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Determinants of Bank Group Profitability in the Philippines from 2008 to 2019: A Panel Data Regression Approach

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The goal of this study is to determine the internal and external factors that influence the profitability of the Philippine banking sector. This study applies a fixed effects panel regression model to aggregated quarterly data of the commercial, universal, rural, thrift, and cooperative bank groups in the Philippines from 2008 to 2019. Return on Asset (ROA) and Return on Equity (ROE) values are used as dependent variables in two different models. The estimation shows that of the internal factors tested, bank group size (-), credit risk (-), income diversification (+), capitalization (+), and interest spread (+) are significant determinants of both ROA and ROE. Of the external factors, foreign exchange rates (+) and interest rates (-) are found to be significantly related to profitability. These results serve as a valuable reference for further study of the performance of the Philippine banking sector.

Keywords: Bank profitability, banking system, bank groups, Philippines

1 Introduction

The banking sector is instrumental in the economic development of the Philippines. For an emerging country with fast-growing provincial regions, supporting economic expansion is vital in uplifting citizen welfare. Banks support the economy by providing two key services – holding deposits and providing loans. Banks increase confidence in the domestic business environment by safekeeping the assets of deposit-seeking clients. Often, these deposits generate a small return for depositors. Deposit services are becoming increasingly important in emerging economies because they encourage local and foreign entities to invest and do business in the country. Deposit services also support workers who receive their compensation through bank deposits by employers.

Banks leverage their deposits by extending loans and earning money from interest. The provision of loans is critical for economic development because it directly channels the funds into the hands of individuals who utilize the loan proceeds for consumption or investment purposes, and to entities who use the proceeds to support its current and future business activities.

Bank runs are especially detrimental to the banking sector and, hence, the overall economy. To mitigate the risk of bank runs, the banking sector is closely regulated. In the Philippines, the regulating body is the Bangko Sentral ng Pilipinas (BSP), which is also the country's monetary authority. Well-crafted regulations that enhance banks' resilience are needed as the economy grows, new financial technologies develop, and the banking sector evolves.

According to the World Bank (n.d.b.), annual Gross Domestic Product (GDP) growth for the Philippines from 2008 to 2019 hovered between four and seven and a half percent, except for 2009, as can be seen in Figure 1. To sustain this growth, it was important for the BSP to facilitate the operation of a sound banking sector through the enactment and implementation of policies that delivered a reasonable level of profits to banking institutions.

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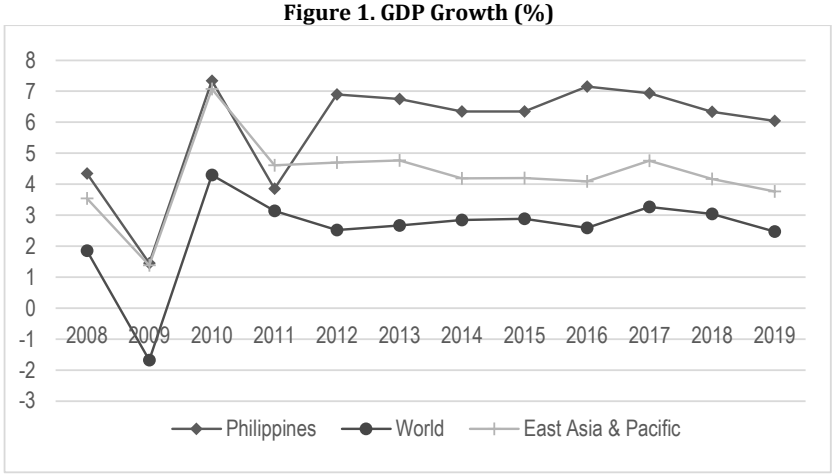
Figure 1. GDP Growth (%)



Source: The World Bank, n.d.b.

Sufian and Chong (2008) studied the determinants of commercial bank profitability in the Philippines from 1995 to 2005. Their study concluded that all internal bank characteristics tested (firm size, credit risk, income diversification, management efficiency, and capitalization) were significant determinants of profitability. But in terms of external characteristics, the study showed that only inflation was a significant determinant; GDP, growth in money supply, and stock market capitalization were not. They concluded by suggesting the use of additional variables for testing in future studies.

The 2008 global financial crisis resulted in significant changes in the global banking environment, warranting new research on bank performance. The crisis alerted the United States (US) regulators to enact the Dodd-Frank Wall Street Reform and Consumer Protection Act, which resulted in fundamental changes in US financial regulation, particularly on risk management (Randall D. Guynn, Davis Polk, & Wardwell LLP, 2010). Because of the role of the US financial system in the global economy, non-US banks had to take corresponding measures. Globally, banks adopted additional practices to increase resiliency to shocks, primarily through building up capital and liquidity buffers (BIS, 2018).

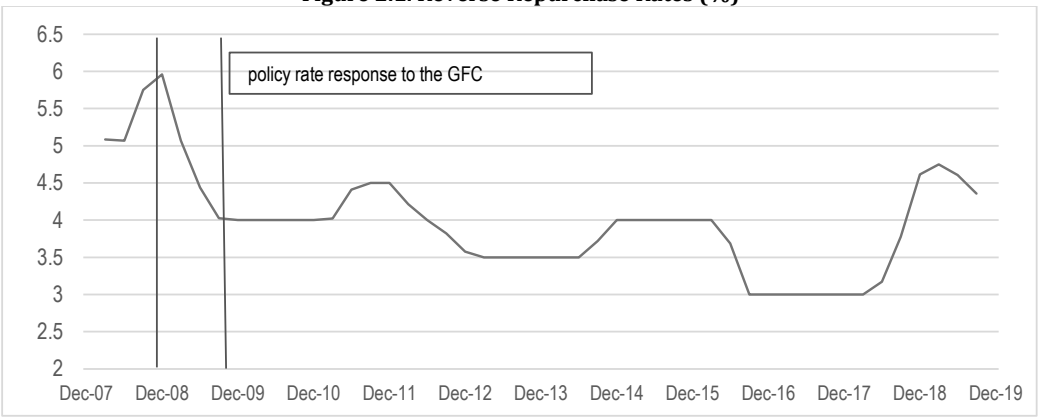
Although there are several studies on the determinants of bank profitability, there are limited studies of bank profitability in the Philippines. This paper adds to the existing literature by testing a novel set of factors that explain bank profitability. This study tests liquidity, foreign exchange rates, and interest rates – factors that are not deeply investigated in existing literature. Interest rates and foreign exchange rates are particularly meaningful factors to investigate because they are closely monitored by banking regulators, while liquidity is an important factor in evaluating the overall risk in the banking sector. This paper also adds to the existing literature by using data from 2008 to 2019, a period inclusive of the peak of the global crisis and a relatively long-term period thereafter. The use of a more recent data set is warranted given the changes in the banking system throughout the world. Additionally, this paper uses aggregated data from five bank groups in the Philippines; analysis is done on group-wide information on commercial, universal, rural thrift, and cooperative banks. Most of the existing literature utilizes firm-level data of commercial banks, thus limiting the applicability of the various literature's recommendations for the entire banking sector. The use of an aggregated data set from all bank groups produces a wider point-of-view analysis of the banking system and results in unique insights on the factors tested.

2 The Philippine Bank Groups from 2008 to 2019

The Philippine economy suffered relatively fewer losses compared to other economies during the 2008 global financial crisis. In fact, the GDP growth of the Philippines was positive during the peak years of the global crisis at 4.3% and 1.4% in 2008 and 2009, respectively. The BSP responded to the global financial crisis by dropping reverse repurchase rates (See Figure 2.1) and adopting measures that enhanced the transparency and communication of the central bank's monetary policies and policy objectives (Guinigundo, 2011). The Philippine banking system was resilient despite the global financial

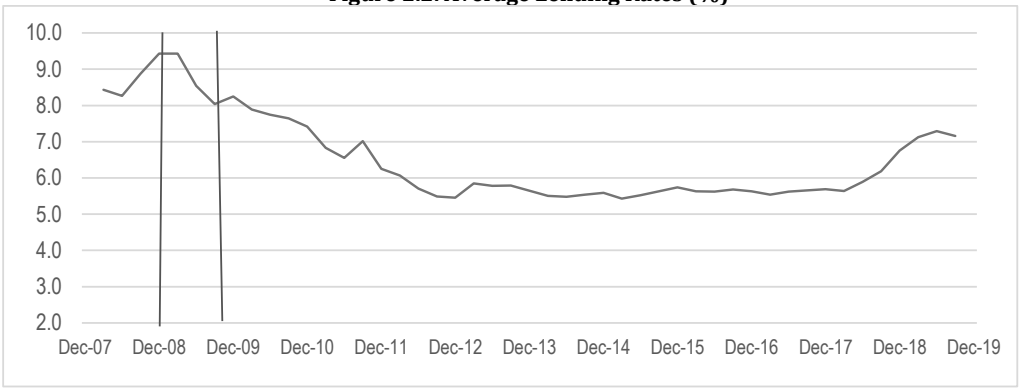
crisis due to the limited exposure of domestic banks to US subprime assets, strong bank balance sheets, adequate risk and liquidity policies, strengthened regulation over banks, and moves by banks to engage in more profitable business lines such as consumer lending (Guinigundo, 2011, p. 327).

Figure 2.1. Reverse Repurchase Rates (%)



Source: BSP, n.d.c.

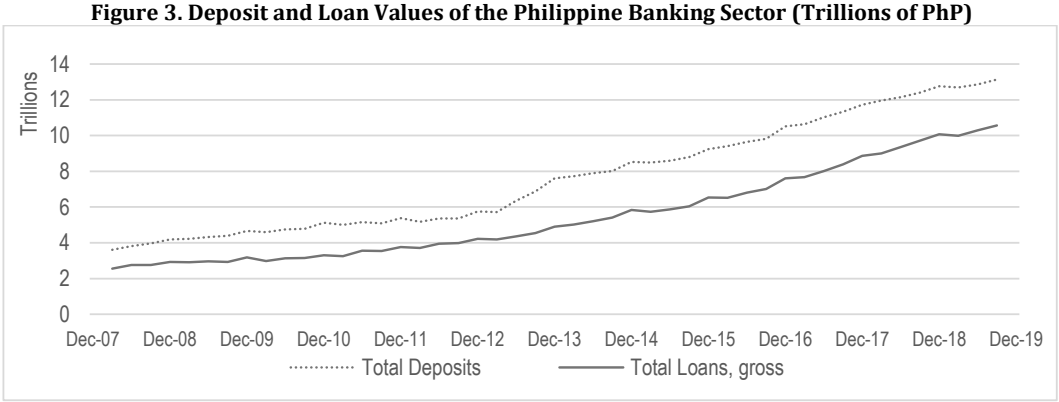
Figure 2.2. Average Lending Rates (%)



Source: BSP, n.d.c.

The growth of the Philippine GDP from 2008 to 2019 was accompanied by the growth in the number of Philippine financial institutions from around 21,500 to around 27,200 for the same period (BSP, n.d.e.). Total deposits and total loans of the sector likewise grew substantially during the same period (See Figure 3).

Figure 3. Deposit and Loan Values of the Philippine Banking Sector (Trillions of PhP)



Source: BSP, n.d.a.

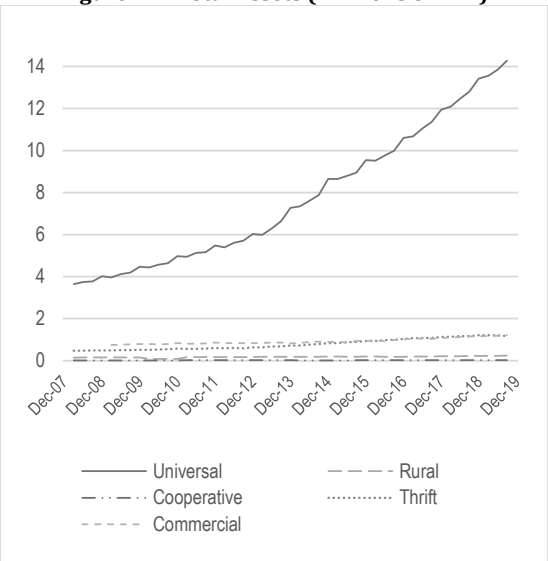
The Philippine banking sector is divided into three main groups – rural and cooperative banks, thrift banks, and universal and commercial banks (BSP, n.d.a.). Rural banks assist in the growth of the rural economy through the provision of basic financial services, assisting farmers, fishermen, cooperatives, and other merchants obtain capital (Rural Act of 1992, Sec. 3). Cooperative banks function in a similar manner (Cooperative Code of the Philippines, 1990, Art. 100). They differ, however, in terms of ownership structure, with rural banks organized as stock corporations (Rural Act of 1992, Sec. 4) with potential owners having different profiles, and cooperative banks mostly owned by cooperatives (Cooperative Code of the Philippines, 1990, Art. 100).

Thrift banks – composed of savings and mortgage banks, private development banks, and stock savings and loan associations (The General Banking Law of 2000, Sec. 3.2) – offer a wider array of services compared to rural and cooperative banks. Such services include the acceptance of foreign currency deposits and issuance of domestic letters of credit ("What's the difference?," n.d.). The clientele of thrift banks is generally composed of small- to medium-sized enterprises.

Rural, cooperative, and thrift banks are given special attention by the BSP because of their role in helping the economies in the less developed regions of the country. In recent years, there has been a thrust by the regulators and the banks to expand service offerings of these banks (Cuaresma, 2019). One such example is the opening of bank branch-lite units, offices or places of business that perform limited or simpler bank activities, and are thus subject to fewer regulations. In 2018, 23 branch-lite operations of rural banks and 41 branch operations of thrift banks were approved by the BSP.

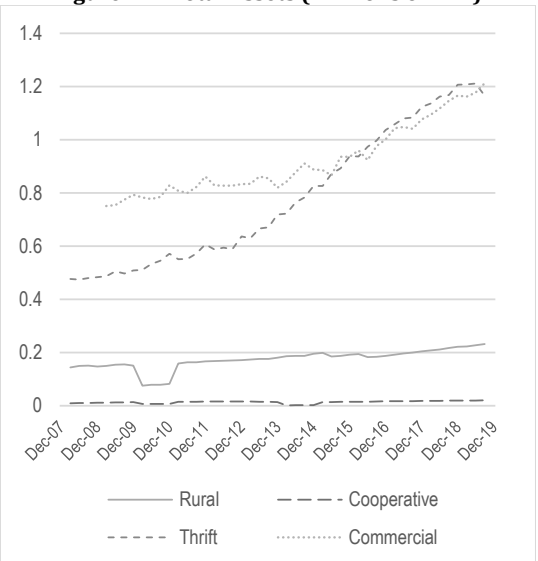
Universal and commercial banks comprise the largest single group based on assets (BSP, n.d.a.). Commercial banks have the right to offer all services of thrift banks and more, such as advisory to investment management accounts and quasi-banking functions ("What's the difference?," n.d.). Universal banks offer the widest array of services; they have all the rights of a commercial bank in addition to the license to engage in underwriting and other investment house functions ("What's the difference?," n.d.). In terms of asset size, universal banks dominate the other bank groups from 2008 to 2019 (See Figure 4.1 and 4.2). Graphically, it is seen that bank group size is directly related to net profit values with universal banks having the highest net profits in absolute terms and cooperative banks the smallest (See Figure 4.3 and Figure. 4.4).

Figure 4.1. Total Assets (Trillions of PhP)



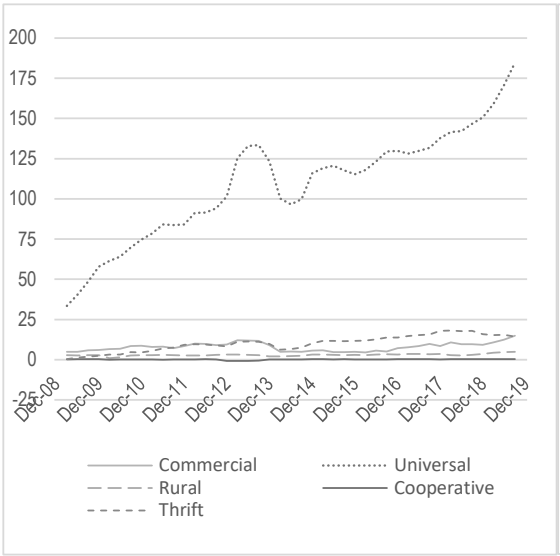
Source: BSP, n.d.a.

Figure 4.2. Total Assets (Trillions of PhP)



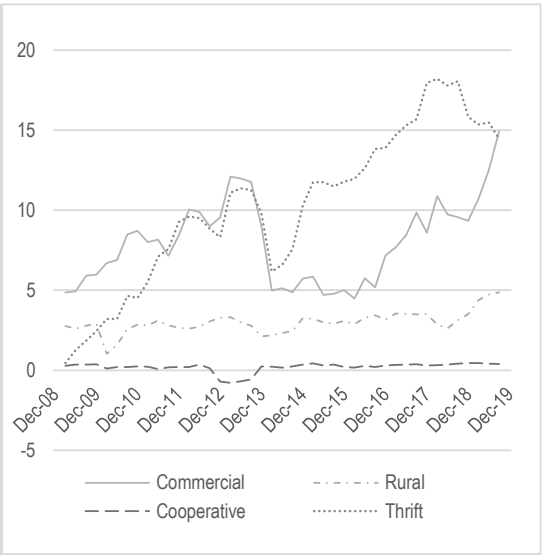
Source: BSP, n.d.a.

Figure 4.3. Net Profit (Billions of PhP)



Source: BSP, n.d.a.

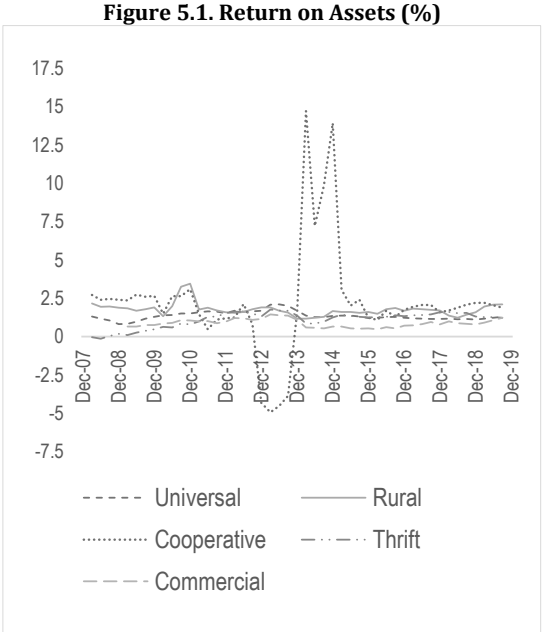
Figure 4.4. Net Profit (Billions of PhP)



Source: BSP, n.d.a.

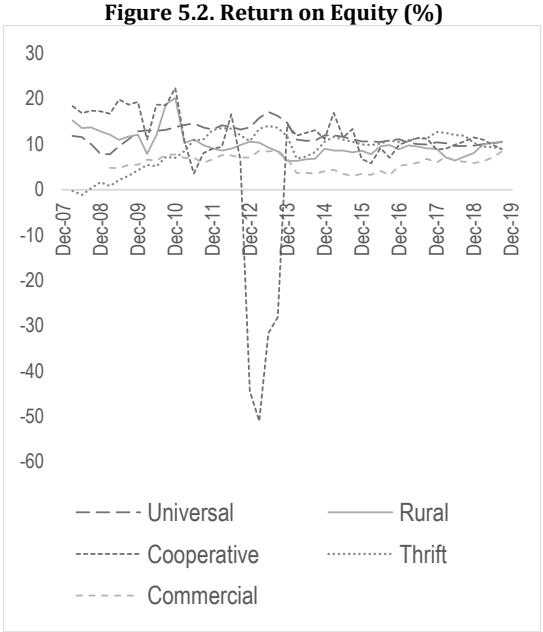
The bank groups were generally profitable from 2008 to 2019 (See Figure 5.1 and Figure 5.2). Even in 2008, when the global financial crisis was at its peak, Philippine banks experienced positive ROA and ROE with the only exception of thrift banks, which experienced slightly negative but almost zero returns. Another notable exception was the profitability of cooperative banks from 2012 to 2013, a period when the BSP pursued reforms in the rural and cooperative banking sector.

Figure 5.1. Return on Assets (%)



Source: BSP, n.d.a.

Figure 5.2. Return on Equity (%)

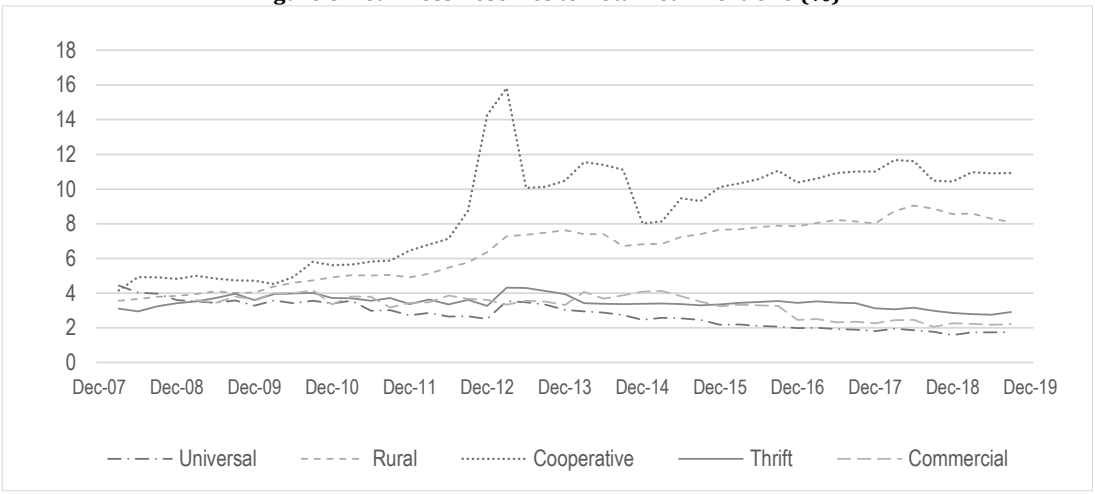


Source: BSP, n.d.a.

As to credit risk exposure of the different bank groups, rural and cooperative banks had the riskiest loan profile from 2008 to 2019 (See Figure 6). Loan loss reserves as a percent of the total loan portfolio of cooperative banks reached a peak of almost 16% between 2012 and 2013, compared to under four percent for universal and commercial banks during the same period. The credit risk of cooperative

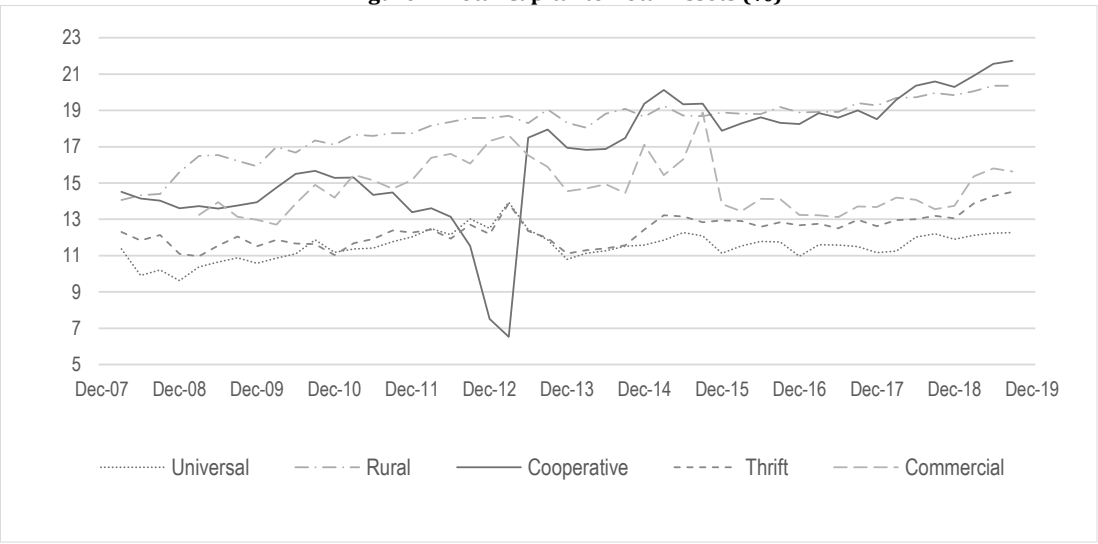
banks was also notable during this period when viewed alongside bank capitalization (See Figure 7). Between 2011 and 2013, capitalization as a percent of total assets of cooperative banks significantly declined. Rural and cooperative banks also consistently had the highest ratio of non-interest expenses to total assets from 2008 to 2019 (See Figure 8.1 and Figure 8.2), indicating that rural and cooperative banks were relatively inefficient in the use of their assets compared to other bank groups. The assessment of bank group credit risk, capitalization, and management efficiency showed that cooperative banks had the most operational struggles before 2013.

Figure 6. Loan Loss Reserves to Total Loan Portfolio (%)



Source: BSP, n.d.a.

Figure 7. Total Capital to Total Assets (%)



Source: BSP, n.d.a.

Figure 8.1. Non-Interest Expense to Total Assets (%)

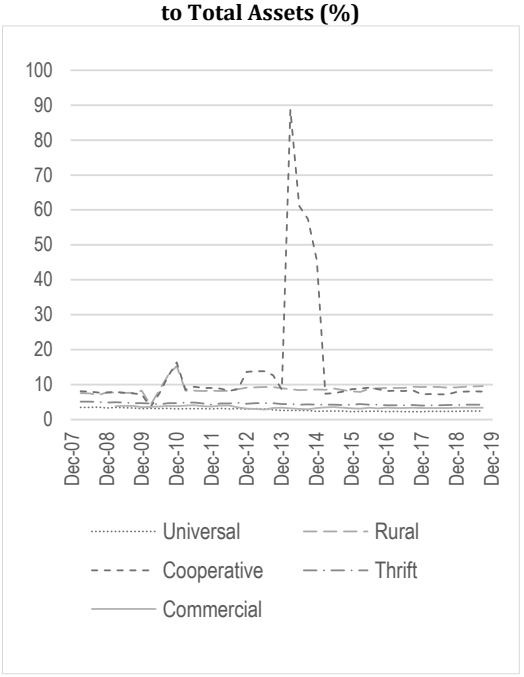
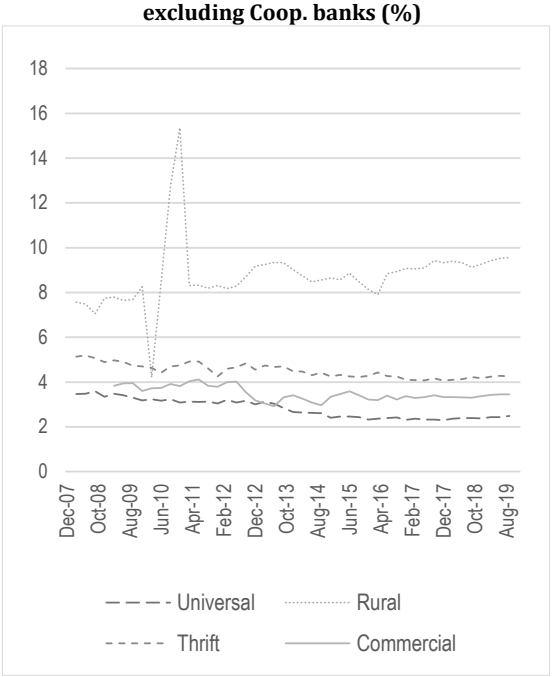


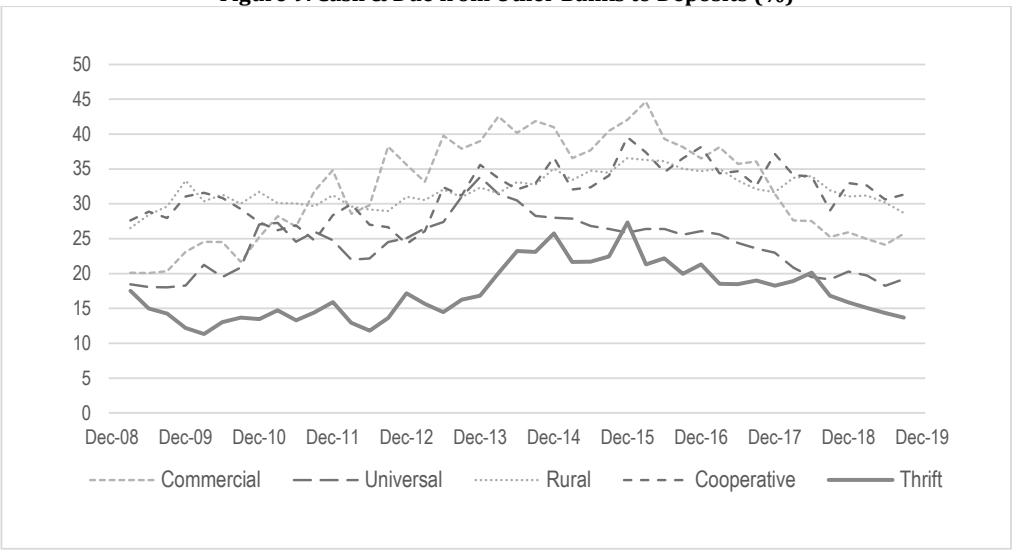
Figure 8.2. Non-Interest Expense to Total Assets excluding Coop. banks (%)



Source: BSP, n.d.a.; Author's computation

To enhance the resiliency of the rural and cooperative banking system, the BSP, the Philippine Deposit Insurance Corporation, and the LandBank of the Philippines launched in 2011 the Strengthening Program for Cooperative Banks, which was renewed in 2013 and 2015 (Agcaoili, 2015). They also launched in 2015 the Consolidation Program for Rural Banks, which was renewed in 2017 (Cuaresma, 2017). These programs encouraged mergers and consolidation of cooperative and rural banks to create a less fragmented banking system. This plan would improve bank stability and generate synergies and economies of scale (BSP, 2017). The number of rural bank head offices decreased from 541 in early 2015 to 451 in late 2019, but the total number (head offices and branches) increased from 2,628 to 3,272 (BSP, n.d.e.), an indication that rural banks consolidated but still expanded their networks. These measures taken by the BSP to develop the cooperative and rural banking system played an important role in the performance of rural and cooperative banks in subsequent years (BSP, 2013). Non-interest expenses as a percent of total assets spiked upward for cooperative banks after 2013, but returned to a lower level after 2014. The upward spike could be attributed to an increase in cooperative banks' administrative costs and incurrence of consolidation expenses during the year. Capitalization of cooperative banks stabilized after 2013, and was followed by profitability which stabilized after 2014. Cooperative bank liquidity also showed stability after 2013. Although the credit risks of cooperative banks were still higher than the risk of other bank groups, cooperative banks were able to reduce their credit risk exposure after 2014. The recovery of cooperative banks seemed to indicate that the policies pursued by the BSP (and other government agencies) had a positive effect in strengthening the rural and cooperative bank system.

Figure 9. Cash & Due from Other Banks to Deposits (%)

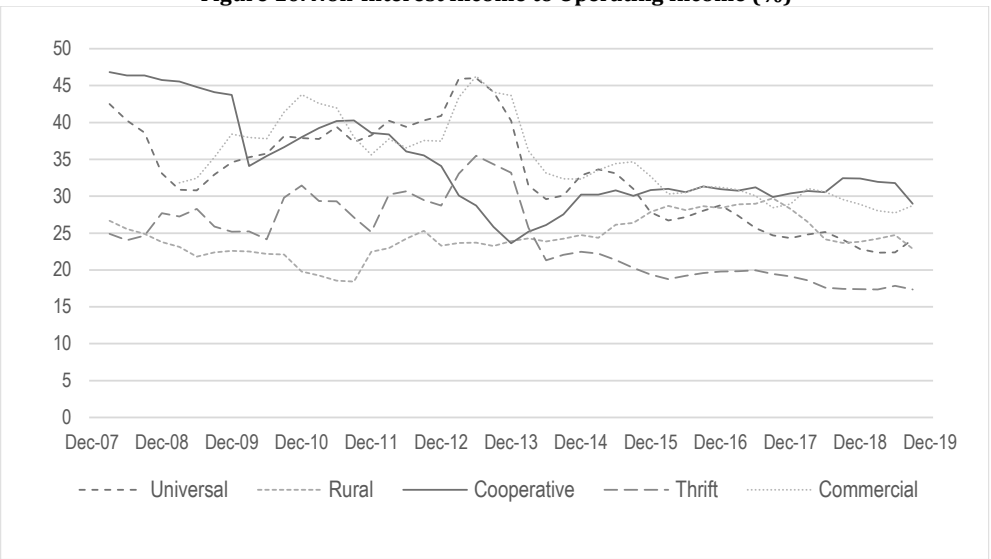


Source: BSP, n.d.a.

From 2008 to 2019, universal and commercial banks inconsistently had the most diversified operating income among the bank groups (See Figure 10). Prior to 2015, universal and commercial banks generally had the highest ratio of non-interest income to operating income. This was expected given that among all bank groups, universal and commercial banks had the right to offer the widest variety of services ("What's the difference?," n.d.). However, there were significant periods after 2015 when rural and cooperative banks earned greater relative income from non-interest sources compared to universal and commercial banks. The sector-wide income statement of rural and cooperative banks indicated that a substantial portion of non-interest income came from fees and commissions, and trading income. Unfortunately, a more detailed breakdown of the non-interest income of rural and cooperative banks was not available. However, the more diversified income of rural and cooperative banks could still be attributed to the consolidation within the rural and cooperative banking industry after 2014. Some of the policies enacted by the BSP on the use of financial technology could have also influenced rural and cooperative banks service offerings[1].

[1] In December 2015, the BSP launched the National Retail Payment System (NRPS), a regulatory framework to develop an interconnected and interoperable Philippine electronic payment system (BSP, 2018). The NRPS made it significantly easier for financial institutions to process money transfers and digital payments, resulting in wider service offerings to clients. In 2017, the BSP issued Circular No. 950 which relaxed the rules on client verification for low-risk clients. The circular allowed banks to use electronic know-your-customer procedures, such as video calls and geocoding, to verify a client's identity (Lopez, 2017). The circular expanded the client base of banks especially those in rural regions of the country where, compared to urban centers, there are more unbanked individuals.

Figure 10. Non-Interest Income to Operating Income (%)



Source: BSP, n.d.a.

3 Literature Review and Hypotheses Development

Studies on the determinants of bank profitability are numerous, but they vary in the period and geographies covered, and the variables considered. Most researchers use firm-level data in their empirical tests.

Among the early studies, which covered the period before the 2008 financial crisis, were those of Bourke (1989), Molyneux and Thornton (1992), and Demirguc-Kunt and Huizinga (1999). Bourke (1989) used 1972 to 1981 data from various states and countries and found that concentration ratios had a positive effect on profitability, liquidity had a negative effect, and government ownership had an insignificant effect. Molyneux and Thornton (1992) tested a similar set of variables to Bourke (1989), but used a more recent data set from 1986 to 1989 and focused on European banks. They reached the same conclusion as Bourke (1989) on liquidity and industry concentration, but found that government ownership had a positive influence on profitability. Demirguc-Kunt and Huizinga (1999) used data for the period 1988 to 1995 and from 80 industrial and developing countries, and added more variables in their test, including GDP per capita which had a positive association with profitability.

Petria, Capraru, and Ihnatov (2015) determined that industry concentration, as measured by the Herfindahl-Hirschman Index (HHI), was a negative and significant determinant of profitability, in contrast to Molyneux and Thornton (1992). Both studies covered European banks but differed in the time frame considered, with Petria et al. (2015) using data from 2004 to 2011.

Studies also covered different geographic scope. Some studies covered individual countries: Philippines (Sufian & Chong, 2008); Greece (Athanasoglou, Brissimis, & Delis, 2006; Mamatzakis & Remoundos, 2008); Vietnam (Batten & Vinh Vo, 2019); Tunisia (Ben Naceur & Goaied, 2008); the United Kingdom (UK) (Kosmidou, Pasiouras, & Tanna, 2005; Saeed, 2014); Nigeria (Ozili, 2015); and Australia (Williams, 1998). Meanwhile, some other studies covered several countries and a wider geographic region: industrial and developing countries (Demirguc-Kunt & Huizinga, 1999); emerging markets (Kohlscheen, Murcia, & Contreras, 2018); European countries (Menicucci & Paolucci, 2016; Petria et al, 2015; Staikouras & Wood, 2004); and sub-Sharan Africa (Flamini, Mcdonald, & Schumacher, 2009)

There were also studies that, instead of using bank profitability as a dependent variable, used it as an independent (Bhati, De Zoysa, & Jitaree, 2019) or control (Cortez, Ramiento, & Sese, 2019) variable.

Existing studies varied in the factors evaluated to determine bank profitability. The studies also had different conclusions about these factors, which could be attributed to their use of different data sets covering different periods and geographic regions. However, a common theme across the studies

was the use of two classifications for the determinants of bank profitability – internal factors and external factors. Internal factors were those that management and directors could strongly influence, such as size, credit risk, income diversification, management efficiency, capitalization, and liquidity. These factors were found to have varying significance and relationship with profitability. External factors were those outside the control of management, and were generally related to the economic environment where the financial institutions operate. Management of certain external macroeconomic characteristics was usually in the domain of monetary authorities, such as the BSP. (See Appendix for a summary of some of the studies on the determinants of bank profitability.)

3.1 Internal Factors

3.1.1 Size

In this study, note that the size considered is not firm size but bank group size. A larger bank group size does not necessarily mean that firms included in the group are individually larger; it could also mean that there are more firms that contribute to a higher bank group asset value. The use of a different data set in this paper compared to prior studies limits the comparability of results. Nevertheless, these prior studies provide useful input for hypothesis generation.

Most of the existing literature has studied the effects of individual bank size on profitability, rather than bank group size, because of their use of firm-level data. These studies have conflicting results. Size positively affects profitability when firms can exploit economies of scale. Menicucci and Paolucci (2016) posit that as the firm increases in size, its economies of scale result in operational efficiency, thereby improving profits. Larger banks may also have access to markets which smaller banks do not. The positive effect of firm size can be seen in the study of Meslier, Tacneng, and Tarazi (2014) on Philippine banks and Ozili (2015) on Nigerian banks.

In consideration of the type of data used in this study, a negative relationship can be argued when the size is due to the number of banks within the group. More firms within a group may imply greater competition amongst them, which then may pressure profits downwards. However, a negative relationship can also be argued when the size of bank groups is due to larger firms comprising the group. Larger firms may experience diseconomies of scale (Menicucci & Paolucci, 2016) due to say increased bureaucratic costs. The negative effect of size is shown by Batten and Vinh Vo (2019) in a study of banks in Vietnam, and Kohlscheen et al. (2018) in a study of banks in emerging markets; but note that these studies use firm-level data.

It is difficult to predict the influence of bank group size on profitability given the different results found in existing studies and the type of data set used in this study. However, most of the studies which found the size to be significant have shown a positive association on account of economies of scale. Hence, it is hypothesized that bank group size has a positive relationship with bank group profitability. Given the type of data used in this study, testing this hypothesis implies testing the notion that bank groups are larger because of the presence of larger, individual firms that benefit from economies of scale, rather than an increased number of firms in the bank group.

H1: There is a positive relationship between size and bank group profitability.

3.1.2 Credit Risk

Credit risk refers to the quality of a bank's assets, which generally refer to a bank's loan portfolio (Basel Committee on Banking Supervision, 2000). Credit risk is the risk that a bank's borrowers are unable to satisfy their obligations based on agreed-upon terms (Basel Committee on Banking Supervision, 2000). Banks that have riskier loans in their portfolio have poorer quality assets. Higher credit risk leads to higher amounts of write-offs and higher market-determined costs of capital, which negatively impacts profitability. Bank credit for risk is a function of the strength and soundness of a bank's credit policies.

Studies have shown that bank credit risk is negatively related to profitability (Athanasoglou et al., 2008; Menicucci & Paolucci, 2016; Petria et al, 2015; Staikouras & Wood, 2004; Sufian & Chong, 2008; Tan & Floros, 2012). Given the results of these studies, it is hypothesized that:

H2: There is a negative relationship between credit risk and bank group profitability.

3.1.3 Income Diversification

The regular source of income for banks is interest from loans. Because of the influence of heavy regulations on credit risk in the banks' loan portfolios, interest income from loans is relatively stable, but often has a lower rate of return compared to other income sources. Other income for banks come from gains or losses on equity (inclusive of dividends and changes in fair value), service fees, gains or losses on foreign currency holdings, and miscellaneous income.

Meslier et al. (2014) show that income diversification is positively correlated with bank profitability. Improvements in profitability from income diversification can be explained by the higher margins from income sources outside a bank's regular lending activities. Other income sources seldom have returns lower than those of loans because management can shift their investment to loans if other income streams do not offer sufficient returns for a given level of risk. Hence, it is hypothesized that:

H3: There is a positive relationship between income diversification and bank group profitability.

3.1.4 Management Efficiency

Management efficiency refers to the ability of management to control operating expenses and increase productivity. A common hypothesis is that an increase in management efficiency leads to lower expenses, thus improving profitability. Workers utilizing assets more effectively or operating with lesser costs increase the bottom line.

Studies show that poor management efficiency is significantly and negatively linked to profitability (Athansoglou et al., 2006; Batten & Vinh Vo, 2019; Mamatzakis & Remoundos, 2003; Ozili, 2015; Sufian & Chong, 2008).

However, the notion of higher expenses leading to lower incomes is not absolutely seen in literature. First, some financial institutions may directly pass on their operating costs to customers with a significant margin, leading to improved profitability with higher operating costs. This is argued by Ben Naceur and Goaied (2008). Second, expense preference behavior – a phenomenon where managers make decisions that are contrary to the profit maximization objectives of shareholders – may also be present. When expense preference behavior is prevalent in a bank, high profits earned are appropriated in the form of higher payroll expenditures. This is the argument of Molyneux and Thornton (1992, p. 1177) when their results indicate staff expenses positively correlate with before-tax ROA.

Notwithstanding these two studies, literature suggests a significant negative link between poor management efficiency and profitability. Thus, it is hypothesized that:

H4: There is a negative relationship between poor management efficiency and bank group profitability.

3.1.5 Capitalization

Capitalization is the extent to which banks are funded by equity rather than debt. It is inversely related to leverage, which refers to the extent to which banks are debt-funded. Commercial and universal banks in the Philippines, under the regulation of the BSP, adopt the standards under Basel III[2], a set of reforms that, among other goals, strengthen the definition of regulatory capital and the ability of banks to overcome economic and financial distress (BSP, 2013). On the other hand, the other bank groups are covered by a separate risk-based capital adequacy system labelled by the BSP as the Basel 1.5 framework, a simplified version of Basel II that considers the simplicity of these banks' operations (Morales, 2020, para. 22).

Studies have found a positive relationship between capitalization and bank profitability (Bourke, 1989; Köster & Zimmerman, 2017; Ozili, 2015). Bourke (1989) posits that the relationship between capitalization and profitability can be explained by the lower cost of funds for better capitalized banks on. Köster and Zimmerman (2017) nuance the relationship as they find that higher capitalization leads to lower accounting-based bank risk measures and higher accounting-based profitability measures. However, market-based risk measures increase with increased capitalization, supporting the capital

[2] There are two classes of capital under Basel III – Tier 1 capital and Tier 2. Tier 1 capital consists of shareholders' equity and retained earnings, while Tier 2 capital includes revaluation reserves, loan-loss reserves, and undisclosed reserves (Nickolas, 2020).

signaling hypothesis. According to this hypothesis, higher capitalization is associated with banks that carry riskier investments because banks are required to maintain a capital ratio appropriate for the quality of their assets; that is, higher capital ratios are viewed by the market as banks carrying higher risk assets.

Most of the literature suggests that banks with higher capitalization have higher profits. In line with these findings, it is hypothesized that:

H5: There is a positive relationship between capitalization and bank group profitability.

3.1.6 Liquidity

Liquidity refers to the readiness of firms to meet short-term obligations (Hayes, 2021, para. 5). A bank short on liquidity is exposed to higher liquidity risk. Regulators are keen to manage the overall financial system's liquidity risk because it greatly affects the stability and resiliency of the macroeconomy.

Bordeleau and Graham (2010) found that profitability improved as liquidity increased, but only up to a certain extent. Once a liquidity threshold was reached, further holdings of liquid assets reduced profitability. The improvement in profitability with increased liquidity could be attributed to the "expected bankruptcy cost hypothesis" of Berger (1995), which argued that the reduction in liquidity risk as firms hold more liquid assets was viewed favorably by the funding markets, reducing capital costs. The negative effect of increasing liquidity on profitability was due to the opportunity cost of holding liquid assets, which normally had rates of return that were lower than other assets.

Results are ambiguous on the relationship between liquidity and profitability – showing both a negative relationship (Demirguc-Kunt & Huizinga, 1999; Molyneux & Thornton, 1999) as well as a positive relationship (Bourke, 1989; Bordeleau & Graham, 2010; Kohlscheen et al., 2018; Kosmidou et al., 2005; Saeed, 2014). The studies which found a positive association are generally those that used more recent data sets.

Although existing studies are ambiguous on the relationship between liquidity and profitability, recent research suggests a positive relationship. This leads to the following hypothesis:

H6: There is a positive relationship between liquidity and bank group profitability.

3.1.7 Interest Spread

Interest spread is the difference between asset yield/interest income and funding cost. It reflects a significant portion of a bank's markup. According to the loanable funds theory, the interaction between supply and demand in the credit market is what ultimately determines interest rates (Ohlin, 1937); that is, interest spread is likely to be greater when demand for credit exceeds supply.

A study by Rono, Simiyu, and Wachilonga (2014) showed that commercial banks in Kenya adopted different interest rate spreads to cover their costs and earn profit, and that there were significant correlations between interest spread and ROA, and interest spread and ROE. Similarly, a study by Musah, Gakpetor, and Anokye (2018a) found a positive relationship between interest spread and bank profitability in Ghana.

It is hypothesized then that:

H7: There is a positive relationship between interest spread and bank group profitability.

3.2 External Factors

3.2.1 Exchange Rate

There are a few studies on the impact of the exchange rate on bank profitability.

Simiyu and Ngile (2015) determined that for publicly listed Kenyan commercial banks, depreciation of the Kenya shilling against the US dollar resulted in improved profitability. They argued firstly that depreciation of the local currency benefited the local industry. From the point of view of importers of Kenyan products and services, the depreciation of the Kenyan shilling reduced prices and increased demand, leading to an overall increase in profitability of exporting industries. The profit benefits to local industry were then transmitted to finance providers, such as banks. They argued secondly that banks could take advantage of a depreciating local currency in a controlled macroeconomic policy environment, and strategically gain by holding foreign currency. Kohlhagen (1977) argued that devaluation of a certain country's currency would result in increased profitability

of foreign investments; that is, currency devaluation would lead to increased foreign investment inflows. Musah, Gakpetor, Nana, Kyei, and Akomeah (2018b) argued that increased foreign investment inflows lead to increased bank profitability. Foreign direct investment (FDI) inflows led to the creation of more credit and eventually higher profits.

The few studies on the impact of exchange rate on bank profitability have similar conclusions. Hence, it is hypothesized that:

H8: Depreciated values of domestic currency are associated with improved bank group profitability.

3.2.2 GDP Growth

GDP growth reflects the development of the overall economy. As numerous sectors of the economy experience greater activity, demand for credit and deposit facilities increases. This benefits the banking sector, and this may translate to higher profitability. Petria et al. (2015) and Meslier et al. (2014) show a positive relationship between GDP growth and bank profitability.

It is hypothesized then that:

H9: There is a positive relationship between GDP growth and bank group profitability.

3.2.3 Inflation

The effect of inflation on profitability is not clear in existing literature.

Bourke (1989) posited that the effect of inflation depended on the assumptions on the growth of wages and other non-interest costs relative to the inflation rate. Higher growth of wages and other non-interest costs relative to inflation produced a negative relationship between inflation and profitability. Perry (1992) argued that the effect depended on whether inflation was anticipated or unanticipated. If inflation was anticipated, it would positively affect profitability, because banks could take advantage of adjusting interest rates on loans. The upward adjustment of interest rates resulted in bank revenues that increased faster than costs. If inflation was unanticipated, banks would be unable to adjust interest rates accordingly, resulting in a faster increase of costs versus revenues resulting in reduced profitability. Tan and Floros (2012) found that inflation was positively related with bank profitability in China, explaining that this phenomenon was because the country had a transparent monetary policy regime where inflation could be anticipated, and banks could adjust interest rates on loans accordingly.

Studies on the impact of inflation on bank profitability have conclusions dependent on country-specific circumstances. Given the effective response of the BSP to the financial crisis in 2008 (Guinigundo, 2011) indicating its capability to wield monetary policy, it is hypothesized that:

H10: There is a positive relationship between inflation and bank group profitability.

3.2.4 Interest Rate

Higher interest rates are commonly associated with lower economic activity, as discussed by Seabury, 2020. He says central banks modify target interest rates in response to economic activity – increasing rates when the economy is overly strong and decreasing rates when the economy is weak (para. 1). When interest rates are high, lending activity stalls, resulting in lower bank profits (Seabury, 2020).

Arguments can be made to support the notion that higher interest rates lead to higher bank profits. A mechanism in which the interest rate affects bank profitability is through its influence on bank risk-taking behavior. Firstly, interest rates affect asset valuations. Low interest rates boost asset prices, particularly valuation of loan collateral. The lower interest rate affects banks' provisions for default and releases the risk budget of banks, encouraging them to take on more positions. Secondly, interest rates affect the incentives of asset managers. Asset managers are inclined to invest in higher return and higher risk instruments if yields on government become less attractive (Altunbas, Gambacorta, & Marques-Ibañez, 2010). Thirdly, interest rates affect the investor habit formation. Low interest rates result in economic expansion. In an environment of expansion, market participants become less risk-averse, and they consume at higher-than-normal levels. An easing monetary policy, which is associated with increased economic activity, decreases investors' risk aversion and increases their risk-taking behavior (Campbell & Cochrane, 1999).

Lower interest rates can result in lower bank profitability because of increased risk-taking behavior by banks. However, decreasing interest rates also result in decreasing profitability through other mechanisms. Borio, Gambacorta, and Hoffman (2017, p. 50) posit that lower interest rates reduce net interest margins through two channels – the "retail deposits endowment effect" and the "quantity' effect." The "retail deposits endowment effect," they say, is a result of banks pricing deposits as a markdown on market rates (which is influenced by policy rates); and because deposit rates cannot fall significantly below zero, low levels of market rates result in lower interest margins. The "quantity effect," they describe, happens when the volume of bank loans and deposits is affected by the level of market rates; and at low levels of interest rates, where demand for loans is relatively inelastic, increasing market rates lead to increased interest margins.

Higher interest rates are still primarily associated with lower bank profits, since it overall reduces the demand for loans from bank clients and increases the cost of capital of the bank. It is hypothesized then that:

H11: There is a negative relationship between interest rates and bank group profitability.

4 Data and Methodology

This study uses aggregated quarterly data of five bank groups in the Philippines – commercial, universal, thrift, cooperative, and rural banks. The years covered are from 2008 to 2019.

Financial statements and selected performance indicators of bank groups are taken from the online database of the BSP (BSP, n.d.a.). They are based on reportorial requirements provided by the BSP-supervised financial institutions. Foreign exchange rates, bank lending rates, and inflation data are all likewise taken from the online database of the BSP (BSP, n.d.b.; BSP, n.d.c.; BSP, n.d.d.). Quarterly GDP data come from the online database of the Philippine Statistics Authority (PSA, n.d.). Quarterly data for the year 2008 of the commercial bank group and the last quarter of 2019 for all bank groups are excluded because of incomplete information. Two hundred thirty-one bank-year observations are included in this study.

Bank profitability is usually measured by ROA and ROE. ROA is a measure of how well managers earn profits off bank resources (Golin & Delhaise, 2013, p. 269), while ROE is a measure of how well managers profit off shareholder's funds (Menicucci & Paolucci, 2016). Firms with different capital structures have the same ROA but different ROE, *ceteris paribus*. According to Rivard and Thomas (1997, p. 63-64), ROA is considered a better measure of profitability because it is not distorted by high equity multipliers, and represents a better measure of the ability of the firm to generate returns on its portfolio of assets. In this study, profitability is primarily proxied by the ROA, but ROE is also tested as a check for robustness.

Table 1 summarizes the variables used along with the hypothesized effects of the independent variables on profitability. Table 2 provides descriptive statistics for the variables studied.

Table 1. Summary of variables

Variable name	Variable	Description	Hypothesized relationship with profitability
Dependent			
Profitability	ROA_{it}	Computed as *annualized net profit/average total assets*. It is the return on average total assets of bank group *i* for quarter *t*.	NA
	ROE_{it}	Computed as *annualized net profit/average capital.* It is the return on average capital of bank group *i* for quarter *t*.	NA
Independent Internal factors			
Bank group size	$LNTA_{it}$	Natural logarithm (ln) of the average total assets of bank group *i* at the end of quarter *t*.	+

Variable name	Variable	Description	Hypothesized relationship with profitability
Credit risk	$LLTP_{it}$	Computed as *allowance for credit losses/total loan portfolio, gross*. It is the ratio of loan loss reserves to the total loan portfolio of bank group *i* at the end of quarter *t*. It describes the level of bank provisioning.	−
Liquidity	$CDep_{it}$	Computed as *cash & due from banks/ total deposits.* It is the ratio of cash and due from other banks to total deposits, and uses high-quality liquid assets as the group's basis of liquidity.	+
Income diversification	$NIIOI_{it}$	Computed as *annualized non-interest income/ annualized operating income*. It describes the relative contribution of non-interest income to the total operating income of bank group *i* for quarter *t*.	+
Management efficiency	$NIETA_{it}$	Computed as *annualized non-interest expenses/ average total assets*. It describes how much expenses are incurred for each currency unit of total assets for quarter *t* by bank group *i.*	−
Capitalization	$TCTA_{it}$	Computed as *total capital/total assets*. It describes the proportion of total assets funded by equity capital at the end of quarter *t* for bank group *i*.	+
Interest spread	int_spread_{it}	Difference between the earnings asset yield and funding cost for quarter *t* of bank group *i.*	+
External factors			
Exchange rate	$FXRATE_t$	Average nominal exchange rate of the Philippine peso(s) to US dollar for the three months composing quarter *t.*	+
GDP growth	$GDPg_t$	GDP growth for quarter *t* is computed as the percentage change of real GDP from the end of quarter *t-1* the end of quarter *t.*	+
Inflation	$INFL_t$	Inflation for quarter *t* is the average inflation of the three months composing quarter *t*.	+
Interest rate	$lrate_t$	Bank lending rate for quarter *t* is the average bank lending rate for the three months composing quarter *t.*	−

Table 2. Descriptive statistics of variables used

Variable	Mean	S.D.	Min	Max
ROA_{it}	1.47	1.68	-4.95	14.72
ROE_{it}	9.00	7.55	-51.03	22.44
$LNTA_{it}$	19.79	2.16	14.25	23.38
$LLTP_{it}$	4.96	2.80	1.59	15.83
$CDep_{it}$	27.08	7.46	11.35	44.66
$NIIOI_{it}$	30.08	7.22	17.36	46.84
$NIETA_{it}$	6.66	8.31	2.30	88.69
$TCTA_{it}$	14.68	3.09	6.52	21.74
int_spread_{it}	5.63	2.54	2.69	17.24
$FXRATE_t$	46.36	3.57	40.70	53.55
$GDPg_t$	2.41	11.40	-16.49	18.52
$INFL_t$	3.61	2.08	-0.07	10.27
$lrate_t$	6.51	1.16	5.43	9.43

+ Values for ROA_{it}, ROE_{it}, $LLTP_{it}$, $CDep_{it}$, $NIIOI_{it}$, $NIETA_{it}$, $TCTA_{it}$, int_spread_{it}, $GDPg_t$, $INFL_t$, and $lrate_t$ are expressed in percentage (%).

Considering the econometric model used by Sufian and Chong (2008), a linear regression model is developed to evaluate the effects of various possible determinants of bank profitability. The general econometric model takes on the following form:

$$P_{it} = \delta_0 + \alpha'(I_{it}) + \beta'(E_t) + \varepsilon_{it} \quad (1)$$

where P_{it} denotes the profitability of bank group i at quarter, t, δ_0 denotes the constant term, I_{it} denotes the internal factors of bank group i at quarter t, E_t denotes the external factors affecting all bank groups at quarter t, α' denotes the parameters of the internal factors, β' denotes the parameters of the external factors, and ε_{it} denotes the random variable disturbance term.

Considering the two common measures of profitability, two regression models are created – Model (2) and Model (3). These models expand on Model (1) and use the variables described in Table 1.

$$\begin{aligned} ROA_{it} = \delta_0 &+ \alpha_1(LNTA_{it}) + \alpha_2(LLTP_{it}) + \alpha_3(CDep_{it}) + \alpha_4(NIIOI_{it}) + \alpha_4(NIETA_{it}) \\ &+ \alpha_5(int\_spread_{it}) + \beta_1(FXRATE_t) + \beta_2(GDPg_t) + \beta_3(INFL_t) \\ &+ \beta_4(lrate_t) + \varepsilon_{it} \end{aligned} \quad (2)$$

$$\begin{aligned} ROE_{it} = \delta_0 &+ \alpha_1(LNTA_{it}) + \alpha_2(LLTP_{it}) + \alpha_3(CDep_{it}) + \alpha_4(NIIOI_{it}) + \alpha_4(NIETA_{it}) \\ &+ \alpha_5(int\_spread_{it}) + \beta_1(FXRATE_t) + \beta_2(GDPg_t) + \beta_3(INFL_t) \\ &+ \beta_4(lrate_t) + \varepsilon_{it} \end{aligned} \quad (3)$$

5 Results

Table 3 provides the correlation between the independent variables. The correlation values indicate that multicollinearity problems are not severe (Gujarati, 2000).

Table 3. Correlation matrix for independent variables

	$LNTA_{it}$	$LLTP_{it}$	$CDep_{it}$	$NIIOI_{it}$	$NIETA_{it}$	$TCTA_{it}$	int_spread_{itt}	$FXRATE_{it}$	$GDPg_{it}$	$INFL_{it}$	$lrate_{it}$
$LNTA_{it}$	1.00										
$LLTP_{it}$	-0.77	1.00									
$CDep_{it}$	-0.37	0.44	1.00								
$NIIOI_{it}$	-0.06	-0.03	0.25	1.00							
$NIETA_{it}$	-0.56	0.51	0.21	-0.10	1.00						
$TCTA_{it}$	-0.58	0.64	0.62	-0.15	0.31	1.00					
int_spread_{itt}	-0.62	0.58	0.24	-0.40	0.42	0.65	1.00				
$FXRATE_t$	0.09	0.02	-0.09	-0.38	-0.10	0.16	-0.02	1.00			
$GDPg_t$	0.00	-0.01	0.05	0.00	-0.01	-0.03	0.03	0.01	1.00		
$INFL_t$	-0.06	-0.13	-0.32	0.12	0.01	-0.19	0.03	0.04	0.01	1.00	
$lrate_t$	-0.07	-0.20	-0.41	0.16	-0.09	-0.22	0.04	0.08	-0.05	0.63	1.00

The least squares method to fixed effects (FE) model is used on the panel data. The Hausman test reveals that a FE model is more appropriate to use than a random effects model. The results of the regression, as well as that of the Hausman test, are reported in Table 4.

Table 4. Multivariate regression results

Model 1 – Dependent variable: ROA						
Variables	**Coefficient**	**S.E.**	**t-stat**	**p>|t|**		
constant	12.14	6.22	1.95	0.05	R^2	0.35
Internal factors					F-test value	23.19
LNTA	-1.07	0.30	-3.55	<0.01***	Prob > F	<0.01
LLTP	-0.44	0.04	-12.30	<0.01***	Hausman test:	
CDep	0.01	0.02	0.90	0.37	Chi Sq	66.01
NIIOI	0.07	0.01	5.51	<0.01***	Prob > Chi Sq	<0.01
NIETA	0.15	0.01	11.61	<0.01***		
TCTA	0.27	0.03	8.04	<0.01***		
int_spread	0.13	0.06	2.15	0.03**		
External						
FXRATE	0.13	0.02	5.74	<0.01***		
GDPg	0.00	0.00	0.03	0.97		
INFL	-0.01	0.03	-0.20	0.84		
lrate	-0.23	0.09	-2.64	<0.01***		
Model 2 – Dependent variable: ROE						
Variables	**Coefficient**	**S.E.**	**t-stat**	**p>|t|**		
constant	35.18	36.59	0.96	0.34	R^2	0.08
Internal					F-test value	35.49
LNTA	-4.66	1.77	-2.63	<0.01***	Prob > F	<0.01
LLTP	-3.22	0.21	-15.31	<0.01***	Hausman test:	
CDep	0.08	0.09	0.88	0.38	Chi Sq	87.09
NIIOI	0.58	0.07	7.79	<0.01***	Prob > Chi Sq	<0.01
NIETA	-0.02	0.08	-0.22	0.83		
TCTA	1.63	0.20	8.17	<0.01***		
int_spread	2.13	0.36	5.92	<0.01***		
External						
FXRATE	0.76	0.13	5.73	<0.01***		
GDPg	-0.01	0.03	-0.26	0.80		
INFL	-0.01	0.20	-0.06	0.95		
lrate	-1.32	0.52	-2.55	0.01***		

Notes: *** and ** denote two-tail significance at the 1% and 5% levels, respectively.

5.1 Effects of Internal Factors on Profitability

All internal factors tested significantly affect ROA, except for liquidity. Testing internal factors as determinants of ROE lead to a slightly different conclusion. All internal factors significantly affect ROE, except for liquidity and management efficiency.

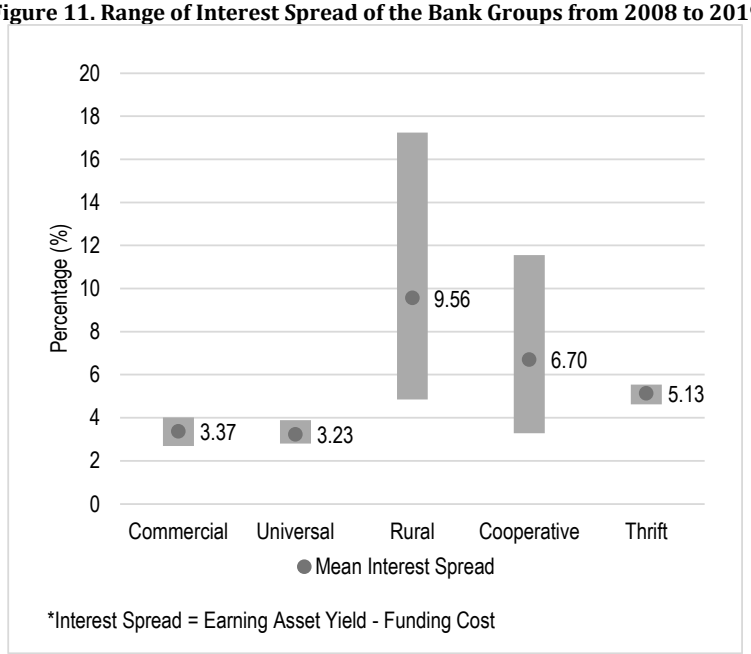
Bank group size has a negative relationship with both profit ratios – ROA and ROE. The relationship can be attributed to several reasons. One possible reason is that diseconomies of scale may prevail over economies of scale when bank size increases. Increased bureaucracy costs associated with larger firms may drive down profitability. However, the explanatory power of diseconomies of scale for lower profit ratios of large bank groups is weakened when the correlation between firm size and management efficiency is considered. Larger firms are associated with more negative NIETA values

(See Table 3); that is, as a bank group size increases, management becomes more efficient. Further tests on the relationship between firm size and management efficiency are required to establish their relationship more clearly. However, their correlation still supports the notion that larger bank groups are more efficient and do not exhibit diseconomies of scale.

Another possible reason for the negative relationship between size and profit ratios is that there may be more firms that increase the total assets of each bank group. More firms in a bank group lead to increased competition, which reduces the profitability of all competing firms. Note that the total asset figures used in the regression model represent aggregate figures for each bank group; each bank group is comprised of numerous firms. Larger bank groups are comprised of either more firms or larger firms or both. More firms in a bank group imply a larger supply of credit and greater competition. The negative relationship of size with profit ratios from the regression results indicates that the size of the bank groups is more easily explained by the existence of more firms than by the existence of larger firms. If the bank groups were comprised of fewer but larger firms, it is expected that profit ratios would be higher. However, this expectation is not supported by the regression results.

An assessment of the bank groups' interest spread provides more evidence of the existence of more firms – rather than the existence of larger firms – to explain the size of bank groups. Commercial and universal banks, two of the biggest bank groups, have significantly lower interest spreads compared to thrift, rural, and cooperative banks (See Figure11), implying that: (1) commercial and universal banks are under greater pressure to reduce interest rates charged to clients; and (2) rural, thrift, and cooperative banks have greater flexibility to increase markups. The downward pressure on markups in commercial and universal banks can be explained by competition within the groups and the nature of the banks' client base. Universal and commercial banks deal with much larger companies, which have better credit ratings and better access to capital. In fact, commercial and universal banks have the lowest loan loss provision ratios among the bank groups, providing evidence of the superior credit rating of their clients. Commercial and universal banks can reduce their credit risk because they have more resources, allowing them to establish better credit rating systems and hire more competent credit analysts. Because of the profile of their clients, commercial and universal banks attempt to reduce lending rates as much as possible to prevent their clients from switching to competitors. The other bank groups cater to a different profile of clients, which have greater credit risk, and hence these bank groups can charge higher rates, leading to greater interest spreads.

Figure 11. Range of Interest Spread of the Bank Groups from 2008 to 2019



Source: BSP, n.d.a.

Although credit risk positively correlates with interest spread, when other factors are controlled for, credit risk has a negative relationship with profit ratios, in accordance with the expected relationship. Bank groups that have higher credit risk recognize higher provisions for loan losses, and are subject to higher costs of capital, leading to lower incomes. These results are in line with the studies of Athanasoglou et al. (2008), Menicucci and Paolucci (2016), Staikouras and Wood (2004), and Sufian and Chong (2008).

Income diversification has a significant and positive relationship with ROA and ROE. The results are in line with the studies of Meslier et al. (2014) and Sufian and Chong (2008).

Regression results indicate that NIETA is positively and significantly related to ROA. NIETA is an inverse measure of management efficiency; that is a lower NIETA represents greater management efficiency. The expected relationship between NIETA and ROA is a negative one – the more efficient management, the greater the profits. However, a small positive relationship is found in the regression results, in line with the results of Ben Naceur and Goaied (2008) and Molyneux and Thornton (1992). This can be explained by how operating expenses are managed. If operating expenses factor into the interest rates charged to debtors or fees charged to clients, higher operating expenses do not automatically reduce profits and may even increase profits if a margin is earned from passing operating costs. Meanwhile, NIETA is not a significant determinant of ROE. ROE is more sensitive to capital structure than ROA, and the effects of small margins on operating expenses are outpaced by firm size, credit risk, interest spread, and capitalization. Interest charged to creditors can be mapped to operating expenses and funding costs, and thus the additional margins on operating expenses can accrue mostly to managers and debtors instead of equity holders. This lends evidence to the existence of expense preference behavior in Philippine bank groups.

Capitalization has a significant and positive relationship with ROA and ROE, supporting the hypothesis of Bourke (1989). Well-capitalized banks are seen by market participants as possessing lower risk, thereby reducing their cost of funds.

Lastly, interest spread has a significant and positive relationship with ROA and ROE – a similar finding to that of Rono et al. (2014) and Musah et al. (2018a).

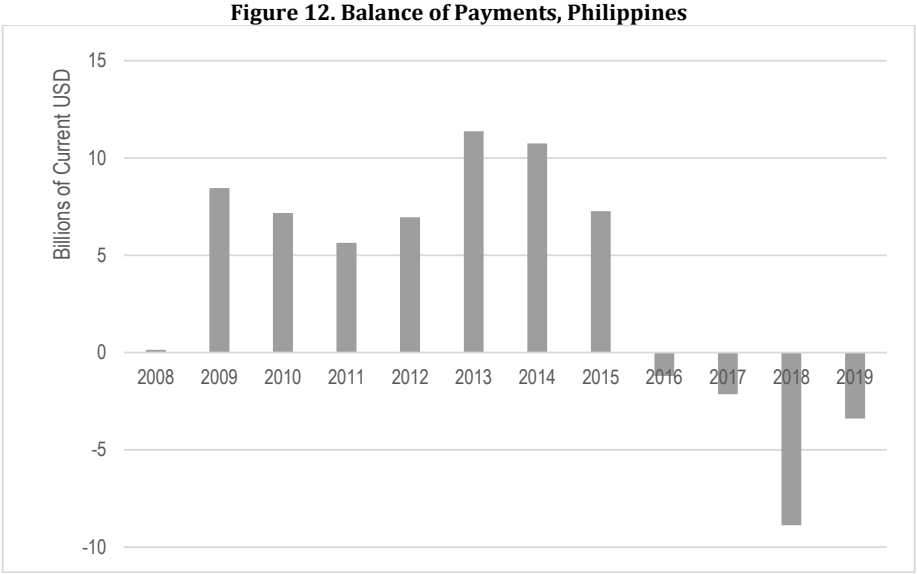
5.2 Effects of External Factors on Profitability

Of the four external factors tested, only the foreign exchange (+) and lending rates (-) are significant determinants of ROA and ROE.

The foreign exchange rate is a positive and significant determinant of both ROA and ROE. Higher foreign exchange rates (i.e., weaker domestic currencies) are associated with higher ROA and ROE. This finding supports the argument of Kohlhagen (1977) and Musah et al. (2018b) and suggests that Philippine banks overall benefit in periods when the purchasing power of domestic currency is weaker. According to Musah et al. (2018b), a depreciating local currency increases overall demand by importers of local products and services. Domestic firms profit off the increased demand, resulting in higher profits for the providers of credit to these firms, such as banks. Another channel in which banks can take advantage of a depreciating local currency in a controlled macroeconomic policy environment is through strategic holdings of foreign currency. Kohlhagen (1977) argues that currency devaluation leads to increased foreign investment inflows, and more FDI inflows lead to the creation of more credit and eventually higher bank profits, as argued by Musah et al. (2018b).

It is important to understand these results in the context of the Philippines' current account. For most of the period under this study, from 2008 to 2015, the Philippines had a positive balance of payments, while it had a negative balance of payment from 2016 to 2019 (See Figure 12).

Figure 12. Balance of Payments, Philippines



Source: The World Bank, n.d.a.

Lending rates are a negative and significant determinant of ROE and ROA; that is, higher lending rates are associated with lower ROE and ROA values. This agrees with the notion that higher interest rates have a depressive effect on economic activity, and thus reduce lending activity.

The results also show that inflation and GDP growth are not statistically significant determinants of bank profitability. This phenomenon can be explained by the stronger effect of lending rates on bank profits. In periods where GDP growth and inflation are increasing, the central bank's main policy response is to increase interest rates to avoid an overheated economy and excess inflation. When interest rates are increased, banks more quickly experience the depressive effects of the policy action than the positive effects of GDP growth and inflation because the banks rely on borrowing to address liquidity needs. In other words, interest rate changes affect the banking sector more quickly than they do other industries; thus, it is possible that while other industries experience economic growth, evidenced by GDP growth and inflation, banks experience lower profits. The statistical insignificance of GDP growth is consistent with the results of Kohlscheen et al. (2018) and Sufian and Chong (2008). Kohlscheen et al. (2018) argue that credit demand growth wins the "horse race" over GDP growth in determining bank profitability. Since credit demand is a better determinant of profitability, and because an increase in interest rates more immediately affects credit demand than GDP levels, interest rates have a stronger effect on bank profitability than GDP growth.

6 Conclusion

The stability of the financial sector is important for economic development. To continue its rapid economic growth, the Philippines needs supportive capital-providing institutions to encourage business activity. This study seeks to shed light on financial sector profitability – an important aspect of sector stability.

This study uses a fixed panel regression model to evaluate factors that may affect bank profitability in the Philippines. This study uses a panel of 231 quarterly observations from 2008 to 2019, covering the five bank groups in the Philippines – commercial, universal, rural, thrift, and cooperative bank groups. Results suggest that six of the seven internal factors tested are significant determinants of profitability as measured by ROA (size, credit risk, management efficiency, income diversification, capitalization, and interest spread). In contrast, only two of the four external factors tested – lending and foreign exchange rates – are significant determinants. The significance of the factors slightly changes when ROE is used as a profitability measure. Of the internal factors, only size, credit risk,

income diversification, capitalization, and interest spread remain significant, but of the external factors, exchange rates and lending rates remain significant.

Results of this study may be useful to policymakers, bank managers, and shareholders. For policymakers, knowledge of which factors affect bank profitability may be useful for evaluating policy choices. A practical implication for policymakers is that better management of interest and foreign exchange rates can be beneficial to the banking sector. Results of this study confirm the effect of policies on interest and exchange rates on economic activity, at least for the banking sector.

Bank management plays a significant role in the profitability of their enterprises because of the strong effect of the internal factors. Philippine banks must be aware of the competitive structure within the group they operate in and understand the different pricing strategies. Banks in a more competitive group are retrained from dictating interest rates because of the greater supply of credit, a finding in accordance with the loanable funds theory. Philippine banks must likewise be cautious in evaluating debtors because of the importance of maintaining a healthy level of credit risk. Banks are incentivized to diversify their income streams, possibly through increased efforts to derive revenues from portfolio management or underwriting services, for universal and commercial banks, because of the beneficial effect of income diversification on bank profits. Lastly, Philippine banks need to monitor their funding sources, ensuring that their levels of capitalization are acceptable.

Existing and potential shareholders can utilize the findings of this study as input to their investment decisions. Firm size, credit risk, income diversification, capitalization, interest spread, foreign exchange rate, and lending rate – factors that are significant determinants of ROE – can be obtained by investors from multiple sources. Risk-reward analysis can be augmented using the determinants as investment criteria.

A possible consideration for future studies is the testing of non-linear relationships between the variables. This can be applicable to variables with an unclear expected relationship with profitability, such as firm size, liquidity, and inflation. The relationship of these variables to profitability may be heavily affected by existing levels. In other words, they may exhibit diminishing or increasing returns to scale which are not tested in this study. Another possible consideration is the use of additional variables. Some studies (Athanasoglou et al., 2008; Bourke, 1989) have tested the level of market competition as an external variable, using concentration ratios or HHI as proxies. Future studies may also consider using alternative measures of the variables used in this study. For example, the proxy for credit risk in this study is the ratio of loan-loss reserves to the total loan portfolio (LLTP) because the ratio is more readily available and commonly used in other similar studies. A weakness of using this measure is it is determined by management. Thus, the reliability of LLTP as a proxy for credit risk is contingent on management integrity. Other data collection methods may be used in future studies that would seek out other measures not only of credit risk but also of the other variables.

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