Modeling the Determinants of Firm Value of Conventional Banks: Empirical Evidence from ASEAN-5 Countries

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Abstract: This study systematically investigated the determinants of the firm value of conventional banks in Southeast Asian countries. The panel data technique used was based on the data extracted from 63 commercial banks over nine years (2009–2017), with 567 observations. The empirical results revealed that capital adequacy and asset quality had a significant positive impact on the firm value of banks. Meanwhile, the liquid asset ratio and deposit ratio have a significant and positive effect on firm value, and the efficiency ratio had a significant and negative impact on firm value. On the other hand, the Herfindahl-Hirschman Index and bank size have a significant negative effect on firm value, whereas the firm value is not affected by diversification, gross domestic product (GDP) growth, and inflation rate. The study provides the implication that bank management and policymakers focus on the importance of macroeconomic policies. Priority should be given to policies that can control inflation and as well foster financial intermediation. Hence, further study should include government changes and industry concentration, oil shocks, and financial structure.

Keywords: firm value, bank-specific factors, macroeconomic factors, profitability, Southeast Asian

The critical financial functions of banks are diversified and play an exceptional role in driving economic funds to invest and support economic growth efficiently, thus resulting in the reduction of income inequality, particularly in developed and emerging countries such as Southeast Asia. Financial institutions play a vital role in the financial sector as they channel investment funds from being savers to spenders and play an important financial intermediary role in economic growth (Yanikkaya et al., 2018; Yao et al., 2018). Many studies have attempted to ascertain the significant profitability determinants of banks. Notably, it is critical to understand the determinants of firm value to identify the causes of unfavorable economic situations, such as the recession in the 1990s and the financial crisis of 2008. The efficient intermediation of banks is crucial for executing a country's monetary policy (Al-Harbi, 2019). Furthermore, the stability

and profitable banking sector facilitates continuous economic growth and extensively withstand negative shocks.

The changes in demand and supply have driven the recent development and fundamental shift in the banking sector. Surprisingly, the supply side is affected due to radical deregulation and the local banks' internationalization, whereas the demand side changed due to a tremendous increase in economic growth and consumerism (Yüksel et al., 2018). Moreover, the numerous financial deregulations, globalization, and innovations posed significant challenges to the market participants across developed, developing, and emerging economies (Menicucci & Paolucci, 2016; Guru et al., 2002). Technological advancements boost the electronic banking frontiers and internet banking that notably reshape the structure of the banks, customer interactions, inter-bank relationships, and internal operations (Petria et al., 2015; Guru et al., 2002). Besides, the proliferation of new financial services offered and the overlapping of the financial market between financial and non-financial intermediaries have a massive impact on the cost and revenues of banks in the sector. Therefore, the consequential shift from low to high-yielding deposits, triggered by lower yield loans and increased cost of funds, has imposed pressure on the firm value.

Given that commercial banks are facilitators of shareholders' wealth, they must improve their overall performance actively to provide improved customers and stakeholders' satisfaction. In order to achieve these objectives, several categories of performance management systems are often employed. As a result, there have been many novel approaches to manage and improve their performance in recent decades. Koller (1994), on the other hand, argued that although a lot of these performance management systems have thrived, many others have not. In addition, the literature review has shown that it is essential for bank managements to identify, select, and target the markets to compete in by defining the type of offered value, and thus, creating and supplying it would enhance its aim of value creation (Echebarria & Barrutia-Legarreta, 1999). In sum, financial institutions must generate excess return more than the cost of capital over a period of time when creating value (Favaro, 1998). Thus, the firm must earn a positive economic profit when the capital charge and related expenses are deducted from the generated revenue.

The research question addressed in this paper is on how firm value of banks is connected with what determinants. This paper reports how the firm value of conventional banks in the Southeast Asian countries are found to be affected by the criterion variables commonly identified in the literature as bank-related and macroeconomic factors: the criterion variables are suggested by prior empirical studies on banking performance. Hence, studying the determinants driving firm value would, in a broad sense, be useful to investors to ascribe the performance of banks as having a signal value for not just banks but also for other financial institutions. Although existing literature addressed the determinants of the bank's profitability, most studies still use the traditional accounting indicators such as return on asset (ROA) and return on equity (ROE) to measure the bank's profitability (Al-Harbi, 2019; Almaqtari et al., 2019; Yüksel et al., 2018; Sufian & Noor Mohamad Noor, 2012; Anbar & Alper, 2011). Our study is one of the few studies that empirically examined the key factors affecting the creation of banks value under the condition of enterprise value as a measurement tool.

Numerous scholars have focused on the issue of financial performance in the field of business and strategic management. Hence, this study aims to clarify and add evidence on possible differences between countries on the determinants of firm value to enrich the studies that combine the determinants of different natures while including less developed countries. In this context, the last four decades have observed conflict in the nexus investigated in several empirical research. Conversely, the deductions drawn from these studies have all been unclear and contradictory. Hence, this study addresses this gap by exploring the five Association of Southeast Asian Nations (ASEAN) countries and providing the determining factors specific to each of these countries. The remaining sections of this paper include section two, a contextual study of the ASEAN countries, and a literature review. Next, section three describes the research methodology, data, and variables, while section four analyses and presents the results, followed by a conclusion.

Theoretical Development

Seminal studies on the determinants of profitability in banks were investigated by Short (1979) and Bourke

(1989). Several theoretical and empirical studies were examined to ascertain the determinants of bank performance around two decades ago. Presently, great emphasis has been placed on research that helps banks remain financially stable, thus sustaining the financial economy. The factors that determine the firm value of banks are twins in nature and well-defined as a function of internal and external determinants. On the other hand, the bank-specific determinants of firm performance are classified as internal and tied to management decisions. Besides, the macroeconomic factor reflects the external factors that influence the banks' operation, which is often beyond the management's control. Understanding the dynamics of internal factors, external factors, and firm value nexus is useful to attain higher firm performance and crucial for banks' survival by enabling them to hedge against the severity of external shocks.

The instability in the profitability of banks across various regions has necessitated in-depth research in this field. The main significant objective of any business venture is to generate sufficient profitability, where commercial banks are not exempted. Notably, the banking industry has distinct characteristics that make them sensitive to the entire economy. To be precise, the stability of the financial system hinges on the banks' significant role as an intermediary institution. The lending activities of banks generate higher profitability through the difference in interest paid to the depositors and interest received from the borrower. Due to this competition, the likelihood of increased interest revenue is limited. Thus, more attention was recently given to the non-interest revenue received from services offered by banks. Therefore, research on banks' profitability determinants is vital for the bank managers, corporate investors, and the government so that they could evaluate the bank's performance, regulate the government's policies, and control investor's choices to achieve their goals (Pasiouras, & Kosmidou, 2007; Mamatzakis, & Remoundos, 2003).

Empirical Review of Literature

Empirical studies and cross-references on banks' profitability determinants are mostly found in developed economies, such as the United States of America (U.S.A.) and European countries (Berger,

1995; Chiorazzo & Milani, 2011; Petria et al., 2015; Menicucci & Paolucci, 2016; Yuksel et al., 2018). The seminal study by Bourke (1989) and Molyneux and Thornton (1992) focused on larger banks, different from other mixed studies with no definite conclusion. Provided that contemporary studies in the context of Southeast Asia are obviously lacking, this study aims to expand the existing theoretical and empirical literature in this specific perspective. However, there is mixed and inconsistent evidence regarding profitability determinants. Olweny and Shipho (2011) revealed that the significant factors that have the most influence on profitability are the bank characteristics, whereas other studies argued that the factors with lesser influence on profitability are the macroeconomic factors (Acaravci & Çalim, 2013).

On the other hand, Martani and Munaiseche (2010) deduced that macroeconomic factors significantly influence profitability. However, what is lacking in the empirical literature is the recognition of whether these significant factors could impact the firm value. Furthermore, Menicucci and Paolucci (2016) revealed that greater profitability increases a firm's cash-flow position and offers more flexibility, enabling excellent investments that improve productivity, competitiveness, and employment. Meanwhile, Sufian (2009) investigated the performance of commercial banks in Southeast Asia after the 1997 Asian financial crisis (1997–2004). He further stated that liquidity, non-interest income, and capital adequacy ratio positively influence bank profitability. In their study of U.S.A. banks before and during the financial crisis, Millon et al. (2010) reported that all the banks had suffered huge losses, with the largest banks being the most affected.

The study by Saif-Alyousfi (2019) examined the effect of bank-specific financial structure and macroeconomic factors on the shareholder value of banks in Gulf Cooperation Council (GCC) economies during 2000–2017. The author used static panel estimation techniques and two-step difference and system dynamic generalized method of moments estimator. The results showed that banks that are highly dependent on non-traditional activities have higher shareholder value. Higher opportunity cost, capitalization, and demand deposits result in a better bank shareholder value.

The study by Zhang and Aboud (2019) investigated the determinants of the economic value-added (EVA)

performance evaluation model for the Chinese banking industry. The results showed that credit risk, operational efficiency, and the degree of innovation are positively related to banks' EVA using the ordinary least square regression, whereas capital management has a negative impact on it. Bolarinwa et al. (2019) re-examined the determinants of bank profitability in Nigeria. Using system generalized method of moments, the results show that cost efficiency is a strong determinant of bank profitability in developing countries. Sun et al. (2017) examined the determinants driving bank performance of two types of banks in the Organisation of Islamic Countries. The study uses the dynamic generalized method of moments (GMM), and the result reveals that capital adequacy, management quality, and diversification determinants significantly explain the margins of both types of banks.

Yüksel et al. (2018) investigated the determinants of bank profitability in 13 post-Soviet countries. Using fixed-effects panel regression and the GMM, the results showed that loan amount, non-interest income, and economic growth are significant indicators of profitability. Moreover, the 2008 global mortgage crisis has a negative influence on bank profitability in post-Soviet countries.

Rahman et al. (2020) examined the effect of the bank-specific and macroeconomic determinants of profitability for the banking sector of Pakistan. The study applied GMM technique, and the result revealed that capital adequacy accelerates profitability, whereas the liquidity ratio, business mix indicators, interest rates, and industrial production deteriorate the bank profitability of the banking sector in Pakistan. The study by Le and Ngo (2020) investigated the determinants of bank profitability in 23 countries using the system GMM. The findings indicate that the number of bank cards issued, the number of automated teller machines (ATMs), and the number of point of sale (POS) terminals can improve bank profitability. Also, the findings showed the negative impact of market power on bank profitability, implying that competition improves bank profitability.

The study by Naceur (2003) on Tunisian banks' profitability determinants revealed that capital ratio, stock market development, and loans positively impact profitability. However, bank size negatively impacts profitability. Ultimately, macroeconomic factors, such as the GDP growth rates and inflation, had no impact on profitability. Furthermore, Scott and Arias' (2011)

findings on the top five U.S.A. banks indicated that the determinants of profitability in the banking industry include the annual percentage changes in the external per capita income, size, and capital ratio. Abreu and Mendes (2002) indicated that banks with an increased equity level to assets ratio performed better. They also stated that banks with higher capital ratios enjoyed lower funding costs due to their lower credit risks. The empirical results also presented that efficiency positively influenced bank profitability.

Moreover, Nikolaus' (2015) study on firm performance determinants in Indonesia and the Netherlands in non-financial sectors revealed that leverage strongly predicts Tobin's q in both countries. Further empirical findings showed that ownership concentration in Indonesia and the Netherlands disclosed differing results, with a higher concentration result of better performance in Indonesia. Despite these results, the nexus between concentration and performance is negative compared to firms with dispersed ownership in the Netherlands. The seemingly high rate of inflation has a negative effect on Indonesia. In contrast, the moderate rise in the inflation rate leads to a positive but not significant effect in the Netherlands.

On top of that, Al-Harbi (2019) investigated the profitability determinants of banks in the Organisation of Islamic Countries (OIC). The results revealed that foreign ownership, equity, off-balance-sheet activities, GDP growth, and concentration spur bank performance. Additionally, the empirical findings showed that loans and banking sector development could improve bank profitability in the long run, whereas the deposits reduced profitability. On another note, market capitalization, GDP per capita, and bank size do not affect profitability. Yanikkaya et al. (2018) studied the difference in profitability among conventional and Islamic banks. The empirical results presented that capital adequacy and the deposit had no relationship with bank profitability. Nevertheless, the study also revealed a significant positive nexus between foreign ownership and profitability, whereas GDP growth has a significant negative effect on profitability.

Methods

This study used the panel data approach, a special technique that includes the cross-sectional and time-

series dimensions of the dataset. This approach offers extra informative data with less variation, less collinearity, and greatly reduces the problems arising from missing data. We use different techniques in the study for estimation (fixed and random effects), and the decision to choose the model which best fitted our data was based on the specific econometric test. The panel data models have been commonly used in recent times because they capture the effect of both the individual and time factors of the sample and controls the heterogeneity problem of the data. The sources of the data, variable definition, and model specification were discussed in this section.

Data Sources and Definition of Variables

The financial data between 2009–2017 of 63 conventional banks across five Southeast Asian countries (Singapore, Thailand, Indonesia, Malaysia, and the Philippines) were used in this study, with 567 balanced panel observations. Additionally, Thomson Reuters was used as a source for the bank-specific dataset, whereas the World Bank Indicator provides access to the macroeconomic variables used in this study.

Firm Value

The enterprise value was used to ascertain the total firm value and undervalued firms. The proxy gauged the entire market value instead of only the equity value, and thus all ownership interests and asset claims from equity and debt were incorporated (Lifland, 2011). The firm value is measured using the enterprise value to earnings before interest, taxes, depreciation, and amortization ratio (EV/EBITDA; Bhullar & Bhatnagar 2013). Enterprise value is measured as equity value + total debt– cash & cash equivalents + preferred stock + minority interest.

Determinants of Firm Value

The bank management decision and policy objective determine the bank-specific factors, including the deposits, efficiency, capital adequacy, bank size, asset quality, liquidity, and income-expenditure structure, as discussed below.

The natural log of total assets was used to gauge bank size and capture the impact of economies or diseconomies of scale. The economies of scale results in a positive relationship, whereas the diseconomies of scale leads to a negative relationship. Generally, in

the empirical literature, the effect of bank size on firm value is expected to be positive. Besides, the equity to total asset ratio was used to measure the capital adequacy ratio. Banks with a higher capital ratio could absorb losses and handle significant risk exposure as a higher ratio implies a lesser need for external funding. The financial theory argues that a negative nexus between profitability and high capital ratio suggests the safer and well-capitalized a bank is. However, implying that taking a lesser risk produces lower returns. This study measured asset quality via loans to total asset ratio, and theoretical evidence argued that an increase in the number of loans increases bank income. When banks take on an unacceptable level of risk, it leads to lower asset quality and increases the risk of the loan portfolio (Menicucci & Paolucci, 2016). Hence, there is theoretical evidence to expect a positive or negative impact of a loan on firm value.

One of the main causes of failure in banks is a shortage in the supply of liquidity, signifying that the greater the liquid asset ratio, the more liquid the bank is. When banks hold liquid assets, they have an opportunity cost of higher return. Therefore, banks often mitigate risk during times of instability by choosing to increase their cash holding and then improving firm value. Liquidity is proxy by the liquid asset to total asset ratio. On the other hand, the deposit is the primary source of funds for banks, offering the lowest and cheapest cost of funds. Some theoretical literature argued the presence of a positive nexus between deposits and firm performance (Menicucci & Paolucci, 2016; Saona, 2016), proving that deposits increase profitability. The firm value is adversely affected due to the high rate of cost to income ratio that results from inefficient management of operational cost. This ratio indicates how successfully banks manage their assets and liabilities internally by hedging against their risk dimensions. Thus, theorists have argued that higher expenses reduce bank profitability (Kosmidou et al., 2006; Moualhi et al., 2016; Trijillo-Ponce, 2013).

The income sourced from non-interest-bearing assets, such as fees and commission, usually generates more income for the banks. Moreover, previous studies have found a positive nexus between diversification and profitability (Chiorazzo et al., 2008), whereas several studies found a negative relation (Tan & Floros, 2012). The proponents of the structure-conduct hypothesis (SCP) debated that banks generate more

profit through market power mainly from collusion behavior in lending and borrowing interest rates (Djalilov & Piesse, 2016; Sinha & Sharma, 2016; Yao et al., 2018). The market power is measured by the sum of the square of market shares of each bank.

Macroeconomics Factors

Banks tend to monitor operational activities, which include borrowings, lending, and investments in the course of economic growth (Dumicic & Ridzak, 2013; Sinha & Sharma, 2016). The increase in economic efficiency could trigger possible economic development, resulting in improved firm performance. According to well-documented literature, the nexus between GDP growth and firm value is expected to be positive. Previous studies argued that the low level of the inflation rate and a stable price suggest positive economic growth and are likely to improve the firm value. The change in the consumer price index is used to gauge the inflation rate (Zarrouk et al., 2016; Lee et al., 2015). Hence, Table 1 summarises the measurement of variables.

Model Specification

Previous studies on bank performance have employed pooled, fixed, and random effect models (Narwal & Pathneja, 2016; Almaqtari et al., 2018). This study used the fixed and random effect models, fulfilling the assumptions necessary to run a linear regression. It is perceived that the use of the models could obtain a more comparable and consistent estimate for the parameter models. Hence, the baseline model is illustrated below:

$$
\begin{aligned}
FV_{it} =\ & \beta_0 + \beta_1 CAR_{it} + \beta_2 LTA_{it} + \beta_3 LATA_{it} + \\
& \beta_4 DP_{it} + \beta_5 EFF_{it} + \beta_6 DV_{it} + \beta_7 HHI_{it} + \\
& \beta_8 SIZE_{it} + \beta_9 GDP_{it} + \beta_{10} INFL_{it} + \varepsilon_{i,t}
\end{aligned} \quad (1)
$$

Table 1

Definitions of Firm Value Determinants Variables

Variables	Details	References
Firm value	EV/EBITDA Enterprise value is measured as equity value + total debt– cash & cash equivalents + preferred stock + minority interest.	Lifland (2011), Bhullar & Bhatnagar (2013)
Capital adequacy	Equity/Total assets	Petria et al., 2015; Yao et al., 2018; Olalere et al., 2017
Asset quality	Loans/Total assets	Menicucci & Paolucci, 2016; Anbar & Alper, 2011; Olalere et al., 2017
Liquidity	Liquid asset/Total assets	Bourke, 1989; Zarrouk et al., 2016; Trujillo-Ponce, 2013
Deposits	Deposits/Total assets	Saona, 2016; Tariq et al., 2014
Efficiency	Total operating expenses/Total asset	Zarrouk et al., 2016; Trijillo-Ponce, 2013
Diversification	Non-interest income/gross income	Chiorazzo et al., 2008; Tan & Floros, 2012
Herfindahl-Hirschman Index	Sum of the square of market shares of each bank	Djalilov & Piesse, 2016; Sinha & Sharma, 2016
Bank size	Natural log of total assets	Demirguc-Kunt & Huizinga, 1999; Saona, 2016; Anbar & Alper, 2011
GDP Growth rate	GDP growth rate	Dumicic & Ridzak, 2013; Sinha & Sharma, 2016
Inflation	Change in the consumer price index	Zarrouk et al., 2016; Lee et al., 2015; Ćurak et al., 2013

Results

The empirical findings from Equation (1) are analyzed and discussed in this section, offering an analytical explanation of the results vis-à-vis conventional banks in the Southeast Asian countries.

Descriptive Statistics

The firm value had an average value of 10%, as illustrated in Table 2. Meanwhile, the capital adequacy had an average value of 12% with a deviation of 8.5% from the mean, implying that the banks have an average adequate capital to absorb shock. Also, the asset quality had an average value of 68%, suggesting that the banks have an averagely high asset quality impairment. In addition, the average liquid asset ratio was 9%, whereas the average deposit ratio was 73%. This finding implied that most banks attract a high deposit rate. The efficiency ratio recorded an average value of 6%. The diversification showed a mean of 20%, whereas the Herfindahl-Hirschman Index (i.e., market power) had a mean of 1.4%, inferring that the banking sector had less monopoly. The bank size presented a mean of approximately $21 million, whereas the GDP growth rate had an average of 5%. The inflation rate presented a mean of 3% for the period of study.

Panel Data Model (ASEAN countries)

The panel data model estimation was employed in this study to control individual heterogeneity and multicollinearity. The model had no multicollinearity and autocorrelation problem, whereas the heteroskedasticity problem is treated with the "robust" option.

The empirical findings of the model in Table 3 show that the capital adequacy ratio has a significant positive impact on the firm value of Southeast Asian countries. This finding suggests that a 1% improvement in capital adequacy could improve the firm value by approximately 87%. The loan to asset ratio has a significant positive effect on the firm value, suggesting that a 1% rise in loan to asset ratio increases the firm value by approximately 86%.

On top of that, the liquidity significantly and positively influences the firm value, thus indicating a 1% improvement in the liquid asset ratio could increase the firm value by 17%. The rise in the liquid asset ratio could spur the bank to channel unused funds towards profitable investment, resulting in a substantial increase in the firm value (Du et al., 2016). Similarly, the deposit has a significant positive impact on the firm value, suggesting that a 1% improvement in the deposit ratio could increase the firm value by 123%.

Table 2

Descriptive Statistics

Vars.	No.	Mean	SD
FV	567	0.10204	0.15336
CAR	567	0.12130	0.08531
LTA	567	0.68412	0.14985
LATA	567	0.09121	0.07291
DP	567	0.73335	0.12099
EFF	567	0.06270	0.03676
DV	567	0.20498	0.13385
HHI	567	0.01471	0.02849
SIZE	567	0.21524	0.02882
GDP	567	0.04945	0.02165
INFL	567	0.03237	0.01992

FV = Firm value. CAR = Capital adequacy. LTA = Asset ratio. LATA = Liquidity. DP = Deposit.
EFF = Efficiency. DV = Diversification. HHI= Herfindahl-Hirschman Index. SIZE = bank size.
GDP = GDP growth. INFL = inflation rate.

Table 3

Result of the Model

Var.	Model	
	Coef.	t-stats
CAR	.8768	2.00**
LTA	.8647	2.22**
LATA	.1703	4.91***
DP	1.2350	3.93***
EFF	-2.7974	-1.66*
DV	-.3142	-0.92
HHI	-3.7924	-3.03***
SIZE	-.3351	-1.95**
GDP	-.0205	-1.13
INFL	.6066	0.47
_cons	-.7673	-1.27
R-sqd	0.2157	
Prob>F	0.0000	
Obs.	567	
Hausman	0.3725 (REM)	

Note: ***, **, * at 1%, 5% and 10% level.

The operational efficiency ratio significantly and negatively impacts the firm value, implying that a decline in efficiency improves the value of the firm by 279%. However, the diversification ratio has a negative but insignificant effect on the firm value. Consequently, the Herfindahl-Hirschman Index also has a significant negative influence on the firm value. This result suggests that with a 1% decrease in market power, the firm value improves by 379%.

Besides, bank size has a significant negative impact on the firm value, signifying that a decline in the bank size by 1% could improve the firm value by 33%. This result is consistent with the study of Sinha and Sharma (2016) and Gul et al. (2011) but contradicts the findings of Alper and Anbar (2011) and Chowdhury and Rasid (2017). The GDP has a negative but insignificant effect on firm value. On another note, the inflation rate has a positive insignificant nexus with the firm value.

Estimation of Results by Country

This section analyzed the determinants of the firm value of banks by country to determine whether the sign and significance of the coefficients differ based on bank sectors or countries. The models where the Hausman test estimates are significant represents that the p-value of chi-square is less than 0.05, signifying that the fixed effect model (FEM) was used. Conversely, the null hypothesis is accepted when the p-value is not significant, implying that the random effect model (REM) was used. Multicollinearity problem is absent among the variables in the empirical model.

Furthermore, when there is an autocorrelation problem in the model but no heteroskedasticity problem, the autocorrelation problem is treated using the panel corrected standard error (PCSE). In contrast, in the absence of an autocorrelation problem, the "robust option" is employed to cope with a potential heteroskedasticity problem in the model. Lastly, the potential heteroskedasticity and autocorrelation problems in the model are treated using the Discroll-Kraay standard error. The results for all the tests conducted and the model analyzed are summarised in Table 4.

Table 4
Panel Data Analysis by Country

Variables	Malaysia		Singapore		Indonesia		Philippines		Thailand	
	Coef.	t-stats	Coef.	t-stats	Coef.	t-stats	Coef.	t-stats	Coef.	t-stats
CAR	.0354	3.15***	-2.835	-2.04**	.0166	0.74	-0847	-2.27**	-.4170	-2.10**
LTA	.1060	2.64***	.4930	2.58***	-.0689	-2.51**	.0502	0.68	-.1115	-1.46
LATA	-.2187	-4.26***	.4891	1.41	-.0731	-1.95*	-1.2824	-3.44***	-.0013	-1.65*
DP	-.3282	-6.52***	-.7993	-2.66***	-.3006	-3.56***	-.5331	-4.23***	-.2073	-4.91***
EFF	-.5444	-3.60***	4.2884	2.81***	.7014	2.74**	-4.5616	-5.19***	.3332	0.43
DV	-.1120	-3.59***	-.4221	-2.88***	-.0045	-0.40	-.0454	-2.01*	-.2032	-2.01**
HHI	.0322	6.14***	.4981	2.94***	1.3933	3.85***	3.9191	1.83	-.0172	-2.19**
SIZE	-.9074	-5.80***	-.3338	-0.42	-.2804	-0.34	-2.0386	-4.40***	2.4618	1.86*
GDP	-.0215	-0.29	.2290**	2.42**	.8135	0.85	.0267	1.67	.0067	1.68*
INFL	.3911	1.75*	-.0114	-2.01**	-.0164	-2.41**	-1.0260	-1.23	-.2375	-0.98
_cons	-.9328	-3.85***	-.0850	-0.06	-.3060	-0.92	-2.5787	-4.38***	-.4312	-1.42
R-sqd	0.6298		0.7358		0.1634		0.3908		0.5712	
Prob>F	0.0000		0.0019		0.0000		0.0002		0.0000	
Obs.	90		27		225		126		99	
Hausman Test	FEM – 44.07 0.0000***		REM – 1.66 0.9983		REM – 1.34 0.9994		FEM – 24.09 0.0074***		REM – 1.98 0.9968	
Auto-correlation	Reject – 19.615 Ho 0.0016***		Accept – 1.461 Ho 0.3503		Reject – 4.198 Ho 0.0517**		Reject – 115.324 Ho 0.0000***		Accept – 2.348 Ho 0.1565	
Heteroskedasticity	Accept – 0.81 Ho 0.3673		Accept – 0.30 Ho 0.5825		Reject – 18.13 Ho 0.0000***		Reject – 136.78 Ho 0.0000***		Reject – 106.66 Ho 0.0000***	

Note: ***, **, * at 1%, 5% and 10% level.

The model for Malaysian banks specifies that the capital adequacy ratio, asset quality, Herfindahl-Hirschman Index, and the inflation rate have a significant and positive impact on the firm value. This finding suggests that with a 1% improvement in capital adequacy, the firm value of Malaysian banks increases by around 3%. Also, the asset quality is positively significant and related to the firm value. This finding suggests that with a 1% improvement in asset quality, the firm value of Malaysian banks increases by around 10%. The Herfindahl-Hirschman Index significantly and positively affects the firm value, indicating that a 1% improvement in the Herfindahl-Hirschman Index increases the firm value of Malaysian banks by around 3%. Besides, the inflation rate has a significant and positive impact on the firm value, implying that a 1% improvement in inflation increases the firm value of Malaysian banks by around 39%, respectively.

Conversely, the result shows that the bank's liquid asset, deposit, efficiency, diversification, and size has a significant negative effect on the firm value. The implication is that a 1% decrease in the liquid asset results in a 21% increase in the firm value. Also, a 1% decrease in the deposit leads to a 32% increase in the firm value. Additionally, a 1% decrease in efficiency ratio results in a 54% increase in the firm value. On the other hand, a 1% decrease in the diversification of Malaysian banks results in an 11% increase in firm value, whereas a 1% decrease in bank size leads to a 90% increase in the firm value of Malaysian banks. However, the GDP has no significant effect on firm value.

The capital adequacy, deposit, diversification, and inflation rate had a significant negative effect on the firm value at Singaporean banks. This finding signifies that a 1% decrease in capital adequacy, deposit, diversification, and inflation rate could improve the firm value. The asset quality, efficiency, Herfindahl-Hirschman Index, and GDP significantly and positively affect the firm value. Improvement in these factors improves the firm value of Singaporean banks. Nonetheless, the size and liquid asset have no significant impact on the firm value.

The asset quality, liquid asset ratio (LATA), deposit, and inflation rate have a significant negative effect on the firm value at Indonesian banks. Meanwhile, efficiency and Herfindahl-Hirschman Index have a significant positive effect on the firm value. Notably, capital adequacy, diversification, bank size, and GDP

growth are found to be insignificant. The model for Filipino banks indicated that the capital adequacy, liquid asset, deposit, efficiency, diversification, and bank size showed a significant negative effect on the firm value of banks. This effect suggests that a 1% decrease in capital adequacy, liquid asset, deposit, efficiency, diversification, and bank size improves the firm value of Filipino banks. Nevertheless, asset quality, Herfindahl-Hirschman Index, GDP growth, and inflation are insignificant.

The model for Thai commercial banks indicated that capital adequacy, liquid asset, deposit, diversification, and Herfindahl-Hirschman Index had a significant negative effect on the firm value, implying that a decrease in these factors leads to an improvement in the firm value of banks. However, bank size and GDP growth had a significant negative effect on firm value. This is in line with theoretical expectations that economies of scale and favorable economic growth expand the bank horizon in asset and customer base, resulting in improved firm value. On the contrary, asset quality, efficiency, and inflation ratio had no significant effect on the firm value of Thai banks.

Discussion

The empirical findings of the model for the aggregate data show that the capital adequacy ratio has a significant positive impact on the firm value. The inference is that the increase in capital adequacy leads to an improvement in the firm value. Studies also argued that an increase in capital ratio enables the banks to access cheap funds and pursue business opportunities, giving them the capacity to absorb any unanticipated losses. This finding is consistent with that of (Olalere et al., 2017; Sufian, 2012; Flamini et al., 2009). The loan to asset ratio has a significant positive effect on the firm value. The result is consistent with the finding of (Menicucci & Paolucci, 2016; Sufian, 2012). The result suggests that improvement in asset quality increases the firm value, where the advocate of this theory argued that an increase in the number of loans contributes to improved firm value. However, as lending activities could be sensitive to economic conditions, an increase in this ratio could result in a high cost of funds.

On top of that, liquidity significantly and positively influences the firm value. The findings imply that the

rise in liquid asset ratio could spur the bank to channel unused funds towards profitable investment, resulting in a substantial increase in the firm value (Du et al., 2016). Similarly, the deposit has a significant positive impact on the firm value. A plausible reason for this result is that the deposit provides banks with the cheapest and acts as a primary source of funds, so when there is a continuous demand for loans, the firm value improves evidently. These results align with the studies by Saona (2016) and Menicucci and Paolucci (2016).

The operational efficiency ratio significantly and negatively impacts the firm value. The result suggests that banks that focus and control operating costs would naturally reduce the operating expenses ratio, resulting in higher firm value. Several studies also revealed that high operating costs would more likely lead to high-interest spread (Dietrich & Wanzenried, 2014). However, the diversification ratio has a negative but insignificant effect on the firm value. Consequently, the Herfindahl-Hirschman Index also has a significant negative influence on the firm value. This suggests that a significant reduction in the market power will increase the firm value of banks. This finding is contrary to the study by Djalilov and Piesse (2016), Sinha and Sharma (2016), and Trujillo-Ponce (2013).

Besides, bank size has a significant negative impact on the firm value. This result is consistent with the study of Sinha and Sharma (2016), Gul et al. (2011) but contradicts the findings of Alper and Anbar (2011) and Chowdhury and Rasid (2017). GDP has a negative but insignificant effect on firm value, implying that it plays no significant role in the firm value of banks. On another note, the inflation rate has a positive insignificant nexus with the firm value.

The model for Malaysian banks specifies that the capital adequacy ratio, asset quality, Herfindahl-Hirschman Index, and the inflation rate have a significant and positive impact on the firm value. Studies argued that an increase in capital ratio enables the banks to access cheap funds and pursue business opportunities, providing banks the ability to absorb any unanticipated losses. This result is consistent with Sufian (2012) and Flamini et al. (2009). Also, the asset quality is positively significant and related to the firm value, consistent with Menicucci and Paolucci (2016). The result suggests that an increase in the number of loanable funds contributes to improved firm value. However, an increase in this ratio could lead to a high cost of funds because lending activities could

be sensitive to economic conditions. The Herfindahl-Hirschman Index significantly and positively affects the firm value. This result implies that a higher concentration of banks results in improved firm value. This finding is parallel with the study by Djalilov and Piesse (2016), Sinha and Sharma (2016), and Trujillo-Ponce (2013). Besides, the inflation rate has a significant and positive impact on the firm value.

Conversely, the result shows that the bank's liquid asset has a significant negative effect on the firm value. The findings imply that the reduction in the liquid asset ratio could spur the bank to channel unused funds towards profitable investment, resulting in a substantial increase in the firm value. This result differs from Saona (2016) and Menicucci and Paolucci (2016), who discovered a positive nexus. A deposit has a significant negative effect on the firm value. A plausible reason for this result is that even though the deposit provides banks with the cheapest and acts as a primary source of funds when there is a decrease in recurrent non-performing loans, the firm value improves evidently. The result is consistent with the study of Dietrich and Wanzenried (2014). The efficiency has a significant negative effect on the firm value. The result implies that a decrease in operational cost will improve the firm value of Malaysian banks. Diversification has a significant negative effect on the firm value. The result suggests that less diversification will increase the firm value. The size has a significant negative effect on the firm value. However, the GDP has no significant effect on firm value.

The capital adequacy, deposit, diversification, and inflation rate had a significant negative effect on the firm value at Singaporean banks. This finding signifies that a decrease in capital adequacy, deposit, diversification, and inflation rate could improve the firm value. The asset quality, efficiency, Herfindahl-Hirschman Index, and GDP significantly and positively affect the firm value. Improvement in these factors improves the firm value of Singaporean banks. Nonetheless, bank size and liquid assets have no significant impact on the firm value.

Asset quality, liquid asset ratio (LATA), deposit, and the inflation rate have a significant negative effect on the firm value at Indonesian banks. Meanwhile, efficiency and Herfindahl-Hirschman Index have a significant positive effect on the firm value. Notably, capital adequacy, diversification, bank size, and GDP growth are found to be insignificant. The model for

Filipino banks indicated that the capital adequacy, liquid asset, deposit, efficiency, diversification, and bank size showed a significant negative effect on the firm value of banks. This effect suggests that a 1% decrease in capital adequacy, liquid asset, deposit, efficiency, diversification, and bank size improves the firm value of Filipino banks. Nevertheless, asset quality, Herfindahl-Hirschman Index, GDP growth, and inflation are insignificant.

The model for Thai commercial banks indicated capital adequacy, liquid asset, deposit, diversification, and Herfindahl-Hirschman Index had a significant negative effect on the firm value, implying that a decrease in these factors leads to an improvement in the firm value of banks. However, bank size and GDP growth had a significant negative effect on firm value. This is in line with theoretical expectations that economies of scale and favorable economic growth expand the bank horizon in asset and customer base, resulting in improved firm value. On the contrary, asset quality, efficiency, and inflation ratio had no significant effect on the firm value of Thai banks.

Conclusion

The significant changes in the banking sector because the financial crises are pressing issues that affect the bank performance across all Southeast Asian countries. The increase in the trend of balance sheet indicators such as loans and deposits, borrowings, and the deteriorating state in profitability ratio has raised significant concern in banks recently. Panel data estimation was used in the study covering 9-years and cross-sections of 63 commercial banks from five Southeast Asian countries. To our best knowledge, this study offered insightful findings different from prior studies that solely focused on specific countries. Thus, these findings are valuable for corporate investors, managers, analysts, and researchers.

The empirical findings confirmed the critical findings of extant literature that use profitability measures to no small extent. Moreover, the contribution of this study stems from long-term measurement proxy use that is scant in recent studies. Also, this study identified the essential factors that influence the firm of *ASEAN-5* banks. The key factors include capital adequacy, loans, liquid asset ratio, deposits ratio, efficiency, Herfindahl-Hirschman Index, and

bank size. Other factors, such as diversification, GDP growth, and inflation rate, do not affect the firm value. The study provided several significant implications for policymakers and argued that as a financial intermediary, the firm value of banks is also a vital source of equity. There is a multiplier effect of safer banks when the profits realized are reinvested, and hence, high returns could stimulate financial stability.

The empirical evidence showed that excessive lending could be reduced by increasingly sharing credit information, leading to a decrease in net interest income, thus enhancing the expansion of credit and financial intermediation. Furthermore, the high rate of deposit suggests that it contributes to the mainstream firm value, implying the need for banks to direct the use of customer deposits for firm value improvement. Therefore, the policymakers should focus on implementing a policy to reduce and balance operating costs with operating revenue and improve the portfolio of equity financing over debt financing. It is also imperative that bank management and policymakers focus on the importance of macroeconomic policies. Hence, priority should be given to policies that could reduce and control inflation and foster financial intermediation. The limitation identified is that this study should not be generalized to any other sectors outside the ASEAN-5 banking context. Finally, despite the implications of this study, further study should explore the firm value comparison in Southeast Asian countries before and after the crisis. Also, further study should include government changes and industry concentration, oil shocks, and financial structure (market capitalization over GDP) implications, among others.

Declaration of ownership:

This report is our original work.

Conflict of interest:

None.

Ethical clearance:

This study was approved by our institution.

References

Abreu, M., Mendes, V. (2002). *Commercial bank interest margins and profitability: Evidence from E.U. countries.* University of Porto Working Paper Series, No. 122.

Acaravci, S. K., & Çalim, A. E. (2013). Turkish banking sector's profitability factors. *International Journal of Economics and Financial Issues*, *3*(1), 27–41.

Al-Harbi, A. (2019). The determinants of conventional banks profitability in developing and underdeveloped OIC countries. *Journal of Economics, Finance and Administrative Science, 24*(47), 4–28. https://doi.org/10.1108/JEFAS-05-2018-0043.

Almaqtari, F. A., Al-Homaidi, E. A., Tabash, M. I., & Farhan, N. H. (2019). The determinants of profitability of Indian commercial banks: A panel data approach. *International Journal of Finance & Economics*, *24*(1), 168–185. https://doi.org/10.1002/ijfe.1655

Anbar, A., & Alper, D. (2011). Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey. *Business and Economics Research Journal*, *2*(2), 139–152. Retrieved from https://ssrn.com/abstract=1831345

Berger, A. N. (1995). The relationship between capital and earnings in banking. *Journal of Money, Credit and Banking*, *27*(2), 432–456. https://www.jstor.org/stable/2077877

Bhullar, P. S., & Bhatnagar, D. (2013). Theoretical framework EV vs. stock price – A better measurement of firm value. *International Journal of Commerce, Business and Management*, *2*(6), 335–343.

Bolarinwa, S. T., Obembe, O. B., & Olaniyi, C. (2019). Re-examining the determinants of bank profitability in Nigeria. *Journal of Economic Studies*, *46*(3), 633–651.

Bourke, P. (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. *Journal of Banking & Finance*, *13*(1), 65–79. https://doi.org/10.1016/0378-4266(89)90020-4

Chiorazzo, V., & Milani, C. (2011). The impact of taxation on bank profits: Evidence from EU banks. *Journal of Banking & Finance*, *35*(12), 3202–3212. https://doi.org/10.1016/j.jbankfin.2011.05.002

Chiorazzo, V., Milani, C., & Salvini, F. (2008). Income diversification and bank performance: Evidence from Italian banks. *Journal of Financial Services Research, 33*, 181–203. https://doi.org/10.1007/s10693-008-0029-4.

Chowdhury, M. A. F., & Rasid, M. E. S. M. (2017). Determinants of performance of Islamic banks in GCC countries: Dynamic GMM approach. In D. S. Mutum, M. M. Butt, & M. Rashid (Eds.), *Advances in Islamic finance, marketing, and management* (pp. 49–80). Emerald Group Publishing Limited. https://doi.org/10.1108/978-1-78635-899-820161005

Ćurak, M., Pepur, S., & Poposki, K. (2013). Determinants of non-performing loans–evidence from Southeastern banking systems. *Banks & Bank System, 8*(1), 45–54.

Demirguc-Kunt, A., & Huizinga, H. (1999). Determinants of commercial bank interest margins and profitability: Some international evidence. *The World Bank Economic Review, 13*(2), 379–408. https://doi.org/10.1093/wber/13.2.379

Dietrich, A., & Wanzenried, G. (2014). The determinants of commercial banking profitability in low-, middle-, and high-income countries. *The Quarterly Review of Economics and Finance*, *54*(3), 337–354. https://doi.org/10.1016/j.qref.2014.03.001

Djalilov, K., & Piesse, J. (2016). Determinants of bank profitability in transition countries: What matters most? *Research in International Business and Finance*, *38*, 69–82. https://doi.org/10.1016/j.ribaf.2016.03.015

Du, J., Wu, F., & Liang, X. (2016). Corporate liquidity and firm value: Evidence from China's listed firms. *SHS Web of Conferences, 24*. https://doi.org/10.1051/shsconf/20162401013

Dumicic, M., & Ridzak, T. (2013). Determinants of banks' net interest margin in Central and Eastern Europe. *Financial Theory and Practice*, *37*(1), 1–30. https://doi.org/10.3326/fintp.37.1.1

Echebarria, M. C., & Barrutia-Legarreta, J. M. (1999). Creation of value in banking system]. *Informacion-Comercial-Espanola-Revista-de-Economia,* (5), 113-136.

Favaro, K. (1998). Put value creation first (if you want to grow your way to greatness). *Marakon*. http://www.favaro.net/publications/pvcf/ken_pvcf.html

Gul, S., Irshad, F., & Zaman, K. (2011). Factors affecting bank profitability in Pakistan. *Romanian Economic Journal*, *14*(39), 61–87.

Guru, B. K., Staunton, J., & Balashanmugam, B. (2002). Determinants of commercial bank profitability in Malaysia. *Journal of Money, Credit, and Banking*, *17*(1), 69–82.

Koller, T. (1994). What is value-based management? *The McKinsey Quarterly*, (3), 87–102.

Kosmidou, K., Sailesh, T., & Fotios, P. (2006). *Determinants of profitability of domestic U.K. commercial banks panel evidence from the period 1995–2002.* In *Money Macro and Finance (MMF) Research Group Conference*, 45, 1-27.

Le, T. D., & Ngo, T. (2020). The determinants of bank profitability: A cross-country analysis. *Central Bank Review*, *20*, 65–73.

Lee, J. Y., Glenn G., DeBruine, M. and Cha, I. (2015). *Measuring the Impact of the 2007–2009 Financial Crisis on the Performance and Profitability of U.S. Regional Banks*. Advances in Management Accounting. Bingley: Emerald Group Publishing Limited, 25, 181–206. https://doi.org/10.1108/S1474-787120150000025005

Lifland, S. (2011). The impact of working capital efficiencies on the enterprise value option: Empirical analysis from the energy sector. *Advances in Business Research*, *2*(1), 57–70.

Mamatzakis, E., & Remoundos, P. (2003). Determinants of Greek commercial banks, 1989-2000. *Spoudai*, *53*(1), 84–94. http://sro.sussex.ac.uk/id/eprint/40071

Martani, D., & Munaiseche, R. R. (2010). Factors affecting profitability of multi-finance company in Indonesia. *China-USA Business Review*, *9*(5), 53–62.

Menicucci, E., & Paolucci, G. (2016). The determinants of bank profitability: Empirical evidence from European banking sector. *Journal of Financial Reporting and Accounting*, *14*(1), 86–115. https://doi.org/10.1108/JFRA-05-2015-0060

Molyneux, P., & Thornton, J. (1992). Determinants of European bank profitability: A note. *Journal of Banking & Finance*, *16*(6), 1173–1178. https://doi.org/10.1016/0378-4266(92)90065-8

Naceur, S. (2003). The determinants of the Tunisian banking industry profitability: Panel evidence. *Frontiers in Finance and Economics*, *5*(1), 106–130.

Narwal, K. P., & Pathneja, S. (2016). Effect of bank-specific and governance-specific variables on the productivity and profitability of banks. *International Journal of Productivity and Performance Management*, *65*(8), 1057-1074. https://doi.org/10.1108/IJPPM-09-2015-0130

Nikolaus, V. (2015). *Determinants of firm financial performance in Indonesia and Netherlands: A comparison*. Paper presented at the 5th IBA Bachelor Thesis Conference, Enschede, The Netherlands. http://purl.utwente.nl/essays/67399

Olalere, O. E., Omar, W. A. W. B., & Kamil, S. (2017). Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Nigeria. *International Journal of Finance & Banking Studies*, *6*(1), 25–38. http://www.ssbfnet.com/ojs/index.php/ijfbs/article/view/35

Olweny, T., & Shipho, T. M. (2011). Effects of banking sectoral factors on the profitability of commercial banks in Kenya. *Economics and Finance Review, 1*(5), 01–30.

Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, *21*(2), 222–237. https://doi.org/10.1016/j.ribaf.2006.03.007

Petria, N., Capraru, B., & Ihnatov, I. (2015). Determinants of banks' profitability: Evidence from EU 27 banking systems. *Procedia Economics and Finance*, *20*, 518–524. https://doi.org/10.1016/S2212-5671(15)00104-5

Rahman, H. U., Yousaf, M. W., & Tabassum, N. (2020). Bank-specific and macroeconomic determinants of profitability: A revisit of Pakistani banking sector under dynamic panel data approach. *International Journal of Financial Studies*, *8*(3), 42. https://doi.org/10.3390/ijfs8030042

Saif-Alyousfi, A. Y. (2019). Determinants of bank shareholder value: Evidence from GCC countries. *International Journal of Managerial Finance*, *16*(2), 224–252.

Saona, P. (2016). Intra-and extra-bank determinants of Latin American banks' profitability. *International Review of Economics & Finance*, *45*, 197–214. https://doi.org/10.1016/j.iref.2016.06.004

Scott, J. W., & Arias, J. C. (2011). Banking profitability determinants. *Business Intelligence Journal*, *4*(2), 209-–230.

Short, B. K. (1979). The relation between commercial bank profit rates and banking concentration in Canada, Western Europe, and Japan. *Journal of Banking & Finance*, *3*(3), 209–219. https://doi.org/10.1016/0378-4266(79)90016-5

Sinha, P., & Sharma, S. (2016). Determinants of bank profits and its persistence in Indian banks: A study in a dynamic panel data framework. *International Journal of System Assurance Engineering and Management*, *7*(1), 35–46. https://doi.org/10.1007/s13198-015-0388-9

Sufian, F. (2009). Determinants of bank efficiency during unstable macroeconomic environment: Empirical evidence from Malaysia. *Research in international business and finance*, *23*(1), 54-77.

Sufian, F., & Noor Mohamad Noor, M. A. (2012). Determinants of bank performance in a developing economy: Does bank origins matters? *Global Business Review*, *13*(1), 1–23. https://doi.org/10.1177/097215091101300101

Sun, P. H., Mohamad, S., & Ariff, M. (2017). Determinants driving bank performance: A comparison of two types of banks in the OIC. *Pacific-Basin Finance Journal*, *42*, 193–203.

Tan, Y., & Floros, C. (2012). Bank profitability and inflation: The case of China. *Journal of Economic Studies*, *39*(6), 675–696. https://doi.org/10.1108/01443581211274610

Tariq, W., Usman, M., Mir, H. Z., Aman, I., & Ali, I. (2014). Determinants of commercial banks profitability: Empirical evidence from Pakistan. *International Journal of Accounting and Financial Reporting*, *4*(2), 1–22.

Trujillo-Ponce, A. (2013). What determines the profitability of banks? Evidence from Spain. *Accounting & Finance*, *53*(2), 561–586. https://doi.org/10.1111/j.1467-629X.2011.00466.x

Yanikkaya, H., Gumus, N., & Pabuccu, Y. U. (2018). How profitability differs between conventional and Islamic banks: A dynamic panel data approach. *Pacific-Basin Finance Journal*, *48*, 99–111. https://doi.org/10.1016/j.pacfin.2018.01.006

Yao, H., Haris, M., & Tariq, G. (2018). Profitability determinants of financial institutions: Evidence from

banks in Pakistan. *International Journal of Financial Studies*, *6*(2). https://doi.org/10.3390/ijfs6020053

Yüksel, S., Mukhtarov, S., Mammadov, E., & Özsarı, M. (2018). Determinants of profitability in the banking sector: An analysis of post-Soviet countries. *Economies*, *6*(3). https://doi.org/10.3390/economies6030041

Zarrouk, H., Jedidia, K. B & Moualhi, M. (2016). Is Islamic bank profitability driven by same forces as conventional banks? *International Journal of Islamic and Middle Eastern Finance and Management*, 9(1), 46-66. https://doi.org/10.1108/IMEFM-12-2014-0120

Zhang, J., & Aboud, A. (2019). Determinants of economic value added (EVA) in Chinese listed banks. *Asian Review of Accounting*, *27*(4), 595–613.