International Scholars Journals

International Journal of Banking and Finance ISSN 2756-3677 Vol. 7 (2), pp. 001-009, February, 2023. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

Bank-specific determinants of non-performing loans in Qatar: Conventional vs Islamic Banks

Muhannad A. Almuraikhi

College of Islamic Studies, Hamad Bin Khalifa University, Qatar Foundation, Doha 34110, Qatar. email: mualmuraikhi@hbku.edu.qa.

Accepted 31 January, 2023

Abstract

To achieve stability in the banking sector, non-performing loans (NPLs) growth must be kept relatively low. Some bank-level factors signal the NPL situation of a bank, and studies in this area within the Qatari economy are limited. This study investigate bank-specific factors that determine the rate of NPLs and control for some macroeconomic variables in Qatar. This was done using quarterly data from listed sample of Islamic and conventional banks within Q42017-Q32022. The factors considered in the study include loan growth, profitability, income diversification, capital adequacy, efficiency, and bank-type dummy. The study also controlled for money supply and oil prices. The estimations were done by applying the OLS regression modelling approach. The results show that loan growth and ROA (Return on asset) significantly have negative impact on NPLs. This indicates that the profitability and loan growth of the banks in Qatar will decrease when the NPL rate increases. Also, the level of NPLs increase is influenced by the money supply within the Qatari economy. Finally, there is no significant difference between bank-specific determinants of NPLs between Conventional and Islamic banks in Qatar. The findings imply that policymakers should put measures in place to ensure that profitability and loan growth are monitored to achieve low NPL for the sustainability of the banking sector in Qatar.

Keywords: NPLs; NPL; Borrower Default, Stability, Islamic banks.

INTRODUCTION

Economic crisis allows researchers to assess some theories underpinning economic phenomena to engender more understanding and propose new ways of doing things. Some of the economic problems can manifest through instability, bank and thrift failure, and the nature of the economic cycle attracts significant interest from scholars, policymakers, and practitioners. One area within this economic puzzle is NPLs which has attracted much interest from scholars and practitioners (Berger & Humphrey, 1997; Podpiera & Weill, 2008). NPL is commonly known as loans in arrears for at least 90 days, lead to a fast impairment of banks' loan books (Labbé-Pinlon et al., 2016). Many studies conclude that banks always accumulate a lot of NPL as a precursor to their collapse (Berger & Humphrey, 1997). NPL implies that they always stand as an obstacle between banks and the real economy (Makri et al., 2014).

The literature on the factors influencing NPL is categorized into bank-specific and macroeconomic factors (Berger & Humphrey, 1997). For instance, bad management and moral hazard may impact NPL higher (Berger & Humphrey, 1997). Also cost efficiency has also been established to cause NPL (Podpiera & Weill, 2008) while Ghosh (2015) found that the level of leverage affects NPLs. Espinoza & Prasad (2010) and Kauko (2012) considered macro variables and concluded that NPL reduces growth and rising interest rates and external deficits. Louziset al. (2012) estimated the factors that affect NPLs for each loan category (mortgage, business, and consumer) separately. Their results show that NPLs are significantly related to macro variables and the quality of management. Nkusu (2011) found that aggravation in the macroeconomic environment, as proxied by sluggish growth, decreasing asset prices or higher unemployment is interrelated with debt service problems. The crisis period can also influence NPL growth. During the COVID-19 pandemic, NPL is found to increase in a study of Chinese banks (Kryzanowski et al., 2022). Further, the findings show that bank capitalization predicts how effectively it can control NPL during a crisis.

Islamic banks perform financial intermediation similarly to conventional banks. In theory, Islamic banking is a banking

system that operates strictly per the Shariah law, specifically the *muamalaat* (transaction) branch of Shariah that provides laws governing business transactions and contracts. Islamic Banks mobilize funds from surplus economic units and transform these through size packaging and maturity matching to financial assets using sale, lease and sharing contracts. Sale contract modes of financing used by Islamic banks include deferred payment sale or cost-plus, forward sale and forward sale of manufactured goods. The Cost-plus mark-up financing mode allows Islamic banks to finance clients through a deferred sale basis where the price of the commodity or item is deferred to a future date, and the client pays this price in instalments. The asset-backed financing coupled with the deferred price allows the Islamic bank to charge a profit on the original price in the form of a mark-up (Karimu et al., 2022). Religion plays a vital role in moderating behavior and influences the level of loan default, as concluded by (Baele et al., 2014). Islamic finance borrowers are less likely to default on financing advanced to them (Baele et al., 2014). Customer orientation toward loan default may differ depending on the banking model.

The financial system in Qatar has evolved rapidly over the years, driven mainly by the hydrocarbon boom in the country. Despite the Covid-19 pandemic, Qatar's banking sector grew in assets from 1.4 trillion in 2019 to 1.7 trillion in 2021 (QCB, 2021). Similarly, credit creation also expanded, with credit-GDP percent increasing from 150% in 2019 to 200% in 2020. This study is motivated by three developments. Firstly, understanding the bank-level determinants of NPL is still not settled, and policymakers and practitioners continue to look for more understanding to address these issues with appropriate measures, especially with more sophistication of the financial system. Secondly, Islamic banks and conventional banks may both be affected by the same factors when it comes to NPL, as the two-bank types perform the same financial intermediation between surplus and deficit economic units. However, it is still unclear whether the business orientation of the two bank types provides any differentiator when it comes to NPL. Thirdly, the academic literature has limited NPL studies within the Qatari context. Therefore, this study undertakes an empirical study to determine NPL's determinants using bank-specific factors. This was done using quarterly data from listed sample of four Islamic banks and four conventional banks within Q42017-Q32022. The factors considered in this study include loan growth, profitability, income diversification, capital adequacy, efficiency, and bank-type dummy. The study also controlled for money supply and oil prices. The estimations were done by applying the OLS regression modelling approach.

The rest of the paper is organized as follows. Section two discusses the literature underpinning the study, and section three discusses the methodology and data. Section four presents the findings and discussions, and the concluding part is in section five.

Literature review

There is extant literature on the determinants of NPL within a financial institution. These factors are generally classified into bank-specific and macroeconomic factors (Almuraikhi, 2022; Berger & Humphrey, 1997). Factors such as bad management and moral hazard may influence NPL higher (Berger & Humphrey, 1997). Also cost efficiency has also been established to cause NPL (Podpiera& Weill, 2008) while Ghosh (2015) found that the level of leverage affects NPLs. Espinoza & Prasad (2010) and Kauko (2012) considered macro variables and concluded that NPL reduces with growth and rising interest rates and external deficits. Other bank-specific factors that may predict NPL include diversification of income, profitability, capitalization and operating efficiency. Despite the attention given to this phenomenon in the literature, the relationship between these factors and NPL remains unclear.

Borrower-Specific Determinants

The studies of the borrower-specific determinants of NPL are classified into Internal factors, (Cowling et al., 2018; Fianto et al., 2019; Fidrmuc & Hainz, 2010; Gao et al., 2022; Mayock & Tzioumis, 2021; Odeh et al., 2011; Radivojević et al., 2019; Zhang et al., 2020); Institutions (M & N, 2020), External environment (Goedecke, 2018; Nigmonov et al., 2022; Radivojević et al., 2019) and Social issues (Castillo et al., 2018; Hartarska & Gonzalez-Vega, 2006; Trautmann & Vlahu, 2013). The literature analysis indicates that borrower internal company organization markedly affects the possibility of defaulting on loan payments (Almuraikhi, 2022). These internal factors include management competency (showing through the inefficiency in organizational resources use), and financial matters (showing through the company's leverage, for instance, which affects liquidity. Also, organizational innovation may influence the possibility of client default as new technologies are associated with a higher risk of failure, which consequently constrains organizational cashflows. Also, relationships with banks may affect borrowers' default as customers with longer relationships with banks stand a higher chance of default, especially for SMEs (Small and medium enterprises). The institutional arrangement may also contribute to a loan default as weak laws and lax regulatory regimes may encourage the enforcement of loan contracts. These conditions make it easy for organizations to default and make the recovery of loans difficult. Most external factors that may influence loan default relate to the macroeconomic condition under crisis, high inflation, unemployment, and low economic growth.

Bank-Specific Determinants

The characteristics of how banking business is conducted also influence the NPL level (Almuraikhi, 2022). The overarching issues identified in the various reported studies include economic conditions (Ari et al., 2021; Mueller & Yannelis, 2019; Soenen & Vander Vennet, 2022; Vonnák, 2018), profitability pursuit (Choudhary & Jain, 2021; Disli et al., 2022; Parrado-Martínez et al., 2019; Wengerek et al., 2022); information economics (Parrado-Martínez et al., 2019; Widodo et al., 2022); management competence (Lafuente et al., 2019; Palvia et al., 2020; Wasiaturrahma et al., 2020); and ESG (Lee et al., 2022). Some studies from banks' perspectives attribute the level of NPL to the prevailing macroeconomic

conditions. Similar to the borrower's assertion of macroeconomic conditions' role in their inability to service their loans, bankers attribute NPL to weak macroeconomic conditions. Also, the profit maximization goal of banks may influence them to underwrite credit for less creditworthy borrowers, which is likely to lead to defaults. This situation manifests when bankers' remunerations tied to the level of income generation without considering the income quality. Additionally, when credit assessment leads to adverse selection of borrowers, this can lead to moral hazard, which is conceptualized as the economics of information. This affects the repayment of loans when the character of borrowers changes post-loan disbursement. Also, ESG-focused lending may lower NPL occurrence due to the relatively high prudence expected in selecting borrowers and projects. Finally, the competency of bank management may also influence the possible occurrence of loan default. A well-managed bank (demonstration of competency) will ensure that funds are allocated most efficiently to ensure that the funds are paid back.

Islamic vs Conventional

The determinants of NPL may also be viewed in a comparative way between Islamic and Conventional banks. The focus of this study is to determine if the Islamic bank business model, borrower orientation, external environment, and type of contract used have some particularities that influence NPL differently from conventional banks. Some literature reports that Islamic banks NPLs are less than conventional banks'; equity investments/financing reduces NPL, Islamic finance face sectoral concentration risks which may drive NPL higher, and tradeoff between efficiency and risk is less evident in Islamic banks (Alandejani & Asutay, 2017; Baele et al., 2014; Bekele et al., 2016; Croux et al., 2020; Disli et al., 2022; Riahi, 2019; Saeed & Izzeldin, 2016). At the macroeconomic level, oil prices affect conventional banks more than Islamic regarding their impact on NPL (Saif-Alyousfi et al., 2018). Furthermore, religiosity is seen to moderate customer motivation to repay their facility with an Islamic bank. These findings show that Islamic bank customers are more inclined to repay the facility when their financial condition improves relative to conventional bank borrowers (Croux et al., 2020; Mirpourian et al., 2016). Finally, the literature analysis reveals that the contract used in structuring Islamic financial transactions may have some features that reduce the NPL occurrence. For instance, the use of profit and loss-sharing contracts is seen to be less prone to default than fixed-interest debt financing(Alandejani & Asutay, 2017; Croux et al., 2020). This assertion may be true when analyzed from finance contracts point of view, but in economics it may have a different outcome as the performance of the underlining profit and loss-sharing project may signal the possibility of default. The literature review highlights the need for research on determinants of NPL to consider the bank-specific factors holistically within the broader borrower-specific and external factors.

Profitability

The relationship between NPL and profitability has been investigated by Godlewski (2014), who concluded that when a bank's profitability decreases, NPL increases. These findings were corroborated by Boudriga et al. (2010a) in a later study. They also conclude of an inverse relationship between profitability and NPL. They attribute the NPL of the bank during low profitability to the aggressive lending a bank may embark on increasing the loan book and increasing profitability which may expose the bank to lending to less creditworthy borrowers. The negative connection between NPL and profitability was also confirmed in s study of banks between 2004-2013 in Kenya (Kirui, 2014). On the other hand, some studies have claimed a positive relationship between NPL and profitability (Ahmad, 2015). Similarly, Berger and DeYoung (1997) explained their findings of a positive relationship that banks with a high-income level are less involved in risky investments that can lead to loan nonpayment in the future.

Bank Efficiency

The efficiency of banking operations, as manifested in the use of resources, may also affect the NPL rate. In this regard, a study in the United States cost efficiency of commercial findings show that achieving efficiency leads to decreased NPLs and vice versa (Berger and DeYoung, 1997). The explanation is that those managers who exhibit competence through operational excellence and accompanying portfolio management drive down the occurrence of adverse selection of loans. In a similar study using sample from the Czech by (Podpiera & Weill (2008), it was found that between the period of 1994-1995, NPL and efficiency showed a negative relationship. In contrast, some studies show that achieving efficiency by some banks leads to compromising the loan underwriting process, which drives up the possibility of NPL In Sri Lanka, Ekanayake and Azeez (2015) study of the banking sector between 1999-2012 concluded that there is a positive relationship between NPL and efficiency of bank. Also, Benthem (2017) examined the relationship between operating efficiency, capitalization and NPLs in commercial banks, and the result indicates that operating efficiency increases the higher level of NPLs, which proposes. The conclusion from this study is that managerial actions through cost-reduction effect NPLs positively. Within the EU context, an examination of risk factors of NPL indicates that when banking efficiency is deceased, the loan default level increases (Fiordelisi et al., 2011). Similar findings were reported in a study of the Greek banking system (Louzis et al., 2012).

Capitalization of Bank

The capitalization of a bank may also signal the occurrence of loan defaults. High-capitalized banks have the buffers face abnormal losses and to contain such situations. Managerial incentives of low capitalized banks may motivate banks to get involved in high-risk investments and underwrites loans that may not pass the due credit checks and monitoring (Keeton, 1999). These occurrences may result into a rise in loan default showing a negative relationship between bank capital and NPLs. Bank size is therefore deemed to have an inverse relationship with NPL (Hu and Chiu, 2004, Makri et al., 2014, Kojuet al., 2018). On the other hand, NPL and bank capitalization may also exhibit a direct relationship as argued by some studies (see Constant and Ngomsi, 2012).

Income Diversification of Bank

Banks have interest income and non-interest income as the primary sources of revenue. Banks with diversified income sources are more careful in their dealings as they try to lower their risk by minimizing their exposure to high-risk investments. Hence, these banks tend to experience less default, indicating a negative connection between NPLs and income diversification (Ghosh, 2015). In Indonesia, Rachman et al. (2018) researched the various banking factors affecting NPLs, including income diversification. They conclude that these factors do not influence NPLs, apart from income diversification which was found to exhibit a negative relationship with NPL.

Data and Methodology

The data for this study consist of bank-level data which is sourced from balance sheets and income statements of the individual banks. The banks data were extracted from Refinitve database. Eight different types of banks are used for analysis from the time period ranging from Q42017-Q32022. This period is taken because it has never been considered in previous studies to assess the NPLs in the banking sector in Qatar. Previous studies have only considered the period ranging from 2000 to 2016 in different studies by (Saif-Alyousfi et al., 2018). Therefore, studies on assessing NPLs, considering data from recent years, are lacking. Therefore, in this study, we attempted to evaluate the determinants of NPLs from the period ranging from 2017-2022.
This period is considered due to the availability of sufficient data for the analysis of variables. One advantage of the panel data is that it decreases the multicollinearity among variables and enlarges the number of observations and degree of freedom (Boudriga et al., 2010b). Panel data is also helpful in identifying the bank-specific factors and unknown observation differences among individual banks (Ghosh, 2015). In this study, we considered the banking sector of Qatar. The NPLs are considered as a dependent variable and measured as NPLs ratio, while profitability, income diversification, capital and operating efficiency were considered independent variables with money supply and oil price as control variables.
Definitions of variables Definitions of dependent and independent variables under study are given as follows:

NPLs

NPLs are the loans that borrowers have defaulted. The IMF (International Monetary Fund) defines NPL as a loan which is not paid and does not generate interest and the principal amount for a minimum of 90 days. Loans become NPLs if the principal amount and interest are not paid on the due date and payment in the future is not possible. In our study, we measure the NPLs as the ratio of NPLs to total loans.

ROA

ROA measures the profitability of banks, and the net income to total assets is usually used as the proxy (Rajan, 1994). A higher ROA shows stability in the financial position of the banks, and hence investment in risky loans is contained.

Income diversification

Income diversification measures how the capacity of the bank to generate income from multiple sources and is usually measured through a ratio of non-interest income by total income (Louzis et al., 2012).

Bank capital

The Capital Adequacy Ratio(CAR) measures the resilient level of the banks. It determines the bank's capacity to withstand any abnormal losses and its resilience to absorbing shocks that may occur within the economic and financial system. Thus, the survival of banks hinges is linked to their ability to provide and maintain a minimum CAR ratio. The CAR is usually calculated using the ratio of total equity to total assets (Makri et al., 2014).

Bank efficiency

Operational efficiency is the characterization of the cost function of a bank. The ratio assumes that boosting banks' income should move in tandem with cost minimization to achieve a similar level of output (Daley and Matthews, 2009). This is usually measured through non-interest expense divided by non-interest income.

Econometric Model

We used STATA statistical software foranalyzing the data.Various models are available for analyzing the panel data, such as OLS, fixed-effects and random-effect models. To test the relationship between the NPL of banks and the variables described, the OLS linear regression model in the following form is used based on the studies by (Khan et al., 2020) and Louzis et al, 2012:

$$NPL_{it} = \alpha_{it} + Loangrowth_{it} + ROA_{it} + Capital_{it} + Efficiency_{it} diversification_{it} + Oil_{it} + QM2_{it} + Islamic_{it} + \varepsilon_{it}$$

Where NPL_{it}=denotes the NPL ratio for bank is in period t. α_{it} denotes the intercept. $Loangrowth_{it}$ shows the loan growth of the bank of the individual banks in time period t. $Efficiency_{it}$ denotes the operating efficiency of the bank in period t. $Capital_{it}$ denotes the capital of the individual bank for period t. while diversification shows the income diversification of the bank for time period t. t represents the period from Q42017-Q32022, and I represents the banks.The lagged independent variable L.NPL is not significant, therefore, the hypothesis that the NPL are persistent is rejected. Hence, there is no need for a GMM model. Furthermore, the dummy variable Islamic (code one for Islamic banks and zero for conventional) is not significant, hence it is concluded that bank nature does not affect the NPL ratios.

Table 2: Random effects model for performing the LM test.

NPL	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
LoanGrowth	-0.126	0.063	-2.01	0.045	-0.249	-0.003	**
ROA	-13.419	3.666	-3.66	0.000	-20.605	-6.234	***
Efficiency	-0.001	0.042	-0.02	0.983	-0.084	0.082	
Capital	0.032	0.235	0.14	0.892	-0.428	0.492	
Diversification	-0.018	0.017	-1.09	0.278	-0.050	0.014	
Islamic	-0.009	0.008	-1.10	0.273	-0.025	0.007	
Oil	-0.008	0.023	-0.35	0.725	-0.054	0.038	
QM2	0.104	0.056	1.86	0.063	-0.006	0.213	*
Constant	0.082	0.050	1.63	0.102	-0.016	0.181	

Mean dependent var	0.029	SD dependent var	0.040
Overall r-squared	0.254	Number of obs	118
Chi-square	36.808	Prob > chi2	0.000
R-squared within	0.079	R-squared between	0.766

*** p<.01, ** p<.05, * p<.1*

Table 3: Breusch and Pagan Lagrangian multiplier test for random effects.

NPL[bank_id,t] = Xb + u[bank_id] + e[bank_id,t]

Estimated results:

	Varsd = sqrt(Var)
NPL	.0015649
e	.0011859
u	0

	.0395585
	.0344367
	0

Test: Var(u) = 0

chibar2(01) = 0.00

Table 4: Unit root test for panel level.

variable	panels	Chi2	P value
NPL	8	118.502	0.000
LoanGrowth	8	142.879	0.000
ROA	8	130.179	0.000
Efficiency	8	49.317	0.000
Capital	8	32.652	0.003
Diversification	8	90.275	0.000
Oil	8	167.325	0.000
QM2	8	15.172	0.512

Fixed effect, random effects, or OLS

To select an appropriate panel data model, first we start by choosing between random effects and OLS. For this purpose, the Breusch and Pagan Lagrangian multiplier (LM) test is used. If OLS is rejected, there is a must to choose between random and fixed effects models.

LM test helps to decide between a random effects regression and a simple OLS regression. The null hypothesis in the LM test is that variances across entities are zero. The results show that we cannot reject the null hypothesis and conclude that random effects are inappropriate. There is no evidence of significant differences across banks; therefore, we can run a simple OLS regression.

We applied the unit root test to each of the variables of interest in the study before estimating the model to assess the order of integration. The null hypothesis is that all the panels contain a unit root. The alternative hypothesis is that at least one panel is stationary. Table 4 shows the Augmented Dickey

Table 5: Summary Statistics of both conventional and Islamic banks.

Variable	Obs	Mean	Std. Dev.	Min	Max
NPL	136	0.034	0.045	0.004	0.369
Loan Growth	155	0.014	0.055	-0.109	0.386
ROA	155	0.004	0.001	-0.001	0.006
Efficiency	160	0.358	0.110	0.171	0.887
Capital	130	0.172	0.015	0.144	0.199
Diversification	159	0.278	0.229	0.100	2.580
Islamic	160	0.500	0.502	0.000	1.000
Oil	160	0.023	0.148	-0.550	0.173
QM2	160	0.040	0.062	-0.051	0.189

Table 6: Pairwise correlations**.**

Variables	NPL	Loan Growth	ROA	Efficiency	Capital	Diversification	Oil	QM2
NPL	1.000							
Loan Growth	-0.124	1.000						
ROA	-0.376	-0.140	1.000					
Efficiency	0.112	0.024	-0.316	1.000				
Capital	-0.055	0.014	0.057	-0.299	1.000			
Diversification	0.131	-0.021	-0.530	0.169	0.063	1.000		
Oil	0.042	-0.124	-0.031	0.032	-0.022	-0.039	1.000	
QM2	0.202	-0.046	0.041	-0.046	-0.106	-0.024	0.126	1.000

Table 7. Regression Results of both conventional and Islamic banks.

NPL	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Loan Growth	-0.126	0.063	-2.01	0.047	-0.251	-0.002	**
ROA	-13.419	3.666	-3.66	0.000	-20.686	-6.153	***
Efficiency	-0.001	0.042	-0.02	0.983	-0.085	0.083	
Capital	0.032	0.235	0.14	0.892	-0.433	0.497	
Diversification	-0.018	0.017	-1.09	0.280	-0.051	0.015	
Islamic	-0.009	0.008	-1.10	0.276	-0.025	0.007	
Oil	-0.008	0.023	-0.35	0.725	-0.055	0.038	
QM2	0.104	0.056	1.86	0.066	-0.007	0.214	*
Constant	0.082	0.050	1.63	0.105	-0.018	0.182	

Mean dependent var	0.029	SD dependent var	0.040
R-squared	0.254	Number of obs	118
F-test	4.090	Prob > F	0.000
Akaike crit. (AIC)	-443.016	Bayesian crit. (BIC)	-415.309

*** p<.01, ** p<.05, * p<.1*

Fuller test that all variables comply with the unit-root test and are stationary at I(0), apart from QM2 which is stationary at I(1).

Findings and discussions

Descriptive Statistics

Table 5 summarizes the descriptive statistics of both dependent and independent variables including NPLs, ROA, capital, loan growth, operating efficiency and income diversification of commercial banks, oil and money supply throughout 2017–2022. The observations in this study are 136 for the dependent variable and 130 to 160 for the independent variables. Table 5 shows that the mean values for NPLs, ROA, capital, loan growth, operating efficiency and income diversification of commercial banks were 0.034, 0.004, 0.172, 0.014, 0.358, 0.278, respectively. NPL standard deviation was 0.045, with a minimum value of 0.004 and a maximum value of 0.369. The minimum value for ROA standard deviation was 0.001, with a maximum value of 0.006 and a minimum value

of -0.001. On the other hand, the standard deviation for operating efficiency was 0.110, with a minimum value of 0.171 and a maximum value of 0.887. In the case of capitalization, the minimum and maximum values stood at 0.144 and 0.199, and the standard deviation of 0.110. Finally, the income diversification variable has a maximum and minimum value of 0.100 and 2.580, with a standard deviation of 0.299, respectively.

Table 6 shows the correlation matrix between the dependent and independent variables for the combined sample of conventional banks and Islamic banks. No problem of multicollinearity between dependent and independent variables was found because the values of all the variables were less than 0.80, suggesting that there will not be multicollinearity.

Regression Analysis

CONCLUSIONS

This study aims to find out the impact of bank-specific factors that determine the rate of NPLs and controlling for some macroeconomic variables in Qatar. This was done using quarterly data from four each of Islamic and conventional banks within Q42017-Q32022. The OLS model shows that loan growth and ROA significantly and negatively impact NPLs. This indicates that the profitability and loan growth ofbanks increase will decrease NPLs in Qatar. Also, the level of NPLs increase is influenced by the money supply within the Qatari economy. More importantly, there is no significant difference between bank-specific determinants between Conventional and Islamic banks in Qatar. The findings imply that policymakers should put measures in place to ensure that profitability and loan growth are monitored to ensure that they drive down NPL to ensure the sustainability of the banking sector in Qatar.

This study has some limitations that need to be considered. Firstly, the indicators used as proxies for the bank-level determinants were not exhaustive with limited period of 2017-2022. Consequently, more datasets and variables may be used in future studies to improve the robustness of the study. In addition, other economic factors, such as real production, stock exchange variables, can also be used in future studies along with banking variables as elements of NPLs for more understanding. Moreover, Islamic and conventional bank's behavior needs more study to understand how these affect NPL evolution, especially in jurisdictions where Islamic banks are becoming systematically important, like Qatar.

Funding: This research received no external funding.

Conflict of Interest: The author declares no conflict of interest.

REFERENCES

Ahmad, F. (2015), "Explanatory power of bank specific variables as determinants of NPLs: evidence from Pakistan banking", World Applied Sciences Journal, Vol. 22 January 2013, pp. 1220-1231

Alandejani, M., & Asutay, M. (2017). NPLs in the GCC banking sectors: Does the Islamic finance matter? *Research in International Business and Finance*, *42*, 832–854. https://doi.org/10.1016/j.ribaf.2017.07.020

Almuraikhi, M. A. (2022). *Determinants of NPLs Between Islamic And Conventional Banks: A Systematic Literature Review*. OSF Preprints. https://doi.org/10.31219/osf.io/e6wtu

Ari, A., Chen, S., & Ratnovski, L. (2021). The dynamics of NPLs during banking crises: A new database with post-COVID-19 implications. *Journal of Banking & Finance*, *133*, 106140. https://doi.org/10.1016/j.jbankfin.2021.106140

Baele, L., Farooq, M., & Ongena, S. (2014). Of religion and redemption: Evidence from default on Islamic loans. *Journal of Banking & Finance*, *44*, 141–159. https://doi.org/10.1016/j.jbankfin.2014.03.005

Bekele, G., Chowdhury, R. H., & Rao, A. (2016). Analysis of default behavior of borrowers under Islamic versus conventional banking. *Review of Behavioral Finance*, *8*(2), 156–173. https://doi.org/10.1108/RBF-06-2015-0025

Berger, A. N., & Humphrey, D. B. (1997). Efficiency of financial institutions: International survey and directions for future research. *European Journal of Operational Research*, *98*(2), 175–212. https://doi.org/10.1016/S0377-2217(96)00342-6

Benthem, C.S. (2017), The Relation Among NPLs, Operating Efficiency, and Capitalization in Commercial Banking, University of Twente, Enschede, Netherlands

Boudriga, A., Taktak, N.B. and Jellouli, S. (2010a), "Bank specific, business and institutional environment determinants of banks NPLs: evidence from mena countries", Economic Research Forum, Working Paper, pp. 1-28

Castillo, J. A., Mora-Valencia, A., & Perote, J. (2018). Moral hazard and default risk of SMEs with collateralised loans. *Finance Research Letters*, *26*, 95–99. https://doi.org/10.1016/j.frl.2017.12.010

Choudhary, M. A., & Jain, A. K. (2021). Corporate stress and bank NPLs: Evidence from Pakistan. *Journal of Banking & Finance*, *133*, 106234. https://doi.org/10.1016/j.jbankfin.2021.106234

Cowling, M., Ughetto, E., & Lee, N. (2018). The innovation debt penalty: Cost of debt, loan default, and the effects of a public loan guarantee on high-tech firms. *Technological Forecasting and Social Change*, *127*, 166–176. https://doi.org/10.1016/j.techfore.2017.06.016

Constant, F.D. and Ngomsi, A. (2012), "Determinants of bank long-term lending behavior in the central African economic and monetary community (CEMAC)", Review of Economics and Finance, Better Advances Press, Canada, Vol. 2, pp. 107-114.

Croux, C., Jagtiani, J., Korivi, T., & Vulanovic, M. (2020). Important factors determining Fintech loan default: Evidence from a lendingclub consumer platform. *Journal of Economic Behavior & Organization*, *173*, 270–296. https://doi.org/10.1016/j.jebo.2020.03.016

Disli, M., Aysan, A. F., & Abdelsalam, O. (2022). Favoring the small and the plenty: Islamic banking for MSMEs. *Economic Systems*, 101051. https://doi.org/10.1016/j.ecosys.2022.101051

Espinoza, M. R. A., & Prasad, A. (2010). *NPLs in the GCC Banking System and their Macroeconomic Effects*. International Monetary Fund.

Ekanayake, E. and Azeez, A.A. (2015), "Determinants of NPLs in licensed commercial banks: evidence from Sri Lanka", Asian Economic and Financial Review. Asian Economic and Social Society, Vol. 5 No. 6, p. 868

Fianto, B. A., Maulida, H., & Laila, N. (2019). Determining factors of nonperforming financing in Islamic microfinance institutions. *Heliyon*, *5*(8), e02301. https://doi.org/10.1016/j.heliyon.2019.e02301

Fidrmuc, J., & Hainz, C. (2010). Default rates in the loan market for SMEs: Evidence from Slovakia. *Economic Systems*, *34*(2), 133–147. https://doi.org/10.1016/j.ecosys.2009.10.002

Fiordelisi, F., Marques-Ibanez, D., & Molyneux, P. (2011). Efficiency and risk in European banking. *Journal of Banking & Finance*, *35*(5), 1315–1326. https://doi.org/10.1016/j.jbankfin.2010.10.005

Gao, W., Liu, Y., Yin, H., & Zhang, Y. (2022). Social capital, phone call activities and borrower default in mobile micro-lending. *Decision Support Systems*, *159*, 113802. https://doi.org/10.1016/j.dss.2022.113802

Ghosh, A. (2015). Banking-industry specific and regional economic determinants of NPLs: Evidence from US states. *Journal of Financial Stability*, *20*, 93–104. https://doi.org/10.1016/j.jfs.2015.08.004

Godlewski, C. J. (2014). The determinants of multiple bank loan renegotiations in Europe. *International Review of Financial Analysis*, *34*, 275–286. https://doi.org/10.1016/j.irfa.2014.07.005

Goedecke, J. (2018). Contagious loan default. *Economics Letters*, *170*, 14–18. https://doi.org/10.1016/j.econlet.2018.05.028

Hartarska, V., & Gonzalez-Vega, C. (2006). Evidence on the effect of credit counseling on mortgage loan default by low-income households. *Journal of Housing Economics*, *15*(1), 63–79. https://doi.org/10.1016/j.jhe.2006.02.002

Hu, J., Li, Y. and CHIU, Y. (2004), "Ownership and NPLs: evidence from Taiwan's banks", The Developing Economies, Wiley Online Library, Vol. 42 No. 3, pp. 405-420

Karimu, A., Salia, S., Ibrahim, A.-J., & Alagidede, I. P. (2022). Islamic Banking and Finance in Africa. In J. Y. Abor & C. K. D. Adjasi (Eds.), *The Economics of Banking and Finance in Africa: Developments in Africa's Financial Systems* (pp. 431–451). Springer International Publishing. https://doi.org/10.1007/978-3-031-04162-4_13

Kauko, K. (2012). External deficits and NPLs in the recent financial crisis. *Economics Letters*, *115*(2), 196–199. https://doi.org/10.1016/j.econlet.2011.12.018

Khan, M. A., Siddique, A., & Sarwar, Z. (2020). Determinants of NPLs in the banking sector in developing state. *Asian Journal of Accounting Research*, *5*(1), 135–145. https://doi.org/10.1108/AJAR-10-2019-0080

Kirui, S. (2014), "The effect of non performing loans on profitability of commercial banks in Kenya", Research Submitted For Master Degree Programme, University of Nairobi, KenyaFinance, Economics and Business (JAFEB), Vol. 5 No. 2, pp. 35-42.

Keeton, W.R. (1999), "Does faster loan growth lead to higher loan losses?", Economic Review-Federal Reserve Bank of Kansas City, Federal Reserve Bank of Kansas City, Vol. 84, pp. 57-76.

Koju, L., Koju, R. and Wang, S. (2018), "Macroeconomic and bank-specific determinants of NPLs: evidence from Nepalese banking system", Journal of Central Banking Theory and Practice, Vol. 7 No. 3, pp. 111-138, doi: 10.2478/jcbtp-2018-0026.

Kryzanowski, L., Liu, J., & Zhang, J. (2022). Effect of COVID-19 on NPLs in China. *Finance Research Letters*, 103372. https://doi.org/10.1016/j.frl.2022.103372

Labbé-Pinlon, B., Lombart, C., & Louis, D. (2016). Impact de la proximité perçue d'un magasin sur la fidélité des clients: Le cas des magasins d'enseignes alimentaires de proximité. *Management & Avenir*, *84*(2), 73–94. https://doi.org/10.3917/mav.084.0073

Lafuente, E., Vaillant, Y., & Vendrell-Herrero, F. (2019). Conformance and performance roles of bank boards: The connection between NPLs and nonperforming directorships. *European Management Journal*, *37*(5), 664–673. https://doi.org/10.1016/j.emj.2019.04.005

Lee, P.-L., Lye, C.-T., & Lee, C. (2022). Is bank risk appetite relevant to bank default in times of Covid-19? *Central Bank Review*, *22*(3), 109–117. https://doi.org/10.1016/j.cbrev.2022.08.003

Louzis, D. P., Vouldis, A. T., & Metaxas, V. L. (2012). Macroeconomic and bank-specific determinants of NPLs in Greece: A comparative study of mortgage, business and consumer loan portfolios. *Journal of Banking & Finance*, *36*(4), 1012–1027. https://doi.org/10.1016/j.jbankfin.2011.10.012

M, J., & N, P. (2020). Wilful defaulters of Indian banks: A first cut analysis. *IIMB Management Review*, *32*(2), 129–142. https://doi.org/10.1016/j.iimb.2019.10.005

Makri, V., Tsagkanos, A., & Bellas, A. (2014). Determinants of NPLs: The Case of Eurozone. *Panoeconomicus*, *61*(2), Article 2. https://doi.org/10.2298/PAN1402193M

Malimi, K. (2017). The Influence of Capital Adequacy, Profitability, and Loan Growth on NPLsa Case of Tanzanian Banking Sector. *International Journal of Economics, Business and Management Studies*, *4*(1), 38–49.

Makri, V., Tsagkanos, A. and Bellas, A. (2014), "Determinants of NPLs: the case of Eurozone", Panoeconomicus, Vol. 61 No. 2, pp. 193-206.

Mayock, T., & Tzioumis, K. (2021). New construction and mortgage default. *Journal of Banking & Finance*, *133*, 106276. https://doi.org/10.1016/j.jbankfin.2021.106276

Mirpourian, S., Caragliu, A., Di Maio, G., Landoni, P., & Rusinà, E. (2016). Determinants of loan repayment performance among borrowers of microfinance institutions: Evidence from India. *World Development Perspectives*, *1*, 49–52. https://doi.org/10.1016/j.wdp.2016.06.002

Mueller, H. M., & Yannelis, C. (2019). The rise in student loan defaults. *Journal of Financial Economics*, *131*(1), 1–19. https://doi.org/10.1016/j.jfineco.2018.07.013

Nguyen, D. T. T., Diaz-Rainey, I., Roberts, H., & Le, M. (2021). Loans from my neighbours: East Asian commercial banks, financial integration, and bank default risk.

International Review of Financial Analysis, *74*, 101659. https://doi.org/10.1016/j.irfa.2021.101659

Nigmonov, A., Shams, S., & Alam, K. (2022). Macroeconomic determinants of loan defaults: Evidence from the U.S. peer-to-peer lending market. *Research in International Business and Finance*, *59*, 101516. https://doi.org/10.1016/j.ribaf.2021.101516

Nkusu, M. M. (2011). *NPLs and Macrofinancial Vulnerabilities in Advanced Economies*. International Monetary Fund.

Odeh, O., Koduru, P., Featherstone, A., Das, S., & Welch, S. M. (2011). A multi-objective approach for the prediction of loan defaults. *Expert Systems with Applications*, *38*(7), 8850–8857. https://doi.org/10.1016/j.eswa.2011.01.096

Palvia, A., Vähämaa, E., & Vähämaa, S. (2020). Female leadership and bank risk-taking: Evidence from the effects of real estate shocks on bank lending performance and default risk. *Journal of Business Research*, *117*, 897–909. https://doi.org/10.1016/j.jbusres.2020.04.057

Parrado-Martínez, P., Gómez-Fernández-Aguado, P., & Partal-Ureña, A. (2019). Factors influencing the European bank's probability of default: An application of SYMBOL methodology. *Journal of International Financial Markets, Institutions and Money*, *61*, 223–240. https://doi.org/10.1016/j.intfin.2019.04.003

Perumal, S.V. (2021) Qatar banks display lowest NPLs, highest ROE in Q2: Kamco Invest. accessed on 13/01/2023 at https://www.gulf-times.com/story/699218/Qatar-banks-display-lowest-NPLs-highest-ROE-in-Q2-

Podpiera, J., & Weill, L. (2008). Bad luck or bad management? Emerging banking market experience. *Journal of Financial Stability*, *4*(2), 135–148. https://doi.org/10.1016/j.jfs.2008.01.005

Rachman, R.A., Kadarusman, Y.B., Anggriono, K. and Setiadi, R. (2018), "bank-specific factors affecting NPLs in developing countries: case study of Indonesia", The Journal of Asian

Radivojević, N., Cvijanović, D., Sekulic, D., Pavlovic, D., Jovic, S., & Maksimović, G. (2019). Econometric model of NPLs determinants. *Physica A: Statistical Mechanics and Its Applications*, *520*, 481–488. https://doi.org/10.1016/j.physa.2019.01.015

Rajan, R. G. (1994). Why Bank Credit Policies Fluctuate: A Theory and Some Evidence*. *The Quarterly Journal of Economics*, *109*(2), 399–441.https://doi.org/10.2307/2118468

Riahi, Y. M. (2019). How to explain the liquidity risk by the dynamics of discretionary loan loss provisions and NPLs? The impact of the global crisis. *Managerial Finance*, *45*(2), 244–262. https://doi.org/10.1108/MF-12-2017-0520

Saeed, M., & Izzeldin, M. (2016). Examining the relationship between default risk and efficiency in Islamic and conventional banks. *Special Issue on Islamic Finance*, *132*, 127–154. https://doi.org/10.1016/j.jebo.2014.02.014

Saif-Alyousfi, A. Y. H., Saha, A., & Md-Rus, R. (2018). Impact of oil and gas price shocks on the NPLs of banks in an oil and gas-rich economy. *International Journal of Bank Marketing*, *36*(3), 529–556. https://doi.org/10.1108/IJBM-05-2017-0087

Soenen, N., & Vander Vennet, R. (2022). Determinants of European banks' default risk. *Finance Research Letters*, *47*, 102557. https://doi.org/10.1016/j.frl.2021.102557

Trautmann, S. T., & Vlahu, R. (2013). Strategic loan defaults and coordination: An experimental analysis. *Journal of Banking & Finance*, *37*(3), 747–760. https://doi.org/10.1016/j.jbankfin.2012.10.019

Vithessonthi, C. (2016). Deflation, bank credit growth, and NPLs: Evidence from Japan. *International Review of Financial Analysis*, *45*, 295–305. https://doi.org/10.1016/j.irfa.2016.04.003

Vonnák, D. (2018). Why do firms default on their foreign currency loans? The case of Hungary. *Journal of International Money and Finance*, *86*, 207–222. https://doi.org/10.1016/j.jimonfin.2018.05.001

Wasiaturrahma, Ajija, S. R., Sukmana, R., Sari, T. N., & Hudaifah, A. (2020). Breadth and depth outreach of Islamic cooperatives: Do size, nonperforming finance, and grant matter? *Heliyon*, *6*(7), e04472. https://doi.org/10.1016/j.heliyon.2020.e04472

Wengerek, S. T., Hippert, B., & Uhde, A. (2022). Risk allocation through securitisation: Evidence from NPLs. *The Quarterly Review of Economics and Finance*, *86*, 48–64. https://doi.org/10.1016/j.qref.2022.06.005

Widodo, E., Rochmadhan, O. A., Lukmandono, & Januardi. (2022). Modeling Bayesian inspection game for NPL problems. *Operations Research Perspectives*, *9*, 100218. https://doi.org/10.1016/j.orp.2021.100218

Zhang, X., Ouyang, R., Liu, D., & Xu, L. (2020). Determinants of corporate default risk in China: The role of financial constraints. *Economic Modelling*, *92*, 87–98. https://doi.org/10.1016/j.econmod.2020.07.005