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The Impact of Credit Access on Economic Growth in SEA Countries

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Abstract

Access to credit serves as a vital catalyst for economic growth, allowing individuals, enterprises, and governments to fund investments, maintain consumption stability, and encourage productive endeavors. Economic growth is fundamental to sustainable development, enhancing living standards, and promoting innovation. This study investigates the impact of credit access on economic growth in Southeast Asia (SEA) countries using monthly data from 2014 to 2020. By applying the Fully Modified Ordinary Least Squares (FMOLS) method, along with robustness checks using the Dynamic Ordinary Least Squares (DOLS) technique, this study includes essential control variables such as capital, labor, and technology. The results reveal that credit access has a positive impact on economic growth, while capital and technology also contribute positively to economic growth. Conversely, labor shows a negative impact on economic growth within the region. These results are consistent across both the FMOLS and DOLS analyses. Based on these findings, Southeast Asian policymakers ought to facilitate credit accessibility by making loan applications more straightforward, minimizing bureaucratic obstacles, and providing lower interest rates, especially for small enterprises and marginalized communities. Moreover, encouraging financial institutions to lend more liberally and utilizing digital platforms can expand access. Additionally, investing in technology, improving capital formation, and tackling labor market challenges will more effectively align with the region's growth path.

1. Introduction

Access to credit serves as a fundamental element of economic progress, fueling investments in enterprises, infrastructure, education, and healthcare, all of which promote growth and innovation [1–6]. However, weak financial systems and pervasive credit constraints remain significant barriers in developing economies, hindering equitable progress and limiting social mobility [7–12]. Unequal access to credit, particularly in less inclusive financial markets, exacerbates these challenges by limiting households' ability to overcome financial barriers, thereby hindering social mobility and inclusivity [13–15]. Hudon [16] underscores the ethical argument for credit as a human right, highlighting its critical role in fostering economic growth, reducing poverty, and improving societal welfare. Similarly, Armeanu [17] finds that credit extended to businesses has a more significant and lasting impact on economic growth than personal loans, as it boosts investment and positively affects GDP components. Despite this, banks often hesitate to lend to companies due to the challenges of recovering debts from insolvent businesses, leading to cautious lending policies that may inadvertently disadvantage financially stable enterprises.

The relationship between credit access and economic growth has been widely explored, with many studies emphasizing its transformative effects. Seminal research by Levine [18] establishes a strong connection between financial system development and long-term economic growth, illustrating how efficient credit allocation promotes innovation and capital accumulation. Building on this, Levine et al. [19] show that economies with advanced credit markets achieve sustained growth by expanding investment opportunities and supporting entrepreneurial activities. The literature also indicates that credit has a positive impact on economic growth [20–27].

Recent studies continue to validate and expand upon these findings, offering fresh perspectives on the relationship between credit and economic growth. Azimi [28], using the Generalized Method of Moments (GMM) approach, demonstrates that greater financial inclusion, particularly access to credit, significantly accelerates economic growth across diverse global contexts. This research underscores the vital role of credit in reducing income disparities and promoting sustainable development. Similarly, Mayer [29] highlights how limited credit access for low-income households hampers economic mobility, revealing the broader social and economic consequences of financial exclusion. In a focused analysis, Yakubu and Affoi [30] employed the Ordinary Least Squares (OLS) method to show that commercial bank credit significantly influences economic growth in Nigeria. Supporting these conclusions, Armeanu [17] found that credit extended to businesses stimulates investment and positively impacts GDP components, further emphasizing its importance for economic expansion.

Although substantial contributions have been made to the literature, a significant research gap remains in understanding the specific dynamics of credit access and its impact on economic growth in Southeast Asia (SEA). Much of the existing research provides generalized global or regional analyses, overlooking the distinct challenges and opportunities within SEA. This region encompasses a wide spectrum of financial systems and economic structures, ranging from the advanced banking sectors of Singapore and Malaysia to the underdeveloped credit markets of less-developed nations. Furthermore, rural populations, women, and small and medium-sized enterprises (SMEs) in the region often encounter substantial barriers to accessing credit, constraining their economic potential.

This study seeks to fill this gap by examining the impact of credit access on economic growth in the SEA region, with credit access proxied by the Strength of Legal Rights Index (SLRI) and the Depth of Credit Information Index (DCII). The study focuses on the period from 2014 to 2020, using monthly data analyzed with the Fully Modified Ordinary Least Squares (FMOLS) and robust Dynamic Ordinary Least Squares (DOLS) approaches, as these models have been widely used by researchers to assess the long-term impact [31–38]. To ensure a thorough evaluation, the research incorporates control variables such as capital, labor, and technology—factors widely recognized in economic literature as key drivers of growth [39–42]. By accounting for these variables, the analysis isolates the specific contribution of credit access to economic performance, offering a more precise understanding of its role in growth dynamics. This comprehensive approach not only addresses the unique challenges faced by the SEA region but also provides actionable insights for policymakers, financial institutions, and stakeholders aiming to enhance financial inclusion and close credit access gaps, thereby contributing to sustainable and inclusive economic development.

2. Materials and Methods

2.1. Data and Variables

This study utilizes data from Southeast Asian (SEA) countries, specifically Thailand, Indonesia, Malaysia, Singapore, the Philippines, Brunei Darussalam, Cambodia, and Vietnam. Myanmar, Laos, and Timor-Leste are excluded due to the unavailability of data. We converted the data from yearly to monthly intervals, covering 2014 through 2020, to provide a more detailed and reliable analysis. This transformation allows for the capture of more detailed fluctuations in economic activity, providing a more accurate assessment of the relationship between credit access and economic growth. The dependent variable in this study is credit access, proxied by the Strength of Legal Rights Index (SLRI) and the Depth of Credit Information Index (DCII). The aim is to examine whether SLRI and DCII have a similar impact on economic growth, measured by Gross Domestic Product (GDP), to determine whether credit access significantly influences economic growth. Additionally, control variables such as capital formation, labor force, and technology innovation are included to account for other factors contributing to economic performance. All

Table 1. Details of variables.

Status	Variable	Symbol	Proxy of	Unit Measurement	Source
Dependent	Gross Domestic Product	GDP	Economic Growth	Constant USD (2015)	World Bank [43]
Independent	Strength of Legal Rights Index	SLRI	Credit Access	Scale (0-12)	World Bank [43]
	Depth of Credit Information Index	DCII	Credit Access	Scale (0-8)	World Bank [43]
Control	Gross Fixed Capital Formation	GFCF	Capital	Constant USD (2015)	World Bank [43]
	Labor Force	LF	Labor	Total Workers	World Bank [43]
	Technology Innovation	TECH	Technology	Number of Patents	World Bank [43]

data for this study were sourced from the World Bank [43]. All details of the variables used in this study are presented in Table 1.

2.2. Conceptual Framework and Empirical Model

2.2.1. Conceptual Framework

The conceptual framework for this study is grounded in the relationship between credit access and economic growth, emphasizing the role of financial inclusion in fostering sustainable development. Drawing on prior research, credit access—proxied by the Strength of Legal Rights Index (SLRI) and the Depth of Credit Information Index (DCII)—is hypothesized to positively impact economic growth. This framework also incorporates key control variables, including capital formation, labor, and technology, to account for other fundamental factors influencing growth.

The model assumes that credit access enhances business investments, innovation, and productivity by lowering financial barriers, thereby contributing to economic expansion. SLRI reflects the strength of legal systems in securing borrower and lender rights, while DCII measures the extent of credit information availability. These factors collectively impact GDP, the proxy for economic growth in this study

2.2.2. Empirical Model

In this study, we apply a Cobb-Douglas production function, which includes capital and labor, drawing on the foundational concepts of the Solow-Swan growth model [44]. This model emphasizes the role of capital, labor, and technological progress as primary drivers of economic growth. Output is produced by combining these factors with the relationship typically expressed in the function shown in Equation 1.

$$Y = AK^{\alpha}L^{\beta} \quad (1)$$

where Y represents output, A denotes the level of technology (or Total Factor Productivity), and α and β are the elasticities of output with respect to capital and labor, respectively. The model highlights how improvements in technology, along with increases in capital and labor, contribute to long-term economic growth, with technology playing a crucial role in driving productivity enhancements.

To achieve the stated objective, we express the initial function as Equation 2.

$$GDP = f\,(SLRI, DCII, GFCF, LF, TECH) \quad (2)$$

Furthermore, Equations 3 and 4 present the practical econometric model derived from the function in Equation 2. These equations represent Model 1 (SLRI) and Model 2 (DCII) in both logarithmic and econometric forms. We separated SLRI and DCII into individual equations to analyze their respective impacts on economic growth.

$$\text{Model 1: } lnGDP_t = \beta_0 + \beta_1 lnSLRI_t + \beta_2 lnGFCF_t + \beta_3 lnLF_t + \beta_4 lnTECH_t + \varepsilon_t \quad (3)$$

$$\text{Model 2: } lnGDP_t = \beta_0 + \beta_1 lnDCII_t + \beta_2 lnGFCF_t + \beta_3 lnLF_t + \beta_4 lnTECH_t + \varepsilon_t \quad (4)$$

In Equations 3 and 4 for Model 1 and Model 2, ln indicates that the data is in logarithmic form. The variable t denotes the time period (monthly). β_0 is the constant term. lnGDP represents the natural logarithm of Gross Domestic Product, which is the dependent variable capturing economic growth. In Model 1, β_1 is the coefficient for lnSLRI (Strength of Legal Rights Index), serving as a proxy for the effect of credit access on economic growth. In Model 2, β_1 corresponds to lnDCII (Depth of Credit Information Index), which also acts as a proxy for credit access on economic growth. β_2 represents the coefficient for lnGFCF (Gross Fixed Capital Formation). β_3 is the coefficient for lnLFT (Labor Force). β_4 is the coefficient for lnTECH (Technology). Finally, ε_i is the error term.

2.3. Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS)

To ensure the robustness of the results, this study employs Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) techniques. These methods are particularly suitable for panel data analysis involving non-stationary time series and cointegrated variables. FMOLS was developed to provide optimal estimates for cointegrated relationships. It corrects for endogeneity and serial correlation issues by modifying the least squares estimator, ensuring unbiased

Table 2. Descriptive statistics.

Variable	lnGDP	lnSLRI	lnDCII	lnGFCF	lnLF	lnTECH
Mean	26.7759	1.4617	1.8798	25.3525	17.5063	8.9801
Median	26.7926	1.0986	1.9459	25.3593	17.5094	8.9784
Maximum	26.8550	1.9459	1.9459	25.4175	17.5101	9.0085
Minimum	26.6871	1.0986	1.7918	25.2699	17.4994	8.9269
Std. Dev.	0.0561	0.4196	0.0763	0.0466	0.0041	0.0281
Obs.	672	672	672	672	672	672

Table 3. Unit root test.

Variable	Level		1st Diff.	
	t-stat.	**Prob.**	**t-stat.**	**Prob.**
Augmented-Dickey Fuller (ADF)				
lnGDP	-0.2315	0.4085	-11.1907*	0.0000
lnSLRI	2.3844	0.9914	-11.1460*	0.0000
lnDCII	1.4111	0.9209	-11.1460*	0.0000
lnGFCF	-1.0050	0.1574	-11.2682*	0.0000
lnLF	-1.8898**	0.0294	-10.8194*	0.0000
lnTECH	0.4691	0.6805	-10.9005*	0.0000
Phillips–Perron (P-P)				
lnGDP	-0.0442	0.4824	-14.4636*	0.0000
lnSLRI	2.3644	0.9910	-14.4856*	0.0000
lnDCII	1.4392	0.9249	-14.4856*	0.0000
lnGFCF	-0.7067	0.2399	-14.4248*	0.0000
lnLF	-1.9012**	0.0286	-14.6365*	0.0000
lnTECH	0.3885	0.6512	-14.6006*	0.0000

Note: ** and * are significant at the 5% and 1% levels of significance.

and consistent results [45]. FMOLS is especially useful in studies where variables exhibit long-term equilibrium relationships, as is expected in this study, between credit access and economic growth. DOLS builds upon FMOLS by incorporating leads and lags of the differenced explanatory variables to correct for endogeneity and serial correlation. This method is highly effective in addressing small-sample bias and providing efficient estimates in cointegration analyses [46]. By including dynamic adjustments, DOLS improves the precision of coefficient estimates, particularly in panel datasets with a limited time span.

Using both FMOLS and DOLS ensures that the results are not only robust but also account for potential econometric challenges such as endogeneity and serial correlation. This dual approach provides confidence in the validity of the empirical findings and strengthens the overall reliability of the study.

3. Results and Discussion

3.1. Descriptive Statistics

Table 2 presents the descriptive statistics for the variables used in the analysis, including lnGDP, lnSLRI, lnDCII, lnGFCF, lnLF, and lnTECH. The mean value of lnGDP is 26.7759, with minimal variability (Std. Dev. = 0.0561). The maximum and minimum values of lnGDP are 26.8550 and 26.6871, indicating limited disparity in economic size across the observations. lnSLRI has a mean of 1.4617, ranging from 1.0986 to 1.9459, with moderate variability (Std. Dev. = 0.4196), reflecting differences in the strength of legal rights. lnDCII is relatively consistent, with a mean of 1.8798, a maximum of 1.9459, and a minimum of 1.7918, showing low variability (Std. Dev. = 0.0763). lnGFCF, lnLF, and lnTECH exhibit high stability, with small standard deviations of 0.0466, 0.0041, and 0.0281, respectively. The maximum and minimum values of lnGFCF are 25.4175 and 25.2699, indicating stability in investment levels. Similarly, lnLF ranges narrowly between 17.4994 and 17.5101, while lnTECH is distributed between 9.0085 and 8.9269. Overall, the data show stable macroeconomic indicators (lnGDP, lnGFCF, lnLF, and lnTECH) and moderate variability in financial and legal indices (lnSLRI and lnDCII).

3.2. Unit Root Test

Table 3 presents the results of the unit root tests for all variables using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) approaches, both at levels and first differences. At the level, most variables fail to reject the null hypothesis of a unit root, indicating they are non-stationary, as evidenced by insignificant t-statistics and high p-values. The exception is lnLF, which is stationary at the 5% level under both ADF and PP tests. However, after taking the first differences, all variables (lnGDP, lnSLRI, lnDCII, lnGFCF, lnLF, and lnTECH) reject the null

Table 4. Kao cointegration test.

Kao Cointegration	Value Referral	t-stat.	Prob.
Model 1	ADF	-5.3957*	0.0000
Model 2		-7.5512*	0.0000

Note: * indicates significance at the 1% level.

Table 5. FMOLS estimation results on economic growth.

Variable	Model 1			Model 2		
	Coeff.	**t-stat.**	**Prob.**	**Coeff.**	**t-stat.**	**Prob.**
lnSLRI	0.0406	10.9393	0.0000	-	-	-
lnDCII	-	-	-	0.1703*	23.4419	0.0000
lnGFCF	0.8259*	24.1097	0.0000	0.9441*	76.3568	0.0000
lnLF	-2.6880*	-11.0739	0.0000	-0.3953*	-5.4072	0.0000
lnTECH	0.1153*	6.5906	0.0000	0.1276*	11.4633	0.0000
R^2	0.9877			0.9948		
Adjusted R^2	0.9875			0.9947		

Note: * indicates significance at the 1% level.

Table 6. Robustness test: DOLS estimation results on economic growth.

Variable	Model 1			Model 2		
	Coeff.	**t-stat.**	**Prob.**	**Coeff.**	**t-stat.**	**Prob.**
lnSLRI	0.0396*	8.9104	0.0000	-	-	-
lnDCII	-	-	-	0.1681*	19.0114	0.0000
lnGFCF	0.8370*	20.2758	0.0000	0.9510*	63.7124	0.0000
lnLF	-2.6330*	-8.8695	0.0000	-0.3961*	-4.4414	0.0000
lnTECH	0.1096*	5.1914	0.0000	0.1223*	9.0071	0.0000
R^2	0.9890			0.9950		
Adjusted R^2	0.9868			0.9940		

Note: * indicates significance at the 1% level.

hypothesis of a unit root at the 1% significance level, with highly significant t-statistics and p-values of 0.0000. This indicates that all variables become stationary at first differences, supporting their integration of order one. These findings confirm the suitability of these variables for further cointegration and long-run relationship analyses. After establishing stationarity, we proceed to test for cointegration.

3.3. Cointegration Test

These cointegration tests are a crucial component of econometric analysis. Table 4 presents the results of the Kao cointegration test [47], which evaluates the presence of a long-run equilibrium relationship in Models 1 and 2. In both models, the null hypothesis of no cointegration is rejected at the 1% significance level, as indicated by the highly significant t-statistics (-5.3957 and -7.5512) and p-values of 0.0000. These findings confirm that Models 1 and 2 are cointegrated with their respective dependent variables, indicating a stable long-term relationship. This implies that any short-term deviations in these relationships will adjust over time, demonstrating that both models are robust for long-run analysis and suitable for advanced econometric techniques such as FMOLS or DOLS.

3.4. FMOLS Estimation

Table 5 presents the FMOLS estimation results for economic growth as the dependent variable in Models 1 and 2. In Model 1, lnSLRI has a positive and significant impact on economic growth, with a coefficient of 0.0406, indicating that a 1% increase in lnSLRI will lead to a 0.0406% rise in economic growth. lnGFCF also has a positive and significant coefficient (0.8259), suggesting that a 1% increase in lnGFCF will raise economic growth by 0.8259%. Conversely, lnLF has a significant negative impact (-2.6880), meaning a 1% increase in lnLF will reduce economic growth by 2.688%. lnTECH positively affects economic growth, with a coefficient of 0.1153, indicating that a 1% increase in lnTECH will increase economic growth by 0.1153%. In Model 2, lnDCII has a positive and significant impact, with a coefficient of 0.1703, meaning a 1% rise in lnDCII will boost economic growth by 0.1703%. Similarly, lnGFCF (0.9441) and lnTECH (0.1276) have positive effects, indicating that increases in these variables enhance economic growth. However, lnLF remains negative (-0.3953), meaning a 1% increase in lnLF will reduce economic growth by 0.3953%. Both models exhibit high explanatory power, with R^2 values of 0.9877 and 0.9948, respectively, indicating that the independent variables explain a large proportion of the variation in economic growth.

3.5. Robustness Test: DOLS Estimation

Table 6 presents the DOLS estimation results as a robustness check for the FMOLS results on economic growth as the dependent variable. In Model 1, lnSLRI has a positive and significant coefficient (0.0396), indicating that a 1% increase in lnSLRI will raise economic growth by 0.0396%. lnGFCF remains positive and significant, with a coefficient of 0.8370, showing that a 1% increase in lnGFCF boosts economic growth by 0.8370%. lnLF has a significant negative impact (-2.6330), meaning a 1% increase in lnLF reduces economic growth by 2.6330%. Similarly, lnTECH has a positive and significant effect, with a coefficient of 0.1096, indicating that a 1% increase in lnTECH leads to a 0.1096% increase in economic growth. In Model 2, lnDCII positively impacts economic growth, with a significant coefficient of 0.1681, meaning a 1% rise in lnDCII increases economic growth by 0.1681%. lnGFCF also has a strong positive and significant coefficient (0.9510), showing that a 1% increase in lnGFCF leads to a 0.9510% rise in economic growth. Conversely, lnLF negatively affects economic growth, with a coefficient of -0.3961, indicating that a 1% increase in lnLF reduces economic growth by 0.3961%. Lastly, lnTECH has a positive and significant coefficient (0.1223), suggesting that a 1% increase in lnTECH increases economic growth by 0.1223%. Both models demonstrate high explanatory power, with R^2 values of 0.9890 and 0.9950, respectively, showing that the independent variables account for a significant proportion of the variation in economic growth.

The DOLS results are consistent with the FMOLS findings, supporting their robustness. The positive effects of lnSLRI, lnDCII, lnGFCF, and lnTECH, along with the negative impact of lnLF, align across both estimation techniques. This consistency demonstrates that the relationships identified between the independent variables and economic growth are stable and reliable, reinforcing the validity of the results. Both methods confirm that financial and technological factors significantly contribute to economic growth, while labor force size has a negative impact in this context.

3.6. Discussion

The findings from the FMOLS and DOLS estimations demonstrate that SLRI and DCII, which serve as proxy indicators for credit access, have a positive and significant impact on economic growth in the Southeast Asia (SEA) region. These results highlight the critical role of financial infrastructure in fostering economic performance. The positive coefficients of SLRI (strength of legal rights) and DCII (depth of credit information) suggest that improvements in legal protections for borrowers and lenders, as well as the availability and quality of credit information, enhance credit access, which in turn drives economic growth. These findings align with the work of Armeanu et al. [17], Timsina [20], Ananzeh [21], Thierry et al. [22], Azimi [28], Mayer [29] and Yakubu & Affoi [30], who also emphasize the positive impact of credit access on economic performance.

Improved financial infrastructure, including stronger legal protections and better access to credit information, facilitates lending and enhances market efficiency. By strengthening legal frameworks and credit information systems, lenders can better assess risks, leading to more lending opportunities and, consequently, economic growth. In SEA, where financial inclusion is a key policy priority, reducing credit barriers can unlock the economic potential of underserved populations, particularly small and medium-sized enterprises (SMEs), which often struggle to access finance due to limited financial records or high perceived risks. Access to credit enables individuals and businesses to secure the financial resources needed for investment, innovation, and expansion, creating employment opportunities, increasing household incomes, and enhancing economic resilience. Additionally, better credit availability allows households to smooth consumption and invest in human capital, such as education and healthcare, which contribute to long-term productivity. The robustness of these findings across FMOLS and DOLS methods reinforces the importance of strengthening credit systems to support sustainable economic growth in SEA.

In addition to credit access, the analysis reveals significant impacts of other key factors on economic growth, such as capital formation (GFCF). The positive and significant coefficients of capital formation emphasize the pivotal role of capital accumulation in the SEA region. Investments in infrastructure, machinery, and physical assets not only increase productive capacity but also enhance connectivity, reduce transaction costs, and foster regional trade integration. For instance, infrastructure initiatives such as Indonesia's National Strategic Projects and Vietnam's investment in logistics networks underscore the importance of capital formation in boosting economic activity. A 1% increase in capital formation corresponds to substantial increases in economic growth. These results are consistent with the research conducted by Kesar et al. [48], Azam et al. [49], and Idroes et al. [50].

Similarly, advancements in technology (TECH) have a transformative effect on economic growth in SEA. A 1% increase in technology innovation results in significant improvements in economic performance, demonstrating the importance of innovation and digitalization for sustainable development. These findings align with the studies carried out by Behera et al. [51], Ximei et al. [52], and Elfaki & Ahmed [53]. Technological progress enhances productivity across sectors by enabling efficient resource utilization, improving supply chain operations, and fostering new business models. Initiatives like the adoption of Industry 4.0 technologies, digital payments systems, and e-commerce platforms in SEA countries are prime examples of how technology is driving growth. Moreover, increased investment in research and development (R&D) and public-private partnerships in innovation ecosystems are essential for ensuring continued technological progress.

In contrast to the positive contributions of capital and technology, the labor force (LF) shows a negative and significant impact on economic growth in the SEA context. This unexpected finding may reflect inefficiencies in labor utilization, skill mismatches, and the inability to absorb the growing labor force into productive sectors. These results correspond with the research conducted by Elfaki & Ahmed [53] and Zhang et al. [54]. Many SEA countries have young and expanding populations, creating a potential demographic dividend. However, without adequate investment in education, vocational training, and productivity-enhancing technologies, this labor force may remain underutilized. For example, Indonesia and the Philippines face challenges related to high informal employment and low skill levels, which constrain their ability to fully leverage their human capital. Addressing these challenges through upskilling programs, labor market reforms, and alignment of education systems with industry needs is crucial for maximizing the economic potential of the region's workforce.

4. Conclusions, Implications and Limitations

This study examines the impact of credit access, using SLRI and DCII as proxies, on economic growth in SEA countries, utilizing monthly data from 2014 to 2020. The analysis applies the FMOLS method, with additional robustness checks using the DOLS approach. Key control variables, including capital, labor, and technology, are incorporated into the model. The findings indicate that credit access has a positive effect on economic growth, with capital and technology also contributing positively. However, labor shows a negative impact on economic growth in the region. These results remain consistent across both the FMOLS and DOLS models, reinforcing the importance of credit access and the role of capital and technology in driving economic performance in SEA.

Based on the findings of this study, several policy recommendations are crucial for promoting sustainable economic growth in SEA. First, policymakers should focus on strengthening financial infrastructure, particularly by improving legal frameworks and credit information systems, to enhance credit access for SMEs and underserved populations. This would facilitate greater access to financing, empower businesses and individuals, and drive investment and innovation. Second, promoting capital investments should be a priority, especially in infrastructure development, as it can boost productivity and contribute to long-term economic growth. Third, policymakers should actively advance technological capabilities by encouraging digital transformation, supporting research and development funding, and promoting the adoption of Industry 4.0 technologies to increase competitiveness and innovation. Finally, addressing labor market challenges through investments in education, vocational training, and initiatives to generate employment opportunities is essential for improving workforce productivity and reducing skill mismatches.

This study offers valuable insights, though a few limitations warrant consideration. First, while transforming the data from yearly to monthly frequency from 2014 to 2020 provides a detailed view, expanding the time frame could capture long-term trends and economic cycles, further strengthening the findings. Second, although the strength of legal rights index and the depth of credit information index are widely recognized proxies for credit access, future research could explore additional factors, such as informal lending and financial infrastructure, to gain a more comprehensive understanding. Moreover, while this study incorporates key control variables, considering other factors like political stability or external shocks could enhance the robustness of the analysis. The diversity within SEA countries, in terms of economic structure and institutional quality, presents an opportunity for more targeted, country-specific research in future studies. Lastly, the use of FMOLS and DOLS methods is a strength, though addressing potential issues with data stationarity or model specification could further refine the results. Overall, these limitations provide valuable directions for future research, and our findings serve as a foundation for deeper exploration in this area.

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