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COVID-19 and Regional Solutions for Mitigating the Risk of Small and Medium-sized Enterprise Finance in ASEAN Member States

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Abstract: *One of the significant challenges small and medium-sized enterprises (SMEs) face is their difficulty in accessing finance. One way to reduce the risk of lending to SMEs is through the credit guarantee scheme (CGS). In this paper, we assess the determining factors of the optimal credit guarantee ratio for the banking industry in four Association of Southeast Asian Nations (ASEAN) countries, namely Indonesia, Singapore, the Philippines, and Malaysia, by employing statistical techniques and econometric models. The empirical findings prove that the loan default ratio (nonperforming loan/loan, or NPL/L) is the optimal credit guarantee ratio's main determining factor. Our empirical findings confirm that in the ASEAN region, to help SMEs survive in the emergency stage of COVID-19, the credit guarantee ratio needs to be increased. Gradually, when moving to the new normal stage, the ratio needs to be lessened. Our results show that the credit guarantee ratio should vary for different countries based on the macroeconomic climate and also for each bank or, in other words, for banks with similar financial soundness. Governments should give a higher guarantee ratio to sound banks, whilst less healthy banks should receive a lower guarantee ratio. The study also provides policy recommendations for establishing a regional credit guarantee scheme in ASEAN to promote regional economic cooperation at the SME level for greater economic integration.*

Keywords: Small and Medium-Sized Enterprises (SME) finance; credit guarantee scheme; ASEAN; COVID-19
JEL Classification: H81; G21

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1. Introduction

Small and medium-sized enterprises (SMEs) have been considered a major driver of job creation, gross domestic product (GDP) growth, and the economic agility of a country in regional and global competition. The importance of SMEs in contributing to the macroeconomic variables of countries has been proved by many scholars, such as Ayyagari, Demirguc-Kunt, and Maksimovicet (2011) and Wang (2016). This significant role of SMEs in economic aspects draws the considerable attention of policymakers to these kinds of enterprises. According to the Asian Development Bank (2018), SMEs are like an economy's blood in Asia, particularly in developing countries. Yoshino and Taghizadeh-Hesary (2018) emphasised the major role of SMEs in Asian economies, comprising 96% of all Asian businesses.

SMEs are the backbone of Association of Southeast Asian Nations (ASEAN) economies. They are essential drivers and contributors to the GDP of ASEAN economies, accounting for more than 95%–99% of all business establishments and generating between 51% and 97% of employment in many ASEAN Member States. SMEs' contribution to GDP is generally significant, at about 23%–58%, and their contribution to exports is in the range of 10%–30%. They also enable the greater integration of women and youth into the economy (ASEAN Secretariat, 2020). SMEs are a potential sector for promoting regional cooperation in the ASEAN region.

One of the significant challenges SMEs face is their difficulty in accessing finance. Many banks prefer to allocate their resources to large enterprises rather than SMEs. The reason is that large enterprises have a lower risk of default, and their financial statements are clear. However, SMEs are riskier mainly from a lender's point of view, and there is information asymmetry between lenders (banks) and borrowers (SMEs). SMEs usually do not have clear accounting information or audited books. Hence, banks are reluctant to lend to SMEs.

The issue of access to stable finance is of great importance for such enterprises. According to Yoshino and Taghizadeh-Hesary (2019), this issue is one of the fundamental factors in SMEs' survival in different countries, especially in developing Asian countries. In the ASEAN region, like in the rest of Asia, the total loans to SMEs are smaller than the desired level of SME loan demand, and SMEs

have more difficulties compared to large enterprises in accessing finance (Harvie, Narjoko, and Oum, 2013; Yoshino and Taghizadeh-Hesary, 2015; Taghizadeh-Hesary et al., 2019, 2020).

Many scholars have addressed SMEs' credit constraints (e.g. see Beck et al. [2006], Musso and Schiavo [2008], Holton, Lawless, and McCannet [2014], and Carbó-Valverde, Rodríguez-Fernández, and Udell [2016]) in a way that these kinds of enterprises face more substantial credit limitations than larger enterprises. SMEs' difficulties in accessing finance have been more severe amid the outbreak of the COVID-19 pandemic and the economic downturns, and this has been stressed by several scholars. Shafi, Liu, and Ren (2020) found that the outbreak of COVID-19 severely affected SMEs and led to financial disruption for these economic enterprises. This result has also been proved by other scholars, such as Donthu and Gustafsson (2020), Waiho et al. (2020), Juergensen, Guimon, and Narula (2020), Etemad (2020), and Mohammed et al. (2021).

In response to the challenge of providing stable finance to SMEs in the COVID-19 era, one of the most useful state instruments is establishing and expanding credit guarantee schemes (CGSs). Credit guarantee corporations are public or private entities that guarantee a certain level of bank lending to SMEs. In the presence of a credit guarantee, private banks are more willing to lend to SMEs. According to the definition of CGSs proposed by the World Bank (2015), this instrument reduces credit risk and unlocks finance for SMEs. The advantages of CGSs in supporting SMEs have been shown by many existing studies, such as Zecchini and Ventura (2009), Cowling (2010), Beck et al. (2010), Liang et al. (2017), and Martin-Garcia and Santor (2019). The main goal of CGSs is to solve the credit constraints of SMEs, and this could particularly useful during the pandemic.

The core purpose of this paper is to investigate and model CGSs in selected ASEAN countries using an econometric technique and calculate the optimal credit guarantee ratio for each group of banks in selected ASEAN Member States. Therefore, this study seeks to make three main contributions to the existing literature. Firstly, we study the relationship between the credit guarantee ratio and different groups of variables (macroeconomic variables, bank-level variables, and

SME policy variables). Secondly, we develop a vector autoregressive (VAR) model and run an impulse-response function analysis to present some highlights for the loan default ratio response to macroeconomic and bank-level impulses in three response stages to COVID-19: (i) the emergency stage, (ii), the exit stage, and (iii) the new normal stage. Thirdly we calculate the optimal credit guarantee ratio for each group of banks for selected ASEAN Member States for each of the three response stages to COVID-19.

The rest of this study is organised as follows. Section 2 reviews the existing literature. Section 3 explains the theoretical background. In section 4, the data description and model specification are represented. Section 5 presents the empirical results, and finally, the paper is concluded in the last section.

2. Literature Review

In this section, the existing literature is represented by two different strands. The first strand contains studies related to various impacts of COVID-19 on SMEs, and the second strand of literature focuses on SMEs' credit constraints.

The unprecedented COVID-19 pandemic has had various impacts on SMEs. A vast number of studies have drawn their attention to these impacts. The OECD (2020) explores the different impacts of the pandemic on SMEs and concludes that this pandemic influences SMEs through the supply and demand sides. In addition, it may disrupt SMEs' performance through financial markets and reductions in credit. Shafi et al. (2020) emphasised that SMEs are not ready to face such disruptions, and they are the primary victims of the pandemic. Donthu and Gustafsson (2020) argued that COVID-19 is an obstacle to expanding and improving SMEs' economic performance with unstable cash flows. Juergensen et al. (2020) pointed out the short-run and long-run effects of the pandemic on manufacturing SMEs. They find that the logistics aspects have been more seriously influenced by the pandemic in the short run, whilst structural challenges would be considered a major long-run effect of COVID-19 on SMEs. Etemad (2020) declared that the pandemic increases future uncertainties for SMEs, and can lead to severe issues with their future plans and performance. Lu et al. (2020) sought to explore

the different impacts of COVID-19 on 4,807 SMEs in China. Their findings indicate that the major impact is the rise in cash flow risk for these enterprises, causing bankruptcy and financial crisis for SMEs.

Similarly, Fairlie (2020) examined the impacts on SMEs in the US and found that the pandemic seriously reduced these enterprises' activities. Consequently, SMEs are now in an inappropriate financial situation. Rowan and Galanakis (2020) showed that supply chains and financial aspects are two major factors that enormously influenced enterprises during the pandemic. Kuckertz et al. (2020) investigated the impacts of the COVID-19 on start-ups as important SMEs. They highlighted that the pandemic causes entrepreneurial crises in countries due to cashflow challenges.

The second strand of literature considers the financial challenges of SMEs. Chong, Lu, and Ongena (2013) used a survey on SME financing in China to find out whether concentration in the local banking market affects credit availability. Their study results show that lower market concentration alleviates the financing constraints of SMEs. The widespread presence of joint-stock banks has a larger effect on alleviating these constraints than the presence of city commercial banks, whilst state-owned banks have a smaller effect. Bartoli et al. (2013) studied SME financing in Italy and pointed out that an appropriate lending technology is needed to lend to credit-rationed SMEs. Casey and O'Toole (2014) argue that SMEs in the European Union face a cashflow challenge that needs better bank lending performance.

Wang (2016) investigated the major barriers to SMEs' growth and concluded that financing is a severe challenge for SMEs in developing nations. The main reason for this challenge is the high cost of borrowing. Cornille et al. (2019) found out that credit constraints have considerable effects on SMEs' employment, and compensation plans should be carried out to save jobs during exogenous shocks. Cao and Leung (2020) argue that credit constraints, such as cash flow constraints, are a common challenge amongst small firms, and, therefore, governments should plan to support small firms.

Hossain, Yoshino, and Taghizadeh-Hesary (2020) used firm-level survey data on 1,084 SMEs in Bangladesh and found that bank branch expansion at an optimal level improves SMEs' access to finance performance.

We reviewed the existing literature in relation to the role of regional financing schemes of SMEs in promoting regional cooperation. The policy handbook of the OECD (2013) declared that a regional financing scheme should minimise political interference and maximise efficiency by making regional branches of the guarantee fund. Mullineux and Murinde (2014) studied the policies for the development of enterprises in Africa. One of their suggested policies was introducing state-backed loan guarantee schemes to solve rural and urban SMEs' financial problems. A report from the Vienna Initiative Working Group (2014) indicates that regional credit guarantees may be more appropriate for SMEs' regional development. The report proves it this Central, Eastern, and Southeastern European SMEs. However, Gouveia, Henriques, and Costa (2020) declared that many regional fund programmes are inefficient, and they need to enhance their execution capacity to be useful for SMEs.

According to the aforementioned literature, the determining factors of the optimal credit guarantee ratio for the banking industry in the four ASEAN countries, especially during the crisis and the post-crisis period, have not received attention yet. Therefore, this paper has novelty and considers this literature gap and tries to fill it.

3. Theoretical Background

In this section, a theoretical approach is provided, inspired by Yoshino and Taghizadeh-Hesary (2019), to consider the optimal credit guarantee ratio for SME loans. Based on their study, the credit guarantee ratio depends on three factors: (i) the financial soundness of the lender (bank), (ii) the economic climate, and (iii) the policies of the state for supporting SMEs. Economically, sound lenders may access a higher guarantee ratio, whilst a more appropriate economic climate and government policies may lead to a lower guarantee ratio. Adopting the same credit guarantee ratio for all banks will result in moral hazard. To model the guarantee ratio, we can start with the policy objective function:

$$U = w_1(L - L^*)^2 + w_2(\rho - \rho^*)^2 \qquad (1)$$

In Eq. (1), U denotes the state objective function. Furthermore, ($L - L^*$) and ($\rho - \rho^*$) are two different state objectives: stabilising the quantity of loans and setting the nonperforming loans (NPL) ratio to the desired ratio. w_1 and w_2 represent the policy weights related to L and ρ.

In Eq. (1), the desired level of the loan (L^*) equals $(1 + \alpha)L_{t-1}$, where α shows the desired growth rate of the loans received by SMEs and is determined by the state. Moreover, in this equation, ρ^* denotes the desired level of the nonperforming loans ratio (NPL/L) and is obtained by the equation $\rho^* = (1 - b)\rho_{t-1}$, where b indicates changes in the desired NPL ratio. The SME loan demand function can be written as follows:

$$L = l_0 - l_1 r_L + l_2 Y^e \qquad (2)$$

Here, l_0 shows the fixed SME demand for loans. r_L and Y^e represent the interest rate of the loans (with the coefficient l_1) and the expected GDP, respectively.

A bank can maximise its profit through the following equations:

$$Max \quad \pi = r_L(L)L - \rho(g.Y.P_L.P_s.M.Z)L - r_D D - C(L.D) \qquad (3)$$

$$\text{Subject to} \qquad (1 - \rho)L + \rho L = D + A \qquad (4)$$

In Eq. (3), g, Y, P_L , $P_S, M,$ and Z show the credit guarantee ratio, GDP, land price, stock price, money supply, and financial profile of the bank, respectively. Furthermore, r_D represents the interest rate to deposits, whilst D and C indicate deposits and the bank's operational costs.

Considering Eq. (2), the interest rate on loans to SMEs can be written as Eq (5):

$$r_L = \frac{1}{l_1}(l_0 + l_2 Y^e - L) \qquad (5)$$

To calculate the equilibrium loan amount, the first-order condition (FOC) of Eq (5) should be considered as Eq. (6):

$$\frac{\partial \pi}{\partial L} = -\frac{1}{l_1} \times L + \left[\frac{1}{l_1}(l_0 + l_2 Y^e - L\right] - \rho(\ g.Y.P_L.P_s.M.Z) - \ r_D\text{-}\rho_L = 0 \qquad (6)$$

Writing Eq. (6) for L shows the equilibrium loan amount for SMEs:

$$L = \frac{l_1}{2}\left[\frac{l_0}{l_1} + \frac{l_2}{l_1} Y^e - \rho(\ g.Y.P_L.P_s.M.Z) - \ r_D - \rho'_L\right] = 0 \qquad (7)$$

Next, the FOC of Eq. (5) with regards to the optimal credit guarantee ratio (g) can be obtained with the following equation:

$$\frac{\partial U}{\partial g} = 2w_1\ (L - L^*) \cdot \frac{\partial L}{\partial g} + 2w_2(\rho - \rho^*) \cdot \frac{\partial \rho}{\partial g}$$
$$= 2w_1\ (L - L^*) \cdot (\frac{-l_1}{2} \cdot \frac{\partial \rho}{\partial g}) + 2w_2(\rho - \rho^*) \cdot \frac{\partial \rho}{\partial g} \qquad (8)$$

Eq. (3) expresses that the bank's profit is a function of several factors, including the default risk ratio (ρ), and we need to obtain a model to capture the influencing factors on ρ:

$$\rho = F(g.Y.P_L.P_s.M.Z) \qquad (9)$$

In order to expand the model in Eq. (9), we follow Yoshino and Taghizadeh-Hesary (2019) and Yoshino, Taghizadeh-Hesary, and Nili (2019). Considering the studies mentioned above, Eq. (9) can be expanded as follows:

$$\rho = F(g.Y.P_L.P_s.M.Z) = -\alpha_1 g - \alpha_2 Y - \alpha_3 P_L - \alpha_4 P_S + \alpha_5 M - \alpha_6 Z \qquad (10)$$

Finally, we can rewrite the optimal credit guarantee ratio (Eq. (8)) with Eq. (10) as:

$$g = -\frac{1}{\alpha_1\left(\frac{w_1 l_1^2}{4}+w_2\right)} \cdot w_1 \frac{l_1^2}{4}\left(\frac{l_0}{l_1}+\frac{l_2}{l_1}Y^e - r_D - \rho'_L\right) + \frac{l_1}{2\alpha_1}L^* - \frac{w_2}{\alpha_1}\rho^* - \frac{\alpha_2}{\alpha_1}Y - \frac{\alpha_3}{\alpha_1}P_L - \frac{\alpha_4}{\alpha_1}P_S + \frac{\alpha_5}{\alpha_1}M + \frac{\alpha_6}{\alpha_1}Z \quad (11)$$

Eq. (11) expresses that g (optimal credit guarantee ratio) is a function of several factors, and we can simplify Eq. 11 to the following equation:

$$g = \alpha_0 + \alpha_1 L_{SME} + \alpha_2 L^*_{SME} + \alpha_3 \rho^*_{SME} + \alpha_4 L_F + \alpha_5 r_D + \alpha_6 Y^e + \alpha_7 w_1 + \alpha_8 w_2 + \alpha_9 \rho' + \alpha_{10} P_L + \alpha_{11} P_S + \alpha_{12} Y + \alpha_{13} M + \alpha_{14} Z \quad (12)$$

We will develop our empirical study based on Eq. 12, which is our empirical model.

4. Data Description and Model Specification

The theoretical model for calculating the optimal credit guarantee ratio was transformed to the econometric form of Eq. (12), where the optimal credit guarantee ratio (g) for each group of banks is a function of the three groups of variables: (i) government policies for increasing SME loans, (ii) the macroeconomic situation, and (iii) bank-level variables. Based on the model, in a recession like in the current time in the wake of COVID-19, the guarantee ratio needs to be increased as SMEs will encounter more difficulty in accessing finance. This paper runs an empirical quantitative study based on the data from selected ASEAN Member States (Indonesia, Malaysia, Singapore, and the Philippines). Due to the lack of access to data for other member states, we limited our study to these four. A literature review shows no study on modelling the credit guarantee ratio determinants in ASEAN Member States. Hence, from this aspect, this is a novel study that has not been done previously. The macroeconomic and bank-level variables used in this empirical study include the number of loans to SMEs (L_{SME}), the desired level of SME loans

(government policy) (L^*_{SME}), the desired default risk ratio of loans (government policy) (ρ^*_{SME}), fixed demand for loans (L_F), the deposit interest rate (r_D), expected GDP (Y^e), the weight for stabilising the SME loans (policy rate) (w_1), the weight for reducing the nonperforming loan (NPL) ratio (policy rate) (w_2), the marginal increase of nonperforming loans by the increase of additional loans (ρ'), price of land (P_L), price of stock (P_S), GDP (Y), money supply (M), and the financial profile of banks (Z).

The optimal credit guarantee ratio (g) depends on banking behaviour and should be varied based on a bank's soundness. Banks that are more sound and are managing their NPLs should receive a higher guarantee ratio. Model (12) captures this through two variables, namely, the marginal increase in NPL by the increase in additional loans (ρ') and the financial profile of banks (Z). Riskier banks have a higher NPL ratio and also a higher marginal increase in NPLs. This research categorises banks according to their soundness and calculates each group's guarantee ratio based on the result.

It is widely known that the soundness of banks is directly affected by their financial performance. Based on this assumption, and to quantify the banks' financial profile, we focus on banks' financial statements and employ financial variables that describe banks' general characteristics. Loans, properties, securities, cash, accounts receivable from the central bank, accounts receivable from other banks, and NPLs are components of a financial institution's assets. In the next stage, two statistical techniques will be employed: principal component analysis (PCA) and cluster analysis to categorise the banks based on their creditworthiness and to extract the bank-level components. The underlying logic of both techniques is dimension reduction (i.e. summarising information on numerous variables in just a few variables), but they achieve this differently. PCA reduces the number of variables into components (or factors), whereas cluster analysis reduces the number of banks by placing them in small clusters. In this study, we use components (factors) resulting from PCA. The resultant components will represent the banks' financial profile. Subsequently, cluster analysis is carried out to classify the banks.

In the empirical parts of this research, we provide an empirical analysis based on PCA and cluster analysis that places banks in selected ASEAN Member

States into different groups based on their soundness. We will then assess the impact of different factors on the default risk ratios of each group of banks to find the determinants of the optimal credit guarantee ratio and calculate it for the three stages of response to COVID-19: (i) the emergency stage, (ii) the exit stage, and (iii) the new normal stage. The sources of the data used in this research are International Financial Statistics of the International Monetary Fund (https://data.imf.org), finance ministries, and the central banks of ASEAN Member States (Malaysia's Central Bank (https://www.bnm.gov.my/index.php?ch=mone&pg=mone_dld&ac=54), Bank Indonesia (https://www.bi.go.id/en/statistik/seki/terkini/moneter/Contents/Default.aspx), Bangko Sentral NG Pilipinas (https://www.bsp.gov.ph/SitePages/Statistics/Statistics.aspx), and the Monetary Authority of Singapore (https://www.mas.gov.sg/statistics)).

5. Empirical Study

As the first step, banks' financial statement data in four ASEAN Member States (Malaysia, Indonesia, the Philippines, and Singapore) were collected. Following the theoretical background explanations about the relationship between the optimal credit guarantee ratio and banking soundness, banks in the nominated four ASEAN countries are classified based on their soundness. Next, we can calculate the determinants of the credit guarantee ratio (loan default ratio) for each categorised group of banks.

Evaluating the soundness of banks has been considered by many scholars, and there is not a common opinion about the exact variables for calculating the soundness of banks. In this study, we follow Ravi Kumar and Ravi (2007), Poon, Firth, and Fung (1999), Huang et al. (2004), Orsenigo and Vercellis (2013), Yoshino and Taghizadeh-Hesary (2015), and Yoshino, Taghizadeh-Hesary, and Nili (2019) to select the most appropriate variables representing the profiles of the banks, and then conduct the PCA to gather the similar variables into the components. The selected variables are listed in Table 1.

Table 1. Variables Representing the Soundness of Banks

Variable	Symbol
Loans to deposit ratio	LDR
Properties to loans ratio	PLR
Deposits (savings + long term) to total deposits ratio	DTD
Assets to loans ratio	ALR
Securities to loans ratio	SLR
Cash to deposits ratio	CDR
Accounts receivable from central bank to deposits ratio	ACCBD
Accounts receivable from other banks to deposits ratio	ACOBD

Source: Authors.

The mentioned variables in Table 1 represent the banks' financial status so that a higher level of these variables ensures greater stability and soundness of a bank. We gathered raw data and calculated all the selected variables. As one problem, we face different financial variables (Table 1) for various banks in these four ASEAN countries. To solve this problem, we conduct PCA and cluster analysis to reduce the dimensions of variables and units of banks.

Before performing PCA, we need to check two preliminary tests. The first one is the Kaiser-Meyer-Olkin (KMO) test to measure sampling adequacy, and the Bartlett test to check sphericity. The results of these two tests for the four ASEAN countries are listed in Table 2.

Table 2: Results of the KMO and Bartlett Tests

Sample	KMO Test	Bartlett Test
Indonesia	0.65	0.00
Singapore	0.73	0.01
Philippines	0.61	0.01
Malaysia	0.75	0.00

Source: Authors' calculations.

As shown in Table 2, the KMO values are higher than 0.50, which proves the appropriateness of the factor analysis technique. The Bartlett's values are lower than 5%, expressing significant relationships amongst the variables in all four ASEAN countries.

After conducting preliminary tests, we need to determine the adequate number of factors in our analysis. The PCA technique is performed separately for banks in all four ASEAN countries.

According to Table 3, only two factors (Z1 and Z2) are significant for Singapore's case. Z1 consists of three variables (ALR, ACCBD, and ACOBD) with positive values higher than 0.5. According to these three variables, Z1 can represent the assets of banks. Z2 has three main variables (with values > 0.5). According to the three LDR variables, DTD, and CDR, Z2 can reflect the deposits of the examined banks.

Table 3: Results of the Principal Component Analysis for the Case of Singapore

Variable	Component	
	Z1	**Z2**
LDR	0.034	**0.935**
PLR	-0.214	0.043
DTD	-0.391	**0.943**
ALR	**0.955**	0.049
SLR	-0.194	-0.294
CDR	0.031	**-0.643**
ACCBD	**0.985**	-0.221
ACOBD	**0.983**	-0.019

Source: Authors' calculations.

For Indonesia's case, the results are provided in Table 4. The PCA technique presents three significant components: Z1, Z2, and Z3. The two first components of Z1 and Z2 are similar to Singapore's case and can represent the assets and deposits of the examined banks, whilst Z3 consists of two variables, PLR and SLR, which can reflect 1/loans.

Table 4: Results of the Principal Component Analysis for the Case of Indonesia

Variable	Component		
	Z1	**Z2**	**Z3**
LDR	-0.153	**0.943**	-0.231
PLR	0.064	0.011	**0.864**
DTD	-0.321	**0.894**	-0.155
ALR	**0.864**	0.019	0.142
SLR	-0.048	-0.119	**0.793**
CDR	0.277	**-0.739**	0.049
ACCBD	**0.895**	-0.019	0.102
ACOBD	**0.884**	-0.005	0.095

Source: Authors' calculations.

The PCA results for the case of the Philippines are reported in Table 5. As for the results for Singapore's case, the PCA shows only two significant factors (Z1 and Z2) reflecting the assets and deposits of the examined banks.

Table 5: Results of the Principal Component Analysis for the Case of the Philippines

Variable	Component	
	Z1	**Z2**
LDR	-0.314	**0.794**
PLR	0.039	0.211
DTD	0.008	**0.819**
ALR	**0.953**	0.019
SLR	-0.041	-0.210
CDR	0.412	-0.321
ACCBD	**0.895**	-0.06
ACOBD	**0.901**	-0.141

Source: Authors' calculations.

Lastly, the results of the PCA for the case of Malaysia are listed in Table 6. According to the findings, there are only two significant factors: Z1 represents assets, and Z2 reflects 1/total loans.

Table 6: Results of the Principal Component Analysis for the Case of Malaysia

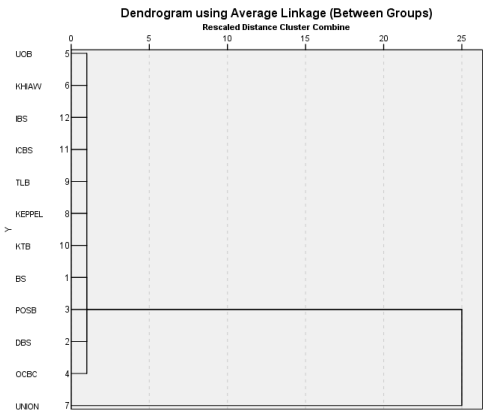
Variable	Component	
	Z1	**Z2**
LDR	-0.164	-0.053
PLR	0.201	**0.873**
DTD	-0.104	-0.194
ALR	**0.985**	0.129
SLR	0.253	**0.755**
CDR	-0.103	0.024
ACCBD	**0.688**	-0.194
ACOBD	**0.729**	-0.112

Source: Authors' calculations.

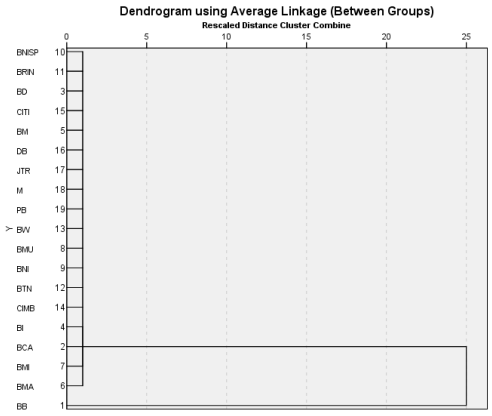
In the next step, we categorise the banks in each of the four ASEAN countries into clusters with similar traits. To this end, we take the components from Tables 3–6 and then conduct cluster analysis using SPSS. The dendrogram of hierarchical clustering describes the distinct groups of the examined banks in our four ASEAN countries (see Figure 1).

Figure 1. Dendrogram Hierarchical Clustering

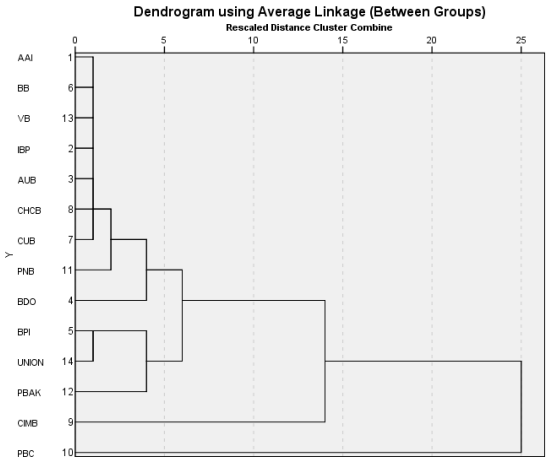
a. Indonesia



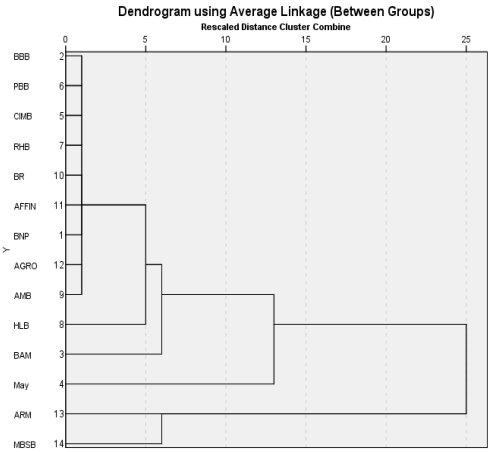
b. Singapore



c. Malaysia



d. Philippines



Source: Authors' calculations from SPSS.

For all four ASEAN countries, the dendrogram organises the banks into two main distinct clusters. In other words, in Indonesia, Bank Banten (BB), Bank Maybank Asia (BMA), Bank Mandiri (BM), and Bank Central Asia (BCA) are classified in one cluster (Group 1) and the other banks in the country are in another cluster (Group 2). For Figure 1(b), POSB, DBS Bank (DBS), OCBC Bank (OCBC), and Overseas Union Bank (UNION) are in one distinct group (Group 1), and other Singaporean banks are classified in another group (Group 2). For the case of Malaysia, the dendrogram categorises the examined banks into two separate clusters. In the first cluster (Group 1) are MBSB Bank Berhad (MBSB), Al-Rajhi

Malaysia (ARM), Maybank (May), Bank of America Malaysia Berhad (BAM), Hong Leong Bank (HLB), AmBank (AMB), Agrobank (AGRO), BNP Paribas Malaysia Berhad (BNP), and Affin Bank (AFFIN), and the other Malaysian banks are classified in the second cluster (Group 2). Finally, Figure 1(d) shows that the banks in the Philippines can be divided into two distinct clusters. The first cluster (Group 1) has the five banks of Philippine Bank of Communications (PBC), CIMB Bank Philippines (CMB), Philtrust Bak (PBAK), Union Bank of Philippines (UNION), Bank of the Philippines Islands (PBI), and Group 2 consists of other Philippine banks.

Next, we can focus on calculating the default risk ratio (NPL/L) determining factors for each bank group. During a crisis time, such as the current period of the COVID-19 pandemic, the default risk ratio of SME loans is increasing and, hence, governments need to increase the credit guarantee ratio. Therefore, there is a direct relationship between these two. To calculate the optimal credit guarantee ratio, three groups of variables need to be considered: macroeconomic variables, the banking profile, and government policies. For different groups of banks based on the cluster analysis, we perform separate estimations with actual data of variables that exist and assumed values of variables such as government policies. Our assumptions about the desired level of loans to SMEs and the desired level of the default risk ratio (NPL/L) are based on the sub-index of financial access sub-dimension from the 2018 ASEAN SME Policy Index (OECD and ERIA, 2018) and the fact that the current level of loans to SMEs is significantly less than SMEs' demand for loans (OECD, 2019). As explanations for our assumptions, it can be expressed that SMEs' contribution to GDP is large in each of these four countries. For instance, according to the Department of Statistics Malaysia (2019), SMEs' contribution to Malaysia's GDP was 38.9% and 38.3% in 2019 and 2018, respectively. In 2019 the share of SMEs in the GDP of Singapore was 48% (Department of Statistics Singapore, 2019), in Indonesia, it was 60% (The Jakarta Post, 2020a), and the ratio in the Philippines was 35% (Fong, 2019). We can assume that the desired level of loans to SMEs may be determined in line with these enterprises' contribution to GDP. Hence, in this paper, we assume the government policy for this variable to be 38.9%, 48%, 60%, and 35% for Malaysia, Singapore, Indonesia, and the Philippines, respectively.

Regarding the desired level of NPL/L, the actual values of these variables in our samples are shown in Table 7.

Table 7. Nonperforming Loans to Total Loans, 2010–2019

(%)

Country	2010	2012	2014	2016	2018	2019
Indonesia	2.53	1.77	2.06	2.89	2.29	2.43
Malaysia	3.35	2.01	1.64	1.61	1.48	1.53
Philippines	3.38	2.22	2.02	1.71	1.67	1.97
Singapore	1.40	1.04	0.75	1.22	1.30	1.30

Source: Authors' compilation from the World Bank database.

The NPL/L ratios in these four countries are quite similar. We assume that governments may try to make the policy goal of reducing the NPL/L ratio to half of the current level (if we consider NPL/L with an average of 2% in these countries, half its level is 1%) as the desired level of the default risk ratio.

Considering the above assumptions and the remaining real observations, the calculations for all 4 ASEAN countries are reported in Table 8.

Table 8. Optimal Credit Guarantee Ratio for Banks in Four ASEAN Member States

Country	Group 1	Group 2
Indonesia	0.511%	0.391%
Singapore	0.471%	0.375%
Philippines	0.583%	0.509%
Malaysia	0.741%	0.658%

Source: Authors' calculations.

According to Table 8, it is clear that the optimal credit guarantee ratios for banks in the second group are less than those in the first group, meaning that the governments in these ASEAN countries should determine different rates for each group of banks.

To ensure the reliability of the results shown in Table 8, we do a robustness check in the form of an econometric equation from our earlier Eq. 10, which is about the loan default risk ratio (ρ). As can be seen from Eq. 10, this variable depends on g (the credit guarantee ratio), macroeconomic variables, and the bank profile.

$$\rho = F(g.Y.P_L.P_s.M.Z) = -\alpha_1 g - \alpha_2 Y - \alpha_3 P_L - \alpha_4 P_S + \alpha_5 M - \alpha_6 Z \quad (10)$$

We develop the above equation for each group of banks in the four ASEAN countries to find out the response of ρ (the sum of the NPLs of the group of banks/total loans of that group of banks) to any exogenous shock from the macroeconomic variables (real economic size, land price, stock price, and money supply).

The data for our macroeconomic variables of real GDP, consumer price inflation rate and M1 (money supply) in monthly frequency for the period 2008–2018 were gathered from the World Bank database (https://data.worldbank.org) and Knoema (www.knoema.com) and Zi (i.e. components from the PCA technique) for the bank profile.

To determine an appropriate econometric estimation, we need to check the results of some preliminary tests. The first is checking for unit roots, which is done by the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests (Tables 9–12).

Table 9. Unit Root Tests for the Case of Indonesia

Variable	ADF Test	PP Test	KPSS Test
$\rho_{Group\ 1}$	-0.539	-2.381	-3.055
$\Delta\rho_{Group\ 1}$	-10.232*	-10.492*	-25.392*
$\rho_{Group\ 2}$	-3.294*	-3.759*	-3.211*
$\Delta\rho_{Group\ 2}$	-8.583*	-8.115*	-15.410*
Real GDP	-1.582	-8.032*	0.117
Δ Real GDP	-8.394*	-13.583*	0.004
Inflation rate	-0.401	-2.395	5.864*
Δ Inflation rate	-14.283*	-10.392*	0.043
M1	-3.733*	-3.694*	0.472*
Δ M1	-8.832*	-8.403*	0.041
Z1, Group 1	-0.515	-2.378	5.913*
Δ Z1, Group 1	-11.119*	-10.815*	0.048
Z2, Group 1	-1.593	-1.489	1.189*
Δ Z2, Group 1	-8.392*	-8.994*	0.088
Z3, Group 1	-8.042*	-8.033*	0.119
Δ Z3, Group 1	-13.593*	-13.110*	0.007
Z1, Group 2	-2.559	-3.064	0.419*
Δ Z1, Group 2	-11.053*	-13.592*	0.047
Z2, Group 2	-0.491	-2.693	5.894*
Δ Z2, Group 2	-10.943*	-11.292*	0.039
Z3, Group 2	-3.583*	-3.889	0.492*
Δ Z3, Group 2	-8.109*	-8.693*	0.047*

Notes: Δ shows the first differences. * denotes the p-value is less than 0.05.
Source: Authors' calculations.

Table 10. Unit Root Tests for the Case of Singapore

Variable	ADF Test	PP Test	KPSS Test
$\rho_{Group\ 1}$	-2.492	-3.066	0.760*
$\Delta\rho_{Group\ 1}$	-9.392*	-14.902*	0.031
$\rho_{Group\ 2}$	-0.693	-3.012	0.485*
$\Delta\rho_{Group\ 2}$	-11.265*	-19.039*	0.036
Real GDP	-1.538	-1.905	1.216*
Δ Real GDP	-8.977*	-12.043*	0.059
Inflation rate	-8.138*	-8.-031*	0.111
Δ Inflation rate	-13.593*	-13.790*	0.002
M1	-0.466	-2.391	5.673*
Δ M1	-10.510*	-12.498*	0.040
Z1, Group 1	-2.394	-3.169	0.682*
Δ Z1, Group 1	-12.673*	-11.492*	0.034
Z2, Group 1	-1.629	-1.522	0.201
Δ Z2, Group 1	-8.705*	-9.042*	0.006
Z1, Group 2	-2.119	-3.411	0.477*
Δ Z1, Group 2	-13.280*	16.400*	0.042
Z2, Group 2	-0.388	-2.186	4.953*
Δ Z2, Group 2	-9.633*	-13.229*	0.031

Notes: Δ shows the first differences. * denotes the p-value is less than 0.05.
Source: Authors' calculations.

Table 11. Unit Root Tests for the Case of the Philippines

Variable	ADF Test	PP Test	KPSS Test
$\rho_{Group\ 1}$	-3.518*	-3.229*	0.488*
$\Delta\rho_{Group\ 1}$	-8.181*	-8.488*	0.040
$\rho_{Group\ 2}$	-0.490	-2.283	5.677*
$\Delta\rho_{Group\ 2}$	-11.129*	-12.476*	0.048
Real GDP	-1.355	-1.590	0.288*
Δ Real GDP	-8.922*	-9.044*	0.028
Inflation rate	-1.808	-1.794	1.188*
Δ Inflation rate	-7.995*	-8.410*	0.083
M1	-7.482*	-7.406*	0.121
Δ M1	-13.022*	-12.991*	0.005
Z1, Group 1	-0.491	-3.005	4.708*
Δ Z1, Group 1	-10.302*	-14.557*	0.041
Z2, Group 1	-0.386	-2.491	1.148*
Δ Z2, Group 1	-9.953*	-12.101*	0.023
Z1, Group 2	-2.693	-3.018	0.689*
Δ Z1, Group 2	-11.593*	-13.577*	0.038
Z2, Group 2	-3.755	-3.682*	0.476*
Δ Z2, Group 2	-8.381*	-8.012*	0.041

Notes: Δ shows the first differences. * denotes the p-value is less than 0.05.
Source: Authors' calculations.

Table 12. Unit Root Tests for the Case of Malaysia

Variable	ADF Test	PP Test	KPSS Test
$\rho_{Group\ 1}$	-0.417	-2.007	5.145*
$\Delta\rho_{Group\ 1}$	-10.311*	-12.766*	0.047
$\rho_{Group\ 2}$	-0.312	-1.448	0.515*
$\Delta\rho_{Group\ 2}$	-8.451*	-8.894*	0.039
Real GDP	-7.903*	-7.593*	0.143
Δ Real GDP	-11.942*	-11.032*	0.004
Inflation rate	-3.594	-3.613*	0.489*
Δ Inflation rate	-9.005*	-8.952*	0.047
M1	-2.414	-2.709	4.694*
Δ M1	-11.593*	-13.121*	0.033
Z1, Group 1	-0.466	-2.365	4.683*
Δ Z1, Group 1	-10.573*	-12.599*	0.024
Z2, Group 1	-1.482	-1.583	0.116
Δ Z2, Group 1	-8.935*	-9.018*	0.003
Z1, Group 2	-8.593*	-8.018*	0.120
Δ Z1, Group 2	-13.204*	-13.583*	0.009
Z2, Group 2	-3.616	-3.818	1.194*
Δ Z2, Group 2	-8.042*	-8.950*	0.086

Notes: Δ shows the first differences. * denotes the p-value is less than 0.05.
Source: Authors' calculations.

The results of the unit root tests indicate that the ADF and PP tests' null hypothesis cannot reject all the cases. In contrast, the KPSS rejects the hypothesis that all the series are stationary at the 5% significant level.

Next, we conduct the Johansen and Juselius cointegration test to compare the validity of a vector autoregressive model (VAR) rather than a structural vector error correction model (VECM). Table 13 represents the test findings for cointegration amongst variables for Indonesia, Malaysia, Singapore, and the Philippines. The results for all four cases reveal no long-run linkages between the series (NPL/L, real GDP, inflation rate, M1, and PCA components (Zi)).

Table 13. Cointegration Test Results

Country	Group of Banks	R	n-r	Maximum Eigenvalue Stat.	95%	Trace	95%
Indonesia	1	r=0	r=1	19.530	21.391	28.594	28.493
		r<=1	r=2	7.502	15.035	7.804	16.229
		r<=2	r=3	0.194	3.693	0.194	3.895
	2	r=0	r=1	18.494	20.669	29.403	29.844
		r<=1	r=2	6.394	14.094	6.606	15.119
		r<=2	r=3	0.152	3.042	0.156	3.429
Singapore	1	r=0	r=1	17.493	19.110	27.591	28.012
		r<=1	r=2	6.701	13.214	6.905	14.817
		r<=2	r=3	0.204	4.012	0.206	4.517
	2	r=0	r=1	17.009	18.994	26.119	27.809
		r<=1	r=2	7.061	14.593	7.495	15.087
		r<=2	r=3	0.236	3.677	0.230	3.736
Philippines	1	r=0	r=1	19.314	20.983	27.100	29.462
		r<=1	r=2	7.702	14.864	7.814	15.408
		r<=2	r=3	0.209	3.483	0.209	3.917
	2	r=0	r=1	18.707	19.549	26.909	28.790
		r<=1	r=2	7.894	15.066	7.908	15.748
		r<=2	r=3	0.198	3.023	0.198	3.208
Malaysia	1	r=0	r=1	20.391	22.505	30.085	32.757
		r<=1	r=2	8.493	16.521	8.018	16.096
		r<=2	r=3	0.412	3.955	0.410	4.001
	2	r=0	r=1	21.752	23.904	32.583	32.778
		r<=1	r=2	8.684	16.478	8.483	16.897
		r<=2	r=3	0.205	3.404	0.205	3.538

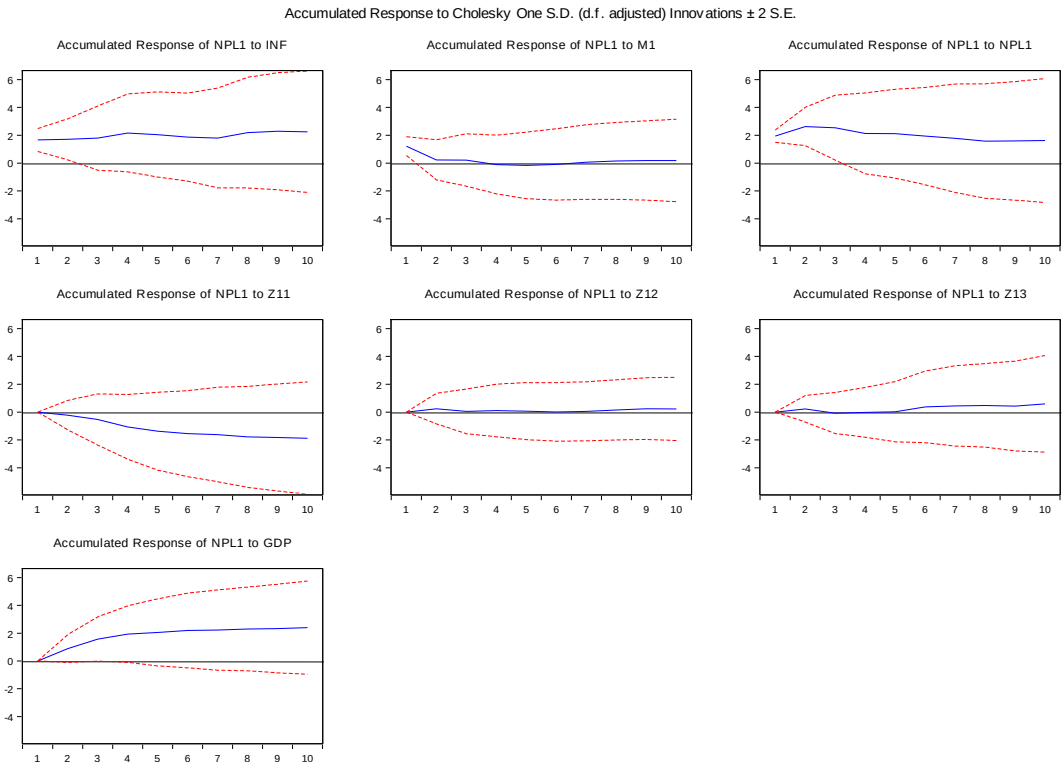
Source: Authors' calculations.

According to the cointegration results for all four ASEAN countries, we have to employ a VAR approach to determine the NPL/L (or ρ) response to any impulse from macro and idiosyncratic variables.

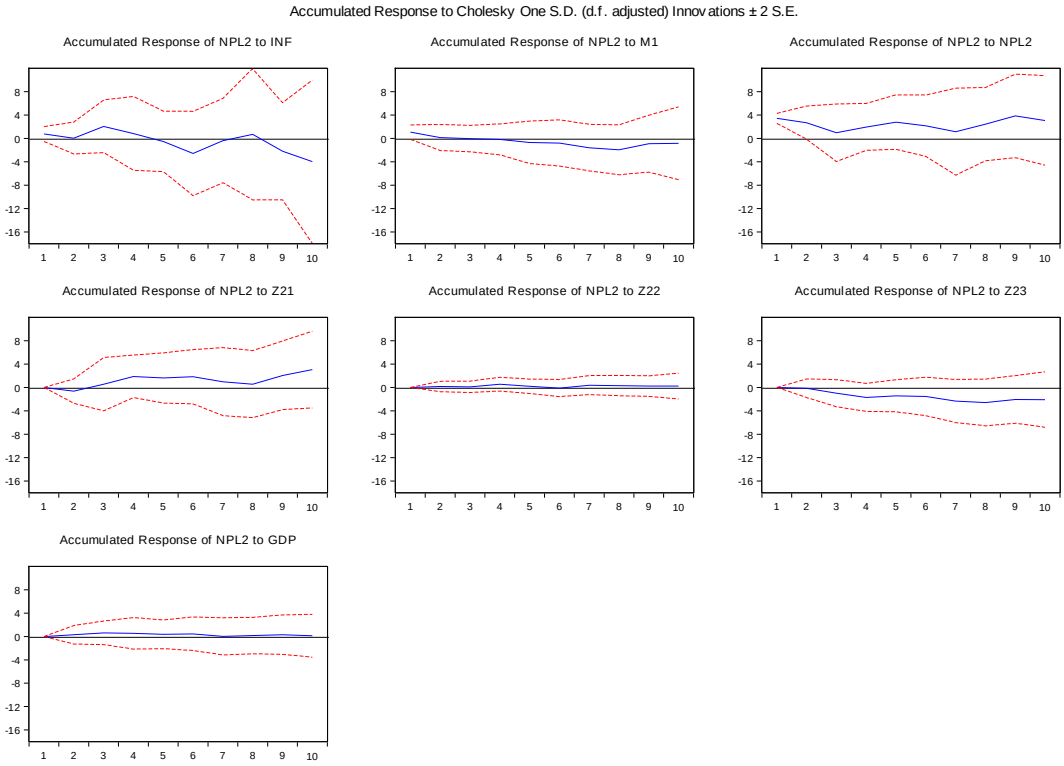
Figure 2 represents the impulse-response function (IRF) for the two groups of banks in Indonesia.

Figure 2. Impulse–Response Function for the Case of Indonesia

a. Group 1 of banks



b. Group 2 of banks



Source: Authors' calculations.

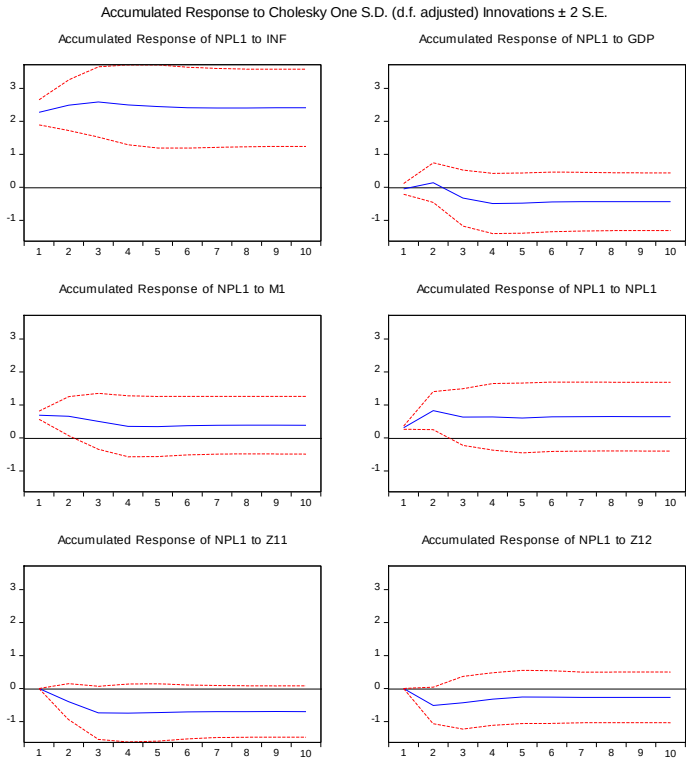
The responses of NPL/L for the first group of banks of Indonesia to any shocks from the inflation rate, M1, the lagged NPL/L, GDP growth rate, Z11, Z12, and Z13 are shown in Figure 2(a). The response of NPL/L to a positive impulse of the growth rate and the inflation rate is positive and significant. Moreover, the response of Group 1's NPL/L to positive shocks to Z11, which represents the assets of banks, is negative, whilst the response to any shock to Z12 and Z13 is positive and statistically significant.

The accumulated responses for NPL/L for the second group of banks in Indonesia to any shocks to variables are shown in Figure 2(b). The accumulated response of NPL/L to the inflation rate is negative, meaning that the default risk (NPL/L) will decrease with an increase in prices. Moreover, an unanticipated impulse to M1 has an accumulated negative impact on NPL/L in Group 2 of the banks in Indonesia. In addition, unanticipated shocks to Z21 and Z22, which denote assets and deposits, have a positive effect on NPL/L for Group 2, whilst the response of NPL/L to any shock to Z23 is negative.

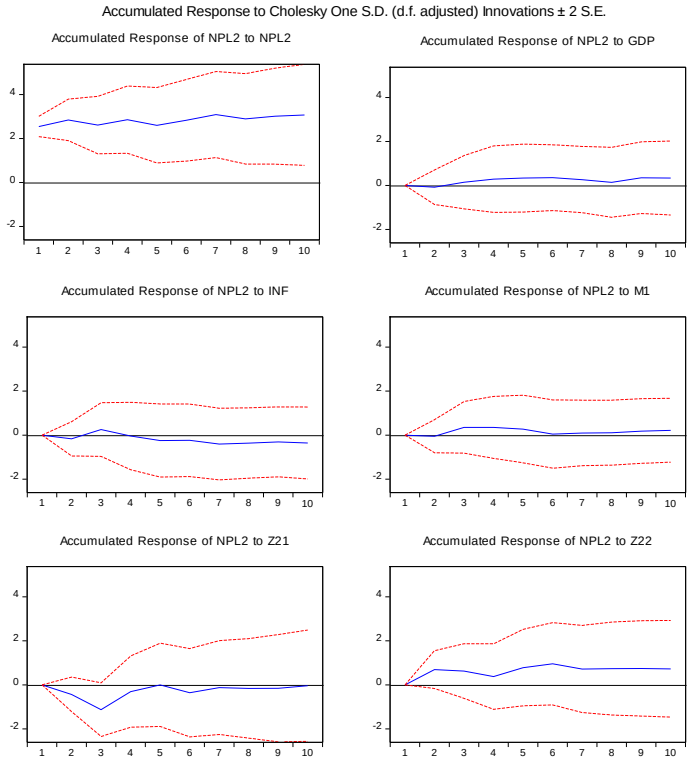
The results of the IRF for the case of Singaporean banks, which were classified into two distinct groups, are shown in Figure 3.

Figure 3. Impulse–Response Function for the Case of Singapore

a. Group 1 of banks



b. Group 2 of banks



Source: Authors' calculations.

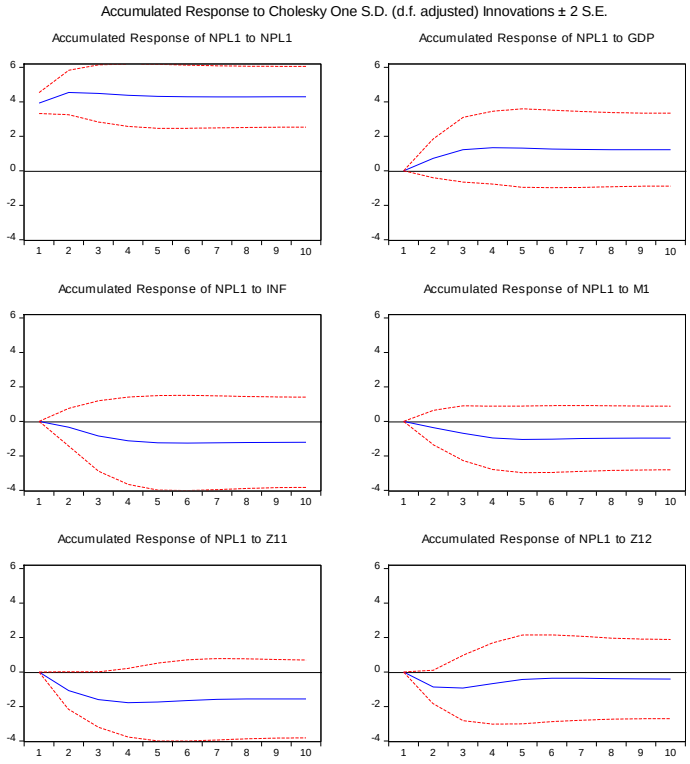
For the first group of banks in Singapore, as shown in Figure 3(a), the accumulated response of NPL/L to a positive shock to the inflation rate is positive, whilst NPL/L in the first group of banks in this country responds negatively to any shock to GDP and M1. Moreover, a positive shock to Z11 and Z12, which are assets and deposits, respectively, reduces the NPL/L of the first group of banks in the country.

The graphs in Figure 3(b) show the accumulated responses for NPL/L of Group 2 of the banks in Singapore to a positive impulse to different variables. Whilst the response of NPL/L to GDP and M1 shocks is positive, a positive shock to the inflation rate negatively affects NPL/L in this group of banks. Furthermore, a positive shock to Z21 (assets) reduces the NPL/L, whereas a Z22 (deposits) shock may increase NPL/L in Group 2 of the banks in Singapore.

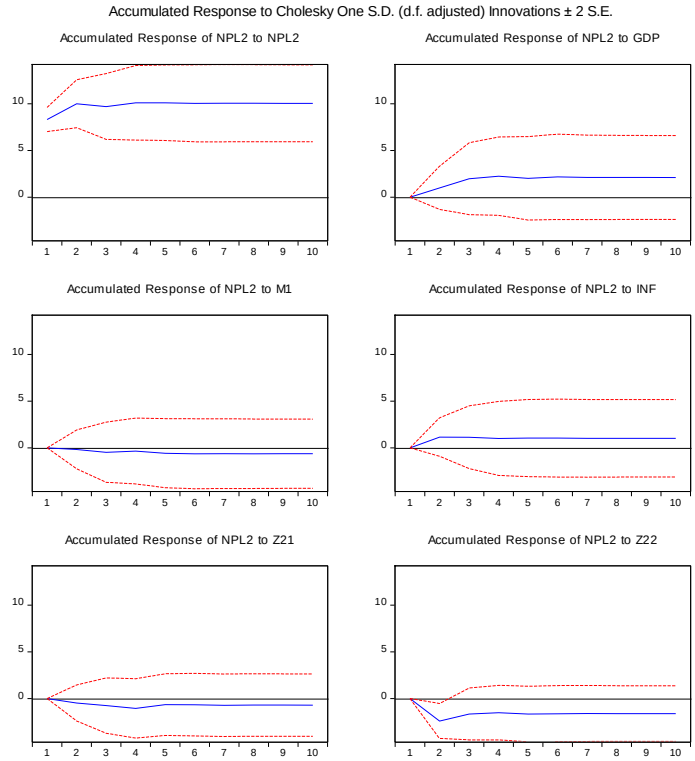
The accumulated responses of NPL/L to any impulse to the variables for the Philippines' banks are depicted in Figure 4.

Figure 4. Impulse–Response Function for the Case of the Philippines

a. Group 1 of banks



b. Group 2 of banks



Source: Authors' calculations.

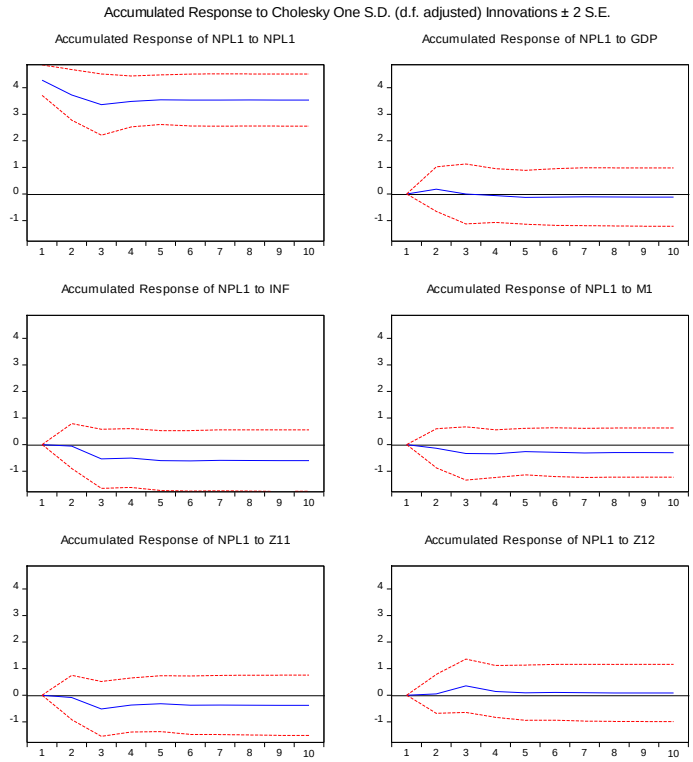
For the responses of NPL/L to any shock to the macroeconomic variables, as shown in Figure 4(a), an unpredicted shock to GDP has a positive impact on NPL/L of the banks in Group 1. In contrast, the response of NPL/L to a positive shock to the inflation rate and M1 is statistically significant and negative.

Figure 4(b) shows how the NPL/L in the second group of the banks in the Philippines reacts to any shock to different variables. The responses of NPL/L to an unpredicted shock to GDP and M1 are positive and negative, respectively. Whilst the response of NPL/L to any positive shock to the inflation rate takes a movement with a negative slope in the long-run period, a positive shock to Z21 (assets) and Z22 (deposits) makes a positive response in the NPL/L in the second group of banks in the Philippines.

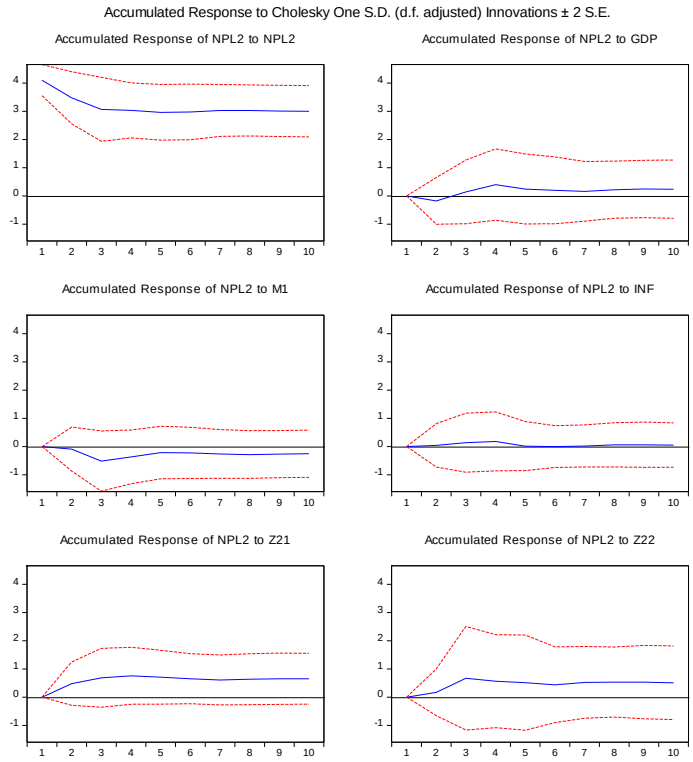
Finally, the results for the IRF for the two groups of banks in Malaysia are shown in Figure 5.

Figure 5. Impulse–Response Function for the Case of Malaysia

b. Group 1 of banks



b. Group 2 of banks



Source: Authors' calculations.

According to the graphs shown in Figure 5(a), the NPL/L of the first group of banks in Malaysia responds negatively to an unanticipated shock to the macroeconomic variables for GDP, M1, and the inflation rate. Regarding the components, a positive shock to Z11 and Z12 makes negative and positive responses for the NPL/L of these banks, respectively, in both the short and long run.

The accumulated responses of NPL/L in the second group of banks in Malaysia to an unpredicted shock to variables are represented in Figure 5(b). It can be seen that a positive shock to GDP and the inflation rate leads to a positive movement of NPL/L, whilst an M1 positive shock makes a negative response for NPL/L in this group of banks. Regarding the PCA components of Z21 and Z22, the accumulated response of NPL/L to a positive shock to them is positive, meaning that increasing assets (Z21) and deposits (Z22) tends to result in an increase in NPL/L for the second group of banks in Malaysia.

According to the findings from the IRF, we can expand our analysis for the current and future coronavirus periods. We consider three different stages: (i) the emergency stage; (ii) the exit stage; and (iii) the new normal stage post COVID-19.

Furthermore, we assume that the impact of COVID-19 on the GDP growth should be considered for determining these three stages, meaning that we expect that countries' GDP will recover and adapt to the existence of the pandemic, and over time this variable may go from the current emergency state to the new normal stage. By addressing this expectation, we can analyse the impact of a GDP shock (as a proxy for COVID-19's effect) on the NPL/L of the groups of banks in the four ASEAN countries. We can divide our 10 periods in the IRF analysis into these three stages as shown in Table 14.

Table 14. Analysis of the Responses of NPL/L in the Three Different Stages of COVID-19's Impacts

Country	Group of Banks	Response of NPL/L to GDP Impulse		
		Emergency Stage (1–3 periods)	Exit Stage (4–6 periods)	New Normal Stage (7–10 periods)
Malaysia	Group 1	Decrease	Decrease	Stable
	Group 2	Decrease	Increase	Stable
Singapore	Group 1	Stability	Decrease	Stable
	Group 2	Decrease	Increase	Stable
Indonesia	Group 1	Increase	Increase	Stable
	Group 2	Decrease	Decrease	Stable
Philippines	Group 1	Increase	Stability	Stable
	Group 2	Increase	Increase	Stable

Source: Authors' calculations.

According to the findings in Table 14, we can predict that in the four ASEAN economies of our study, in the 'new normal' stage, NPL/L for all groups of banks will be stable to any unpredictable decrease in the GDP proxy for a COVID-19 negative shock. In the 'emergency stage', which is addressed as a short-run period, the second groups of banks (riskier banks) will experience an increase in NPL/L to any unpredictable negative shock to GDP. Whilst the first group of banks in our four examined ASEAN countries does not have similar behaviour to the other countries in the group and only in Malaysia, its NPL/L positively reacts to any sharp and sudden GDP reduction. In the 'exit stage', which is considered the medium run, the banks reach better adaption to the shock, and the magnitude of the responses in the first group of banks is less than in the emergency stage. Moreover, in most of the second group banks, the response becomes positive.

Therefore, we can conclude that to help SMEs in ASEAN survive in the emergency stage of COVID-19, the credit guarantee ratio needs to be increased, and then gradually, by moving to the new normal stage, the ratio needs to be lessened.

6. Concluding Remarks and Policy Implications

As Ndiaye et al. (2018) expressed, SMEs play a vital role in most economies around the world, particularly developing economies. However, one of the main obstacles to SMEs' performance, especially amid the challenges of COVID-19, is their difficulty in accessing finance. Banks often prefer to lend to large enterprises due to their lower credit risk. To solve this problem, governments tend to use some instruments to improve SME financing by banks. One of these instruments is credit guarantee schemes, involving a borrower, a lender, and a guarantor. An SME is a borrower trying to borrow money. The SME seeks to obtain proper financing through a bank (lender). A guarantor (government) plays a vital role in small borrower–lender relationships by providing banks with the comfort of a credit guarantee.

In this paper, we attempted to calculate the optimal credit guarantee ratio for the banking industry in four ASEAN countries, namely Indonesia, Singapore, the Philippines, and Malaysia, using the PCA and cluster analyses, as well as the IRF technique in a VAR framework. This paper's empirical analysis was carried out based on a theoretical model that expressed that the optimal credit guarantee ratio depends on governments' policies for NPL reduction and SME support, the macroeconomic climate, and banking behaviour. The loan default risk ratio (NPL/L) is a key variable for calculating the optimal credit guarantee ratio.

The empirical findings proved that NPL/L is influenced by variables representing the macroeconomic climate in all four ASEAN countries. However, banking soundness also should be considered as a significant, influential element on NPL/L. This concluding remark was revealed by the different responses of NPL/L to components of assets and deposits in different groups of banks in the four ASEAN nations.

All in all, it can be concluded that the optimal credit guarantee ratio should vary for different countries based on the macroeconomic climate and also for each bank or, in other words, for each group of banks based on their financial soundness. Governments should give a higher guarantee ratio to sound banks, whilst less healthy banks should receive a lower guarantee ratio. Furthermore, since the macroeconomic variables have more significant impacts on the optimal credit

guarantee ratio in the long run, in the wake of COVID-19, governments in ASEAN Member States should increase the credit guarantee ratio to ensure SMEs' economic activity. This policy recommendation is in line with the most recent policies of some of the ASEAN Member States. For instance, the Monetary Authority of Singapore declared that in 2020, due to the COVID-19 outbreak, the mean of credit guarantee schemes for Singaporean banks increased to 70% (ICLG, 2020). In Indonesia's case, the government proposed a new credit guarantee scheme (US$7 billion) until November 2021 to cover loans for over 60 million SMEs (The Jakarta Post, 2020b). Malaysia is trying to expand CGCs to 80% to ensure financial assistance for SMEs in 2020–2021 (CGC, 2020). In the Philippines, the government on 15 April 2020 approved a guarantee fee reduction from 1% to 0.5%, and Philguarantee (the principal institution for State Guarantee Finance of the Philippines) raised the guarantee coverage for SMEs to 90% (Philguaratee, 2020).

In order to help SMEs in ASEAN Member States survive in the emergency stage of COVID-19, the credit guarantee ratio needs to be increased. Then, gradually, by moving to the new normal stage, the ratio needs to be lowered. The establishment of a regional credit guarantee scheme (RCGS) in ASEAN is another policy implication. A RCGS could enhance cross-country financial transactions in ASEAN, increase cooperation, economic integration, and SME trade, and enhance the ASEAN SMEs' activities.

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