCC countries over the six-year period from 2011 to 2016 which consist of 450 bank-years of data for locally listed banks excluding branches of foreign banks in GCC countries. The final sample consists of 312 bank-year observations after removing incomplete and missing data, which justify the conduct of panel data techniques.

The data in this study were gathered manually from annual reports, audited financial statements of listed banks in each GCC country as well as reports that were retrieved from Thomson Reuters Data Stream and International Monetary Funds (IMF) database.

Methodology

In order to examine the impact of ownership structure and macro-economic factors on credit risk, the panel data approach is selected in order to carry out the empirical analysis. Panel data are time series and cross-sectional data, which have numerous benefits, for instance, controlling individual heterogeneity, increasing efficiency and lowering collinearity (Baltagi, 2005).

In fact, panel data can be analysed either in a fixed or in a random effect model. A Hausman test at 0.05 confidence level is usually applied to determine whether to employ a fixed or random effect model to analyse the panel data regression. The random effect model can be selected if the probability value (Prob) for the χ^2 (χ^2) is greater than 0.05, unless the fixed effect model is the fit model for the panel data regression (Baltagi, 2005; Greene, 2008).

Panel data regressions are conducted to analyse the relationship between the dependent variable and the independent variables used. In the current study, the Hausman test supports the appropriateness of the fixed effect model due to the probability value (Prob) χ^2 that is less than 0.05. It is a preferred model as it can assess the net effect of independent variables on the outcome variable and remove the influence of the time-invariant characteristics. In the same vein, it does not rely on the assumption that individual error term (ε) is uncorrelated to the independent variables (Singh & Sharma, 2016).

Prior literature provides enormous measurements for credit risk, namely, non-performing loans to gross assets, non-performing loans to gross loans, loan loss provisions to total assets and loan loss provisions to total loans. The latter method which is total provisions scaled by gross loans is used in this study to represent for credit risk because it is more efficient than other measures which reflect the real credit risk based upon the outstanding balance of non-performing loans. It is worth noting that core activities in banks are financial intermediations between depositors and borrowers. Moreover, a private bank can create money 'out of nothing' through the extension of credit in modern economies (Werner, 2014). For example, when someone borrowed money from banks, it is rarely paid in cash in which a bank credits customer accounts and debits loan accounts in its accounting system that can enable the borrowers to buy their needs and transfer these loans digitally. As a result, specific LLP are used to measure real core performance in a bank. The higher the ratio of LLP, the more credit risk that banks will endure in their loan portfolios.

To examine the effects of ownership structure and macro-economic factors on credit risk, the following panel data regression model is used:

$$\begin{aligned} LLP_{i,t} = & \alpha + \beta_1 FROWN_{i,t} + \beta_2 STOWN_{i,t} + \beta_3 FMOWN_{i,t} + \beta_4 NPL_{i,t} + \beta_5 GDP_{i,t} \\ & + \beta_6 CPI_{i,t} + \beta_7 M2_{i,t} + \beta_8 BANKAGE_{i,t} + \beta_9 ROA_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

LLP are a dependent variable and a proxy for credit risk, which are specific loan loss provisions divided by total loans (ElBannan, 2015; Goczek & Malyarenko, 2015), FROWN is foreign ownership which is the percentage of shares owned by foreign investors to total numbers of the bank’s shares (Shan & Xu, 2012), STOWN is state ownership which is a gross portion of shares owned by the government or its agencies to total shares of the bank (Shan & Xu, 2012), FMOWN is family ownership which is an aggregate portion of the bank’s ordinary shares owned by the family members to the bank’s shares issued (Alkhaldeh, 2012); NPL are non-performing loans to total loans (El-Masry et al., 2016; Kjosevski & Petkovski, 2016), GDP is the growth of real gross domestic product (Singh & Sharma, 2016); CPI is the growth of the consumer price index (Singh & Sharma, 2016); M2 is the growth of the money supply which is currency in circulation, demand deposits and time deposits (Abugri, 2008; Al-Qudah & Jaradat, 2013). Meanwhile, BANKAGE is the bank age which is the number of years since the bank started to operate in the GCC countries (Shan & Xu, 2012), ROA stands for return on assets which is calculated by using annual net profit of a bank before tax then divided by gross assets (Basuony et al., 2014), and β_1 to β_9 are the coefficient for independent variables, and ϵ is the error term.

Empirical Analyses

The descriptive statistics of the study are tabulated in Table 1 below. The result shows that the mean values of dependent variables (LLP) are 3% while ownership of foreign, state and family are 21%, 24% and 12% respectively. FROWN reaches up to 98% in some banks in Bahrain because foreign shareholders are considered as foreign investment when shares owned by individuals who are non-Bahraini citizens or companies whose headquarters are outside Bahrain which similarly have been applied to each GCC country. Additionally, non-performing loans (NPL) have mean values of 5%. Regarding macro-economic factors, GDP, CPI and M2 are on average 4%, 2% and 8%, respectively.

Table 2 shows that the correlation reaches 76% between LLP and NPL, which implies a strong positive correlation among these variables at the 0.01 level, while CPI has the weakest relationship with LLP. It also indicates that there is no multicollinearity amongst the variables as none correlates above 0.90 (Hair et al., 2010). Obviously, all variables have correlations of less than 0.76, ranging between 0.01 and 0.76, which confirms non-multicollinearity. Furthermore, it is confirmed by the variance inflation factors (VIF), which shows the values range between 1.01 and 2.73, within the cut-off points of

10 as reported by Hair et al. (2010). Hence,

Table 1: Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max
Loan loss provisions (LLP)	0.03	0.03	0	0.17
Foreign ownership (FROWN)	0.21	0.28	0	.98
State ownership (STOWN)	0.24	0.21	0	0.7
Family ownership (FMOWN)	0.12	0.19	0	0.88
Non-performing loans (NPL)	0.05	0.06	0	0.4
Gross domestic product (GDP)	0.04	0.03	-0.01	0.13
Consumer price index (CPI)	0.02	0.02	-0.09	0.04
Money supply (M2)	0.08	0.06	-0.05	0.23
Bank age (BANKAGE)	28.24	16.63	1	63
Return on assets (ROA)	0.02	0.02	-0.07	0.09

Source: Authors’ calculation

Table 2: Correlation matrix

Variables	LLP	FROWN	STOWN	FMOWN	NPL	GDP	CPI	M2	BANKAGE	ROA
LLP	1									
FROWN	-0.19*	1								
STOWN	-0.071	-0.54*	1							
FMOWN	0.01	-0.22*	-0.34*	1						
NPL	0.76*	0.29*	-0.10***	0.02	1					
GDP	-0.02	-0.10***	0.05	0.03	0.01	1				
CPI	0.01	0.05	-0.05	0.04	0.00	0.04	1			
M2	0.14**	-0.20*	0.07	0.05	-0.17*	0.30*	0.024	1		
BANKAGE	0.06	-0.13**	0.33*	0.15*	0.06	0.01	0.03	-0.01	1	
ROA	-0.12**	0.16*	0.21*	0.07	-0.13**	0.08	-0.00	0.02	0.13**	1

Note: LLP = specific loan loss provisions, FROWN = foreign ownership, STOWN = state ownership, FMOWN = family ownership, NPL = non-performing loans, GDP = gross domestic product, CPI = consumer price index, M2 = money supply, BANKAGE = bank age, ROA = return on assets.

* Correlation is significant at the 0.01, ** at the 0.05, and *** at the 0.1 level.

multicollinearity appears not to be a problem in this research.

Table 3 shows the results from the panel data regression that employed the fixed effects model after Hausman test analysis was carried out. It is assumed that the null hypothesis (H_0) is the random effects which is uncorrelated with errors while the fixed effects model is the alternative (H_1) which are correlated with errors (Baltagi, 2005; Greene, 2008). Since the probability value (Prob) for χ^2 is 0.04, the null hypothesis is rejected, so the fixed effects model is the fit model and preferred for this study.

It appears from the panel data regression that FROWN has a negative and significant relationship with LLP at the 0.01 level. Thus, hypothesis H_1 is supported and broadly consistent with prior studies which indicated a negative relationship with LLP (Chou & Lin, 2011; ElBannan, 2015; Lassoued *et al.*, 2016) This finding could be explained by the fact that foreign-owned banks have skills, expertise and new technology that lead to a decrease in LLP. Likewise, STOWN has a negative and significant

relationship with LLP. Hence, hypothesis H_2 is not supported, however, it is in line with the study done by Shan and Xu (2012). The finding is quite unexpected as state-owned banks tend to act based on social interest and lend to credit-constrained borrowers for economic and political reasons which lead to an increase in the level of LLP. A plausible justification of the significant and negative result of state ownership is possibly due to the government assistance programs to the low-income community by encouraging state-owned banks to offer loan for low-income people to build their own houses or run their own business. In case of insolvency the government may compensate banks or settle bad debts to the banks which in turn lead to a decline in the level of LLP. Furthermore, FMOWN is significantly and positively associated with LLP at the 0.1 level in which hypothesis H_3 is supported. Similarly, NPL indicates a significant and positive relationship with LLP at the 0.01 level which is in good agreement with prior studies conducted by Mersni and Ben Othman (2016).

Table 3: Fixed Effects Regression Results

DV: LLP	Beta	p-value
FROWN	-0.034	0.007*
STOWN	-0.059	0.015**
FMOWN	0.058	0.056***
NPL	0.284	0.000*
GDP	0.006	0.821
CPI	0.001	0.983
M2	-0.010	0.394
BANKAGE	-0.0003	0.469
ROA	-0.119	0.100
Cons.	0.039	0.019
Number of Obs.	312	
R ² sq.:		
Within	0.40	
Between	0.18	
Number of Obs.	0.20	
Prob <F	0.000	
Rho	0.85	
Hauman test-Prob < χ^2	0.04	

Notes: LLP= loan loss provisions, FROWN= foreign ownership, STOWN= state ownership, FMOWN= family ownership, NPL= non-performing loans, GDP= gross domestic product, CPI= consumer price index, M2= money supply, BANKAGE= bank age, ROA= return on assets, *= p -value <0.01, **= p -value <0.05 and ***= p -value <0.1

As a result, hypothesis H_4 is supported since there is a strong relationship between NPL and LLP in which LLP calculate based on the outstanding balance of NPL. On the other hand, the coefficients for GDP are positive and insignificant with LLP, which is consistent with prior studies (ElBannan, 2015; Ozili, 2018). Likewise, CPI is positive while M2 seems to be negative, but insignificant. Accordingly, hypothesis H_5 , H_6 , and H_7 are not supported which are contrary to previous findings documented by Du (2011), Castro (2013), Agrawal and Maheshwari (2014), Otašević (2015), and

Kjosevski and Petkovski (2016), who revealed that GDP and CPI have a significant negative and positive impact on credit risk. Meanwhile, Ahmad and Ariff (2007) and Koopman *et al.* (2009) reported that M2 is significantly and positively related to credit risk. The most likely explanation of insignificant results of macro-economic factors is that it may be due to the behaviour of individuals and companies to repay their debts without the influence of GDP, CPI, and M2 growth in the GCC countries because of their high income.

Robustness Test

To test the robustness of the initial results, firstly, this study uses an alternative measure for GDP. The alternative measure is utilized by using the natural log of GDP per capita (Borisova *et al.*, 2012; Ghosh, 2016). This approach is used to

$$LLP_{i,t} = \alpha + \beta_1 FROWN_{i,t} + \beta_2 STOWN_{i,t} + \beta_3 FMOWN_{i,t} + \beta_4 NPL_{i,t} + \beta_5 GDPC_{i,t} + \beta_6 CPI_{i,t} + \beta_7 M2_{i,t} + \beta_8 BANKAGE_{i,t} + \beta_9 ROA_{i,t} + \epsilon_{i,t} \tag{2}$$

As shown in Model 1 (Table 4), both results confirm the basic result that GDP has a non-significant relationship with LLP. In terms of other variables, the regression Model 1 shows similar outcomes in comparison with the basic model.

Secondly, a new control variable, bank size (BANKSIZE), is created and added to the basic

$$LLP_{i,t} = \alpha + \beta_1 FROWN_{i,t} + \beta_2 STOWN_{i,t} + \beta_3 FMOWN_{i,t} + \beta_4 NPL_{i,t} + \beta_5 GDP_{i,t} + \beta_6 CPI_{i,t} + \beta_7 M2_{i,t} + \beta_8 BANKAGE_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} BANKSIZE_{i,t} + \epsilon_{i,t} \tag{3}$$

The regression result for Model 2 (Table 4) shows similar results in comparison with the basic findings. ROA has become significant and positive in relationship with LLP. Likewise, other variables remain similar to the initial results.

$$LLP_{i,t} = \alpha + \beta_1 FROWN_{i,t} + \beta_2 STOWN_{i,t} + \beta_3 FMOWN_{i,t} + \beta_4 NPL_{i,t} + \beta_5 GDP_{i,t} + \beta_6 CPI_{i,t} + \beta_7 M2_{i,t} + \beta_8 BANKAGE_{i,t} + \beta_9 ROA_{i,t} + u_{i,t} + \epsilon_{i,t} \tag{4}$$

Model 3 confirms the outcomes of foreign ownership and NPL while state and family ownerships have become insignificant because the random effects model is more conservative and efficient which declines confidence intervals.

In light of the overall results, foreign ownership has a significant and negative relationship with LLP in all models, which implies that foreign-owned banks have efficient operations and effective risk management. The

confirm the credibility of the main outcomes in Table 3 and to ensure whether or not there is a possible measure that might have different results. As a sequence, it assigns GDPC to the new measure and repeats the regression analysis using the following equation for Model 1:

model and calculated by the natural log of assets. It has been widely employed in prior studies as a control variable (Mansor *et al.*, 2013; Basuony *et al.*, 2014; El-Masry *et al.*, 2016).

It is assumed that large banks are likely associated with lower credit risk due to sufficient resources and expertise in managing information asymmetry and risk. Thus, the following equation for Model 2 is formalized:

Finally, despite this study selects the fixed effects model based on the Hausman test, the random effects model also runs and depicts in Model 3 based on the following equation:

state ownership is significantly and negatively associated with LLP while family-owned banks are significantly and positively related to LLP except for the outcomes of the random effects model because this model is more conservative that decrease confidence intervals. NPL are significantly and positively associated with LLP in all model. Meanwhile, other variables remain the same except for ROA which has become significant in Model 2 and 3 at the 0.1 level.

Table 4: Panel data regression results-Robustness tests

DV: LLP	Model 1		Model 2		Model 3	
	Beta	p-value	Beta	p-value	Beta	p-value
FROWN	-0.035	0.005*	-0.034	0.007*	-0.014	0.098***
STOWN	-0.061	0.013**	-0.059	0.015**	-0.015	0.271
FMOWN	0.056	0.060***	0.057	0.057***	-0.002	0.868
NPL	0.283	0.000*	0.284	0.000*	0.306	0.000*
GDP	-	-	0.006	0.998	0.011	0.642
GDPC	-0.008	0.589	-	-	-	-
CPI	0.004	0.895	-0.001	0.998	0.009	0.774
M2	-0.007	0.572	-0.010	0.398	-0.005	0.670
BANKAGE	-0.0003	0.457	-0.0002	0.677	0.0005	0.703
ROA	-0.117	0.110	-0.124	0.098***	-0.118	0.064***
BANKSIZE	-	-	-0.001	0.802	-	-
Number of Obs.	312		312		312	
R ² sq.						
Within	0.40		0.40		0.37	
Between	0.19		0.19		0.63	
Overall	0.21		0.20		0.57	
Prob <F	0.000		0.000		0.000	
Rho	0.86		0.85		0.65	

Notes: LLP= loan loss provisions, FROWN= foreign ownership, STOWN= state ownership, FMOWN= family ownership, NPL= non-performing loans, GDP= gross domestic product, GDPC= gross domestic product per capita, CPI= consumer price index, M2= money supply, BANKAGE= bank age, ROA= return on assets, BANKSIZE= bank size, *= p -value <0.01, **= p -value <0.05 and ***= p -value <0.1

Conclusion

The objective of this paper is to examine the impact of ownership structure and macro-economic factors towards credit risk in the GCC countries. The findings from this study suggested that foreign ownership and state ownership are significantly and negatively associated with credit risk (proxied by LLP), whereas the finding of state ownership is quite unexpected because state-owned banks tend to

act based on the social interest and may lend loans to credit-constrained borrowers, which can lead to an increase in the level of LLP. A possible explanation is that in countries with a high-income economy, the government may compensate for some bad loans that have social, economic and political interests. Additionally, family ownership and non-performing loans are significantly and positively associated with LLP because non-performing loans are strongly

connected with LLP. However, gross domestic product (GDP), consumer price index (CPI) and money supply (M2) are found to have an insignificant relationship with LLP. The insignificant effects of macro-economic factors might be that LLP are not responsive to the changes in GDP, CPI and M2 in high-income economies because of low fluctuations in the economy and the behaviour of the borrowers is not highly affected by these external factors. The robustness tests confirm basic findings in all models except for state and family ownership in the random effect model which is considered to be more conservative that decreases confidence intervals.

The empirical contribution of this paper is that it examines the ownership structure and macro-economic factors with specific LLP, which is deemed to be the first attempt to examine these factors in the GCC countries to employ specific LLP. It highlights the importance of the banking industry as being the creation of the money and the lifeblood of any economy. In the same vein, it underscores the vital part that foreign ownership may play in the banking sector in order to bridge the gaps in the literature. In light of practical implications, it may have useful implications for many interested parties, especially decision-makers and policymakers who can enact effective regulations of banking systems regarding regulating ownership structure in the banking sector. It may lead to the removal of barriers to foreign investors in the GCC countries and to promote risk management which may decrease credit risk and enhance sustainability in the banking sector. Additionally, it can be useful knowledge for investors who have to take into consideration the ownership structure for potential good investment purposes. Finally, it has policy implications for banking systems on how to improve their real performance due to different types of ownership structure which have different outcomes in terms of credit risk management.

This study is not free from some limitations. The sample size used for the analysis is relatively small due to insufficient data for listed

banks in the GCC countries. Hence, for future research it may cover all listed banks in the GCC countries due to the rapid increase in disclosures and awareness of transparency. Furthermore, the study focuses only on two main factors; namely ownership and macro-economic factors. Other factors such as the corporate governance mechanisms that may also contribute towards credit risk in the GCC countries are not analysed.

Therefore, it is recommended that, the effect of additional variables, for example, professional education, the presence of risk management committee. and corporate governance mechanisms can be explored in more detail for future research also a comparison between the performance of Islamic banks and conventional banks in terms of credit risk management.

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