

THE NEXUS BETWEEN FINANCIAL STABILITY AND ECONOMIC GROWTH IN SOUTHEAST ASIA

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Abstract

Financial stability is an important part of economic growth. The main objective in this study is to analyze how financial stability (using Bank Z-Score) affects economic growth. The data used is country-level data from five selected countries in the Southeast Asia region (Indonesia, Cambodia, Malaysia, Philippines, and Thailand) for the period 2011 – 2021 using the ARDL model approach. The results of this study found strong evidence that financial stability (banking stability) has a positive effect on economic growth for countries in the Southeast Asian region. This study also reveals that it is not only financial stability variables that are important to achieve economic growth but investment and trade openness must also be increased if the country want to achieve the expected economic growth. The positive relationship between investment and trade openness implies that investment and trade openness can be beneficial to economic growth.

Kata Kunci: Financial Stability, Economic Growth, Bank Z-Score, ARDL

INTRODUCTION

Financial and monetary stability are crucial factors in the functioning of a market-based economy of a country efficiently and effectively, as it serves as the foundation for planning and allocation of resources in the real sector (Amali et al., 2022). Guaranteeing that financial institutions in a country can maintain profitability and have adequate liquidity to match their assets with their liabilities is crucial because it ensures the stability of the financial system (Klaas & Vagizova, 2014).

Ensuring financial stability has become a priority for governments worldwide, particularly after the 2008 - 2009 global financial crisis caused substantial losses for many financial institutions globally. An unstable financial system, driven by a spike in problematic credit and excessive leverage in relation to the value of assets in the market, primarily caused this. As a result, there was a substantial decline in the value of investments in many banks, leading to difficulties with solvency and liquidity (Ahulu et al., 2021). The crisis also revealed to the world that an ineffective financial system can affect the efficiency of monetary policy, interrupt economic activity, may result in a deceleration of economic growth or even a decline in economic activity. The crisis reinforced the link between the performance of financial institutions and economic growth (Alsamara et al., 2019). The financial crisis has been shown to also have a detrimental effect on macroeconomic stability, as well as the distribution of savings and investments, ultimately affecting economic growth (Ahulu et al., 2021).

In the last decade, researchers have made financial stability as an interesting topic to study, from various countries and different time periods and using different indicators to measure financial stability such as research (Ahulu et al., 2021; Ijaz et al., 2020; Rakshit & Bardhan, 2019; Stewart et al., 2021) which uses BZS (Bank Z-Score) to measure financial stability, then research (Amali et al., 2022; Sotiropoulou et al., 2019; Younsi & Nafla, 2019) uses non-performing loans as a proxy for financial stability, next there is research from (Emara et al., 2019) which uses the Financial Stability Composite Index, research (Barra & Zotti, 2022; Dhal et al., 2011) uses CAMELS variables as a proxy for financial stability, and (Akalpler, 2021) use macroeconomic indicators to measure financial stability.

Out of the various indicators used as a proxy, BZS is the most used indicator for measuring stability in financial stability literature.

Even though a lot of research has been done on the connection between financial stability and economic growth using different countries, time periods and methods, there are only a few studies that specifically focus on the Southeast Asian region.

The Southeast Asian region is an area with the fastest growth centers in the world economy (Kenedi, 2022; Shimizu, 2021) and if the GDP is combined from all countries (eleven countries), it will be equivalent to the fifth largest economy in the world (Kuusinen et al., 2019). The 2008/2009 global financial crisis had a substantial impact on Southeast Asian nations, as reported by the International Monetary Fund (IMF) in 2010, the economic output of the ASEAN-5 countries decreased from 4.5 percent in 2008 to 1.7 percent in 2009 (Khan et al., 2021). Prior to the global financial crisis, Southeast Asian nations had an average annual economic growth of 5%. When the crisis hit, Thailand and Malaysia were the most affected, with their GDP dropping to -7.2% and -6.4% respectively in the first quarter of 2009. The Philippines saw a decrease in a growth rate for one quarter only, while Indonesia did not experience any decline. Following the global financial crisis, the economic growth rate in Southeast Asian nations became more inconsistent. For instance, Indonesia was able to achieve a growth rate of 6.5% post-crisis, while Thailand only managed to grow at 3%. The Philippines were only able to maintain its pre-crisis growth rate in 2012 and Thailand had the slowest growth rate among countries after the crisis (Kabir et al., 2018).

Considering the context, it is crucial to conduct additional research to explore this matter further. This study aims to examine the correlation between financial stability and economic growth in Southeast Asian countries from 2011 to 2021, taking Investment and Trade Openness into account as control variables. To achieve this objective, robust econometric models such as ARDL, FMOLS, DOLS, and CCR have been utilized for the analysis.

METHOD

The research analysis in this study is based on annual data covering the period from 2011 to 2021, collected from five chosen countries in Southeast Asia, namely Indonesia, Cambodia, Malaysia, the Philippines, and Thailand. The data was sourced from the World Bank's WDI and GFDD through their official website. GDP per capita (current US\$) is adopted as a proxy variable to represent Economic Growth (EG), while Bank Z-Score is utilized as a proxy to assess financial stability (STA). Gross fixed capital formation (current US\$) serves as a proxy for the Investment variable (INV), and Trade (% of GDP) is used as a proxy for the Trade Openness variable (TPN). Both INV and TPN are introduced into the model as control variables. Subsequently, EG and INV are transformed into their natural logarithm (ln) form. An empirical model is built and presented in an equation (1) to test the relationship under investigation.

$$LNEG_t = f(STA, LNINV, TPN) \quad (1)$$

Where LNEG is measured using GDP per capita (current US\$), STA is the Bank Z-Score, LNINV is gross fixed capital formation (current US\$), and TPN is Trade (% of GDP). The long-term form is represented in an equation (2).

$$LNEG = \gamma_0 + \gamma_1 STA + \gamma_2 LNINV_t + \gamma_3 TPN + \varepsilon_{1t} \quad (2)$$

To examine the presence of a long-term relationship between financial stability and economic growth in Southeast Asian countries, the Autoregressive Distributed Lag (ARDL) approach is used. (Pesaran, M. H., Shin, 1999) first developed the ARDL estimation technique and (Pesaran et al., 2001) subsequently refined it. The ARDL model can be applied to small samples or when there is a mix of degree of integration I(0) and

I(1), but not with I(2) (Islam & Mustafa Shindaini, 2022). The general ARDL equation presented in Equation (3) with the study's variables inserted.

$$\begin{aligned} & LNEG_t \\ &= \gamma_{01} + \sum_1^p \gamma_{1i} LNEG_{t-1} + \sum_0^q \gamma_{2i} STA_{t-1} + \sum_0^r \gamma_{3i} LNINV_{t-1} + \sum_0^s \gamma_{4i} TPN_{t-1} \\ &+ \varepsilon_{1t} \end{aligned} \quad (3)$$

The error correction term in the estimated ARDL model, as represented in Equation (4), is utilized to analyze the short-term relationship.

$$\begin{aligned} & \Delta LNEG \\ &= \gamma_{01} \\ &+ \sum_1^p \gamma_{1i} \Delta LNEG_{t-i} + \sum_0^q \gamma_{2i} \Delta STA_{t-1} + \sum_0^r \gamma_{3i} \Delta LNINV_{t-1} + \sum_0^s \gamma_{4i} \Delta TPN_{t-1} \\ &+ \theta ECT_{t-1} + \varepsilon_{1t} \end{aligned} \quad (4)$$

The coefficient $[\theta]$ reflects the rate of adjustment towards the long-term equilibrium of short-term imbalances and combines short-term constants with long-term constants while preserving the long-term perspective. Confirm long-term relationships among variables if the value of $[\theta]$ is negative, statistically significant, and less than one. The fact that the regressor has statistical significance confirms the short-term coefficient.

RESULT AND DISCUSSION

Unit Root Test

Table 1 presents the results of unit root tests, which suggest that all variables were found to be non-stationary at the level, but stationary at the first difference, ADF and PP tests were employed to evaluate the stationarity of the variables. Therefore, the ARDL model can be applied in the present study, as per null hypothesis stating the absence of unit root in the sample.

Table 1. Unit Root Tests

	ADF	PP
LNEG	-1.957	-2.0348
STA	-1.9985	-1.9985
LNINV	-2.1158	-2.153
TPN	-1.9695	-1.9695
D(LNEG)	-7.3558***	-7.4248***
D(STA)	-7.6118***	-7.6123***
D(LNINV)	-16.6621***	-7.2714***
D(TPN)	-6.8516***	-6.8444***

Source: Data Processing Results by the Author; *** significant at 1% level

ARDL (3,4,3,5) Long-term Output

Prior to executing the ARDL model, it is necessary to select the appropriate lag order. The ARDL bounds test is employed for this purpose. The results of the bound's co-integration tests, as reported in Table 2, indicating the presence of a long-term association between the study variables. Therefore, it can be inferred that there is a long-term relationship between financial stability and economic growth in Southeast Asian countries, as indicated by the bounds test.

Table 2. ARDL bounds co-integration test

Test Statistic	Value	Significant	I(0)	I(1)
F-statistic	5.69307	1%	5.17	6.36
k	3	5%	4.01	5.07
		10%	3.47	4.45

Diagnostic and Stability Parameter Testing

A set of diagnostic tests were conducted to make sure that the ARDL model is free from any regression errors. Additionally, the Cumulative Sum (CUSUM) and CUSUM square tests were applied to test for stability of parameters. The results of these tests are summarized in Table 3.

Table 3. Diagnostic Test Result

Test	Value
Normality	0.5875
Serial Correlation	0.1597
Heteroskedasticity	0.9593
Ramsey Reset Test	0.0538

Diagnostic tests show that normality, serial correlation, and heteroskedasticity do not affect the ARDL model. Additionally, the stability of the parameters is confirmed as the curve in Figures 1 falls within the lower and upper bounds.

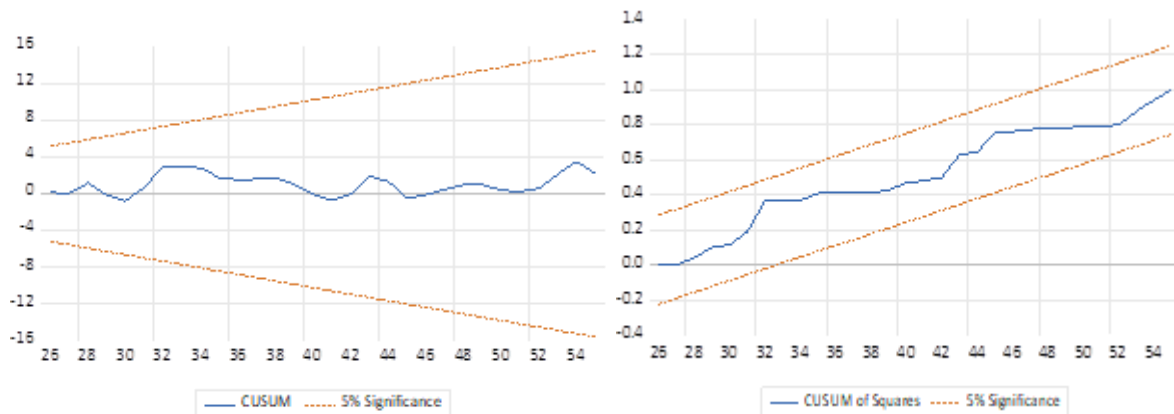


Figure 1. CUSUM and CUSUM of Squares Plot

ARDL regression

Once bounds testing confirms the presence of long-term co-integration, the following step is to calculate the long-term and short-term responsiveness of the variables.

Table 4. Long-term Estimation and Short-term Coefficients

Dependent Variable: LNEG	
Variable:	Coefficient
STA	0.026199 (0.0027)***
LNINV	0.770849 (0.0000)***
TPN	0.020048 (0.0000)***
CointEq(-1)	-0.500835

Dependent Variable: LNEG	
Variable:	Coefficient
	(0.0000)***

Notes: ***, significant at 1% level

The results of the long-term ARDL model estimation and short-term coefficients (ECT) as shown in Table 4, reveal that financial stability (STA) measured using Bank Z-Score in the long-term is positive and significant at the 1% level, demonstrating a strong effect of financial stability on economic growth, where the coefficient value on the STA variable is 0.026199. This means that if there is a 1% change in financial stability, it is expected to result in an increase of 2.62% in economic growth in the long-term. The results of this research further support the idea that a stable financial sector is one of the five main factors that influence economic growth (Stiglitz, 2016). In addition, financial stability that is improved minimizes the detrimental impact that the crisis has on economic expansion (Ijaz et al., 2020), this also implies that a stable financial system enhances the performance of an economy in various aspects, while an unstable financial system can affect how a country's economy performs (Schinasi, 2004). The findings of this research are also in line with research from (Apostolakis & Papadopoulos, 2019; Barra & Zotti, 2022; Ijaz et al., 2020; Stewart et al., 2021).

For two control variables, investment, and trade openness as macroeconomic indicators, based on the ARDL model estimation, the results are consistent with expectations. Investment (LNINV) in the long-term is positive and significant at the 1% level, where the coefficient value on the Investment variable is 0.770849. This means that if there is a 1% change in the investment level, it will result in an increase of 77.08% in economic growth in the long-term. This also confirms (Barro & Sala-i-Martin, 2003) that an increase in the capital will always stimulate economic growth. Studies conducted by align with the outcome of this research are (Akinbode et al., 2021; Isreal Akingba et al., 2018; Kenedi & Sukmawan, 2022; Qamruzzaman & Jianguo, 2017).

Meanwhile, trade openness (TPN) represented by the proxy Trade (% of GDP) in the long-term is also positive and significant at the 1% level with a TPN coefficient value of 0.020048. This means that if there is a 1% change in trade openness (TPN) with other variables held constant in the long-term, it will result in a change of 2% in economic growth (LNEG). This finding is support the statement of (Singh & Siddiqui, 2021) that trade openness has a significant positive impact on the quality of economic growth both in the short and long term and is commonly believed to lead to high economic growth (Tahir & Khan, 2014). Previous research by also supports the results of this research are (Pradhan et al., 2017; Rahman et al., 2017; Tahir & Azid, 2015; Tahir & Hayat, 2020; Tahir & Khan, 2014).

The coefficient estimation ECT(-1) indicates that the value is negative, less than one and statistically significant at the 1% level, which means that in the short-term, the model will eventually reach a state of balance in the long-term at an annual rate of 50.08%.

To validate the empirical results on the long-term ARDL coefficients, testing is carried out using the co-integrating regression method, which consists of three methods, namely (FMOLS, DOLS, and CCR), and the results are presented as follows.

Table 5. Robustness Check

Variable	Metode		
	FMOLS	DOLS	CCR
BZS	0.038112	0.038723	0.038076
	(0.0000)***	(0.0000)***	(0.0000)***
LNINV	0.744375	0.754172	0.743057

Variable	Metode		
	FMOLS	DOLS	CCR
	(0.0000)***	(0.0000)***	(0.0000)***
TPN	0.016182	0.016371	0.016098
	(0.0000)***	(0.0000)***	(0.0000)***
C	-12.36971	-12.64498	-12.32744
	(0.0000)	(0.0000)	(0.0000)

The findings from testing using the FMOLS, DOLS, and CCR methods support the results obtained from the long-term calculations of the ARDL model. These results confirm the reliability of estimates from the ARDL model.

CONCLUSION

This research applies Autoregressive Distributed Lag (ARDL) methods to examine the relationship between financial stability, as measured by Bank Z Score, and economic growth in five Southeast Asian countries over the period of 2011-2021. The study results demonstrate that financial stability, particularly in terms of banking stability, plays a crucial role in economic growth and that enhancing financial stability can offset the adverse effect of crises on economic growth. Additionally, the study indicates that other factors, such as investment and trade openness, are necessary to attain the desired level of economic growth. The positive correlation between investment and trade openness suggests that both investment and trade openness are beneficial for economic growth.

This study suggests that Southeast Asian governments should take an active but non-interfering approach in supporting financial stability, establish financial control systems by implementing policies that enhance the operating conditions of the financial sector that minimize operational risks in the financial sector in Southeast Asian countries.

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