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The Effect of Macroeconomic Conditions and Income Structure on The Stability of Bank Profitability in ASEAN-5

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Abstract–This paper investigates the factors affecting profitability stability of the ASEAN-5 (Indonesia, Malaysia, Philippines, Singapore and Thailand) commercial banks such as income structure, bank specific characteristics, and macro economy factors. This research uses volatility of return on assets (VolROA) instead of ROA and ROE, which are used in previous studies mainly to measure profitability levels, to proxy for profitability stability, thereby capturing the stability of bank earnings over time. This study utilizes panel data of ASEAN-5 commercial banks for a period of 10 years from 2015 to 2024 and employs a fixed-effects regression model to determine the factors affecting the stability of commercial bank profitability. The results indicate that the drivers of non-interest income diversification, bank size, lending activity, degree of deposit funding, condition of the GDP growth, exchange rate, and real interest rates have a significant impact on reducing the volatility of earnings and enhancing the stability of bank profits. Meanwhile, there is an association of higher equity levels with higher volatility in profitability, suggesting a greater level of risk taking by more highly capitalized banks. Moreover, the addition of macroeconomic variables to the model further adds to the model's explanatory power, indicating that the banking stability is not only dependent on the characteristics of the bank, but also on the economic environment of the bank. This study builds on the literature on banking stability by presenting new empirical findings on the stability of banking profitability for the ASEAN-5 commercial banks, which is less thoroughly examined in emerging banking markets, by using the VolROA methodology as well as by placing bank-specific and macroeconomic determinants into a unified empirical framework. The results also have practical implications for regulators and bank management in considering strategies to enhance banking resilience and ensure stable profitability, given the dynamic economic environment.

Keywords: Profitability Stability; VolROA; Income Structures; ASEAN-5; Macroeconomics

1. INTRODUCTION

Banking is the element of financial systems stability and economic growth as it performs its intermediation role, raises funds, loans, and distributes credit, and transmits the monetary policy. Profitability is one of the key measures which help evaluate the performance of a bank and represent how well a bank manages its assets and produces sustainable income (Beck & Keil, 2021; Diamond & Dybvig, 1983; IMF, 2019). Return on Assets (ROA) and Return on Equity (ROE) are the most popular profitability metrics in practice and academic literature because they are easy to interpret and predictable in financial performance analysis (Adnan et al., 2021; Athanasoglou et al., 2008; Muttaqin, 2025; Siniţîn & Socol, 2020). These indicators, however, are fixed in time as they only reflect profitability at one particular time, and they therefore are less likely to reflect the real dynamics of the variations in profits over time.

When it comes to the stability of banks, stability of profits over time is more important than the level of nominal profitability. Income stability is a measurement showing how a bank can withstand macroeconomic shocks and show stability in its performance in the dynamic economic condition (Jokipii & Monnin, 2013). This opinion is supported by the historical process of the development of the ideas of financial stability. The application of the term financial stability has been systematic in the 1990s by the Bank of England. However, the issue of stability of financial systems had been raised at the dawn of the 20th century. Historical records show that the Federal Reserve was established in 1913 largely as a response to recurring banking panics—most notably the Panic of 1907—which underscored the need for a central institution capable of promoting resilience in the banking system and preventing destabilizing runs (Federal Reserve Bank Philadelphia, 2021).

Schinasi, (2004) created a more detailed theoretical framework, breaking down the concept of financial stability into three dimensions, the first one being (1) the efficient allocation of capital, the second (2) the capacity of the system to assess the risks in a prospective manner, and the third (3) the capacity to absorb the shocks of the real and financial sectors. Once any of these aspects are upset, banks may be left exposed as their credit risk increases, liquidity becomes weaker, or even the banks faces bank runs. Such vulnerability, according to the classical theory of Diamond & Dybvig, (1983) comes about by self-fulfilling runs, whereas according to the financial instability hypothesis (1993) by Minsky, long periods of stability may induce excessive risk-taking. These views have gained relevance and value relative to a contemporary financial system which has been complex.

Significant crises of the past decades have solidified the need to have profit stability. The 2008 international financial crisis illustrated the role of the high leverage, dependence on short-term financing, and risky financial innovation in enhancing the speed of spread of shocks. As of 2023, the breakage of the Silicon Valley Bank and the stress experienced by the Credit Suisse helped to demonstrate that having unstable earnings and concentration of risks and exposure to fluctuations in interest rates could lead to collapse despite having positive profitability prior to the crisis. Therefore, level-based profitability indices are not adequate to show the strength of a bank to systemic pressures.

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This trend can also be traced with respect to the banking sector of ASEAN-5 nations. The process of increasing regional integration that has been achieved through trade, investment, and capital flows has exposed banking sector to international shocks like the increasing international interest rates, exchange rate volatility, and financial market instability. The recent empirical investigations have shown that these external forces continue to exert pressure on the profitability of banks in the region. The income structure is a significant factor in defining the ability of the banks to absorb such shocks. Nevertheless, it has been demonstrated by ASEAN that an increased proportion of non-interest income (NII) does not necessarily empower profitability. A 2023 survey of 36 commercial banks in the ASEAN region (2008-2020) concludes that the impact of NII on the bank performance is not uniform and in most instances even negative as the level of NII exceeds a certain level, suggesting the effect of NII is increasing the earnings volatility but not the stability (Phan et al., 2023). The diversification of income, in this context, can be considered rather carefully: NII can be used as an extra source of revenue, nevertheless, over-dependence on it can lead to the banks to be exposed to the risks of the market that are more unstable than other activities that could be done by relying on the interest-based approach.

This claim is supported by a number of studies. Hamdi et al., (2017) found that minimizing ROA volatility can be achieved by increasing non-interest income (NII) while Nguyen & Le, (2022) showed that profitability and bank stability are positively related. But all these effects are affected by the bank size (SIZE), credit exposure (LOANS_TA), funds structure (LNDEPO), and liabilities ratio (LNTLE). Moreover, Adnan et al., (2021) also suggested that the relationship between profitability and bank size does not hold true for all the countries in ASEAN. Although a wealth of literature has emerged on the profitability and stability of banks, most of the previous studies continue to use level-based indicators to assess bank performance, including Return on Assets (ROA) and Return on Equity (ROE) (Adnan et al., 2021; Athanasoglou et al., 2008). These measures are mainly based on profitability in a particular time period and do not fully measure the sustainability of bank profits in the face of macroeconomic and financial market disturbances. Moreover, the majority of the banking stability studies are based on the Z-score as the primary indicator of banking stability, even if the theoretical link between the Z and stability of earnings is less direct and is rather the link to solvency and bankruptcy risk (Mercadier & Strobel, 2024).

In addition, the results of previous studies on the impact of non-interest income (NII) on the stability of profitability are still inconclusive. Some studies indicate that adopting income diversification strategy with NII can improve earnings volatility (Hamdi et al., 2017), while others studies reveal that over-dependence on NII can make earnings more volatile (Phan et al., 2023) especially in an ASEAN region where the financial markets are highly integrated. Empirical evidence based on ASEAN-5 is also scanty in the consideration of macro-economic factors and banking attributes within a single empirical structure which specifically investigates the profitability stability on the basis of volatility measure. Thus, there is a gap in the literature on the effects of macroeconomic conditions and banking income structures on bank profitability stability for the ASEAN-5 countries.

Meanwhile, the Z-score is actually one of the most popular international instruments that assess the banking stability. Nonetheless, in theory, it is a gauge of bankruptcy risk (it is likely to default), rather than the stability of profitability in particular. The Z-score components include profitability, earnings volatility, and the capital ratio which are founded on probabilistic inequalities improved by the Vysochanskii–Petunin methodology in the occasion when the ROA distribution is unimodal (Mercadier & Strobel, 2024). Therefore, Z-score is better in terms of evaluating systemic risk and solvency and more specific indicator like VolROA is needed to evaluate earnings stability.

This study builds on the literature on banking and financial stability which follows the traditional trend of profitability measures based on levels (ROA, ROE) and introduces the Return on Assets volatility (VolROA) as an alternative measure of banking profitability stability (Ashraf et al., 2017; Athari & Irani, 2022). The determinants of bank profitability have been the focus of most studies but the stability aspect of profitability has received very little attention, especially in the emerging ASEAN banking market. Thus, this study is to make a contribution by proposing a unified empirical framework which incorporates not only the bank-level attributes but also macro-economic factors, to examine the determinants of profitability stability empirically for the ASEAN-5 commercial banks. In addition, this study provides fresh empirical evidence for the period between 2015 and 2024 on the combined impact of income diversification, the mix of funding, credit use, and the macroeconomic conditions on banking resilience and earnings stability in changing economic conditions. To the best of our knowledge, studies on profitability stability, specifically using the VolROA in the ASEAN-5 banking context are still limited and this study is one of the few studies that explicitly explores profitability stability from a different lens, that is, from the point of view of the earnings stability of banks. Their results should have implications for policy makers in the design of policies that are conducive to stability of the financial system, and for bank management in developing strategies to sustain and maintain profitability in the face of global financial uncertainty.

2. RESEARCH METHODS

2.1 Type of Research and Population and Sample

The research method used in this study is quantitative research with panel data type. The data used in the study is panel data from commercial banks in the ASEAN countries consisting of Indonesia, Malaysia, Thailand, the Philippines and Singapore in the period 2015–2024. It's apt to use panel data because it reflects not only cross sectional

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differences between banks but also time series differences in macroeconomic conditions and internal characteristics of banks. The method applied is similar to the previous studies in banking on profitability and financial stability (Adnan et al., 2021; Athari & Irani, 2022; Nguyen & Le, 2022).

Financial data of the banks at the bank level were derived from Thomson Reuters Refinitiv, the data comprised total assets, total equity, deposits, loans, non-interest income, and financial ratios of profitability. This is in line with the existing cross-country banking studies (Adnan et al., 2021; Dsouza et al., 2022; Gutiérrez-Ponce & Wibowo, 2023). World Bank data of macroeconomic variables like GDP growth, exchange rates and real interest rates were also obtained from the World Development Indicators (WDI) database. The data set is unbalanced as it is common in banking and financial research where data is unavailable across banks.

2.2 Research Variables

The Profitability stability (measured using the volatility of Return on Assets, VolROA) is the dependent variable in this study. VolROA is calculated as the standard deviation of the bank ROA in three-year windows that are calculated in a rolling fashion. This measure is also regarded as a better indicator of the stability of earnings as it reflects changes in profitability over time instead of simply profitability (Ashraf et al., 2017; Athari & Irani, 2022).

Independent variables are both bank-specific and macroeconomic variables. Other bank-specific variables are non-interest income ratio (NII) as a proxy for income diversification, bank size (SIZE) measured by the natural logarithm of total assets, loans ratio (LOANS_TA) as a proxy for credit intensity, logarithm of total equity (LNTLE) as an indicator of capital resilience, and logarithm of total deposits (LNDEPO) as an indicator of funding capacity. Other macroeconomic variables are GDP growth (GDP_GROWTH), exchange rates (LNEXCHANGE_RATE) and real interest rates (RIR), which are typical variables employed in bank profitability and financial stability (Beck & Keil, 2021). The operational definitions, measurements, and data sources of all variables used in this study are further presented in Table 1.

Table 1. Operational Definitions and Measurements of Variables

Variable	Definition	Proxy / Formula	Unit	Data Source
VolROA (Y)	Bank profitability stability	The standard deviation of bank-level ROA, measured over rolling 3-year overlapping periods. VolROA = @movstdev(roa, 3)	%	The author's calculation
NII	Income diversification	Other Operating Income / Total Assets	%	Refinitiv
SIZE	Bank size	Natural logarithm of total assets	Ln	Refinitiv
Loans/TA	Loan-to-asset ratio	Total loans / total assets	%	Refinitiv
LNTLE	Bank capital resilience	Natural logarithm of total equity	Ln	Refinitiv
LNDEPO	Bank funding source	Natural logarithm of deposits	Ln	Refinitiv
GDP_Growth	Economic growth	Annual GDP growth rate	%	World Bank
LNEXCHANGE_RATE	Exchange rate	Annual change in local currency against USD	%	World Bank
RIR	Real interest rate	Lending interest rate minus inflation	%	World Bank

2.3 Data Analysis and Techniques

Empirical analysis actually starts with descriptive statistics, which is used to summarize the distribution of the research variables. The determinants of profitability stability of the ASEAN-5 commercial banks are then tested using panel data regression analysis. Fixed effects estimation is used to account for any unobserved bank-specific effects and time-specific effects. This study uses a panel-data regression model to conduct the analysis of relationships between these variables by the fact that it enables controlling the unobserved heterogeneity at the level of the bank and year. The estimation specification is of the general form of panel regressions usually utilized in banking research:

$$\mathrm{VolROA}_{it} = \alpha + \beta_1 \mathrm{NII}_{it} + \beta_2 \mathrm{SIZE}_{it} + \frac{\beta_3 \mathrm{LOANS}}{\mathrm{TA}_{it}} + \beta_4 \mathrm{LNTLE}_{it} + \beta_5 \mathrm{LNDEPO}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$\mathrm{VolROA}_{it} = \alpha + \beta_1 \mathrm{NII}_{it} + \beta_2 \mathrm{SIZE}_{it} + \frac{\beta_3 \mathrm{LOANS}}{\mathrm{TA}_{it}} + \beta_4 \mathrm{LNTLE}_{it} + \beta_5 \mathrm{LNDEPO}_{it} + \beta_6 \mathrm{GDP\_Growth}_{it} + \beta_7 \mathrm{LNEXCHANGE\_RATE}_{it} + \beta_8 \mathrm{RIR}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

i refers to individual banks, t refers to years, and $\varepsilon_{it}$is the stochastic error term that is normally distributed. $\mu_i$represents bank-specific effects (individual fixed effects), while $\lambda_t$represents time-specific effects (time fixed effects).

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Table 2. Descriptive statistics

Variable	Minimum	Maximum	Mean	Std. Dev.
VOLROA (Y)	0.000000	1.847521	0.241548	0.257624
NII	-0.009903	0.017651	0.003008	0.003267
SIZE	21.05418	26.95667	24.76825	1.180838
Loans/TA	0.412278	1.052981	0.715964	0.122434
LNTLE	21.03045	26.95489	24.76806	1.180790
LNDEPO	20.46876	26.70086	24.47429	1.193633
GDP_Growth	-6.050000	9.760000	3.532807	3.344735
LNEXCHANGE_RATE	0.295266	9.671268	4.650807	3.451467
RIR	-5.120000	9.990000	3.673860	3.529215

Table 2 presents the research variables have descriptive statistics during the observation period, the average of ASEAN-5 commercial banks' VolROA in the observation period is 0.241548, which shows a relatively moderate level of profitability volatility. The table also shows the differences in the banking characteristics and economic conditions of the ASEAN-5 countries in 2015-2024 in terms of bank-specific and macroeconomic variables. In addition, panel regression methods are used to analyze the factors affecting the stability of profitability. Unobserved bank-specific heterogeneity is controlled for using fixed effects estimations. To deal with any possible heteroskedasticity and serial correlation, robust standard errors are utilized. The statistical significance of the individual coefficients is evaluated with the use of t-tests, as well as the statistical significance of the whole model by using F-tests, and the model explanatory power is assessed by using the coefficient of determination (R^2).

3. RESULTS AND DISCUSSION

The findings of this study based on empirical analysis of the determinants of bank profitability stability in the ASEAN-5 commercial banks are presented in this section. Return on assets (ROA) volatility (VolROA) is used to assess profitability stability, with a lower VolROA indicating greater profitability stability. So, a negative regression coefficient means that the variable has a negative contribution to the volatility of profitability, and a positive regression coefficient means a positive contribution to the volatility of profitability.

The least-squares regression results are shown in Table 3. The bank-specific variables are only included in Equation (1) and both the bank-specific and macroeconomic variables in Equation (2). Macroeconomic variables when added to the model show the model has increased the explanatory power of the system from 0.494 in Equation (1) to 0.656 in Equation (2) as indicated by the coefficient of determination R^2. This result has indicated that ASEAN-5's bank profitability stability is not only affected by banking characteristics but also by the macroeconomic conditions.

Table 3. Fixed-Effects Regression Results on Profitability Stability

Independent Variables	Equation (1) (FE)	Equation (2) (FE)
Constant	-1.0837	6.5555*
	(3.3127)	(3.5437)
NII	-25.6650**	-33.8394*
	(9.8721)	(17.4325)
SIZE	-2.3726***	-3.7072***
	(0.7801)	(0.8043)
Loans/TA	-1.6025***	-1.6522**
	(0.5339)	(0.6345)
LNTLE	2.2055**	5.2080***
	(0.9725)	(1.0867)
LNDEPO	0.2732	-1.5276**
	(0.5205)	(0.6608)
GDP_GROWTH	—	-0.0188***
		(0.0064)
LNEXCHANGE_RATE	—	-0.9989**
		(0.4158)
RIR	—	-0.0277***
		(0.0063)
Observations	217	171
R^2	0.494	0.656
Adjusted R^2	0.361	0.524
F-statistic	3.713	4.984
Prob(F-statistic)	0.000	0.000

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Notes: Figures in the parentheses are robust standard error. *, ** and *** indicate the 10%, 5% and 1% significance levels, respectively

Table 3 indicates that non-interest income ratio (NII) is negatively and significantly related to VolROA in both models. The negative coefficient of NII in Equation (2) indicates that non-interest income diversification significantly reduces earnings volatility, thereby enhancing bank profitability stability. The discovery of this is in support of the diversification theory proposed by Markowitz, (1952) which states that diversified sources of income will help in lowering the risk exposure. These findings are also in line with Hamdi et al., (2017) who found that non-interest income positively affects banking stability through its role in reducing profit fluctuations. In the same manner, Rahman & Abbas, (2025) found that the banking sector is more resilient when it adopts diversified revenue structures in South Asian banking systems. The results, however, contradicted the result of Susanto et al., (2024) which found that greater reliance on non-interest income could make banks in Indonesia less financially sound because of increased market risks and operating risks. This disparity could be attributed to the larger ASEAN-5 sample size in this study, which also has varying degrees of market maturity, financial integration and regulatory oversight among banks. Thus, moderate diversification positively reinforces the profitability stability, while an excessive dependence on non-traditional income, which is more volatile, can have a negative effect.

In addition, bank size (SIZE) has a negative and very significant relationship with VolROA. As seen in Equation (2), the coefficient associated with SIZE is -3.7072 which means that the bigger the bank, the more stable the profitability. This finding lends weight to the economies of scale argument that larger banks have greater opportunity to diversify, a more robust risk management framework, a wider array of customers, and deeper penetration into funding markets. The result is consistent with Pratama et al., (2025) who proposed that big banks tend to be more efficient, and thus can earn more stable returns. However, this result is different from Nguyen & Le, (2022), who reported that, in Southeast Asia, larger banks might be more unstable because of the possibility of aggressive lending and risk-taking behavior arising from the “too-big-to-fail” phenomenon. Differences could be due to differences in observation periods and/or the stability measure of profitability. This work specifically uses VolROA as a measure of earnings stability and examines the relationship between earnings stability and bank growth and stability, as opposed to the focus of Nguyen & Le, (2022) which was more on bank stability and loan growth relationships.

The coefficient of the loans-to-total-assets ratio (Loans/TA) is also negative and statistically significant for both equations. From Equation (2), the coefficient of -1.6522 indicates that banks that are more likely to make loans are more likely to have less volatility in their profit. This indicates that traditional lending activities continue to be an important source of stable income for ASEAN-5 commercial banks. Income from lending is generally more predictable than the income of non-traditional activities like trading and investment activities. This discovery is consistent with the traditional intermediation theory expounded by Diamond & Dybvig, (1983), which underscores the intermediary function of banks, which make a stable income by lending. The outcome also corroborates (Nguyen & Le, 2022), who established that prudent loan growth makes a positive impact on banking stability in Southeast Asia.

In contrast, the coefficient of bank capital resilience (LNTLE) is positive and statistically significant. The coefficient is as high as 5.2080 in Equation (2), which suggests that earnings volatility increases as equity increases. This discovery might seem counterintuitive as one would expect increased capitalization to be linked to increased stability. The outcome could suggest, however, that high-capitalised banks are more likely to have riskier operations or to expand their operations in a more aggressive manner, leading to greater earnings volatility. The findings corroborate the agency theory of Jensen, (1986) that excess capital could lead to a greater risk taking on the part of management. Porter et al., (2025) also reported a similar finding that after implementing Basel regulations, capital increase could provoke the banks to take risk. So, a higher capitalization does not necessarily mean higher stability of profit if risk management is not well done.

In Equation (2) a negative and statistically significant relation is observed between the deposit variable (LNDEPO) and the VolROA variable. The interpretation of the coefficient of -1.5276 indicates that banks with higher deposit funding bases are more likely to have a more stable profitability. The source of funds, deposits, generally has lower volatility and cost of funding than external market funding. This discovery complements the notion of Banke & Yitayaw, (2022) that emphasised how deposit mobilization enhances the sustainability of banks and operational stability. Stable deposit funding seems to diminish the reliance on unstable external funding and enhance the earnings stability in the ASEAN-5 context.

In addition, the macroeconomic variables in Equation (2) offer valuable insights as to the stability of profitability. The coefficient of GDP growth (GDP_GROWTH) is negative and statistically significant at the 5% level, suggesting that higher economic growth leads to lower earnings volatility. In general, when economies grow, borrowers' ability to repay loans improves, non-performing loans decrease, and profits are more stable for banks. This is in line with the results of Ullah et al., (2024), which show that positive macroeconomic conditions bolster the stability of the banking system. Likewise, Athari & Irani, (2022) discussed how the economic environment affects banking risk taking activities. The study result contradicts De Leon, (2020) who suggested that the competitive environment in the banking sector of the ASEAN banking markets might get even more competitive and profitability margins might contract due to the rapid economic growth.

VolROA is also negatively and significantly affected by the exchange rate variable (LNEXCHANGE_RATE). The negative value of -0.9989 means that under the exchange rate condition during observation period, ASEAN-5

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countries have resulted in more stable earnings. A possible reason is that banks in the region have enhanced their foreign exchange risk management in the wake of the previous financial crisis in the region and globally. As expected, the real interest rate (RIR) variable is also negatively and significantly related with profitability volatility. The coefficient of -0.0277 shows that the real interest rate conditions are associated with reduced earnings volatility. Favorable stable interest rate conditions can help banks to better deal with the spread between their lending and deposit rates, which in turn should lead to better bank profitability.

Generally, the results of this study confirm that bank-specific and macroeconomic variables are significant in measuring the stability of profitability in the commercial banks in ASEAN-5. Finally, the results validate the research gap highlighted in the introduction section, that is, that profitability stability can only be explained by means of conventional profitability indicators (ROA and ROE) to some extent. In this study, we utilize VolROA as an alternative profitability stability indicator to offer further empirical insights into the role of income diversification, funding structure, capitalization and macroeconomic determinants in explaining the resilience of banks in emerging economies. In addition, this study makes a significant contribution to the stability of banks literature by combining the banks level and macroeconomic factors in a unified empirical framework specifically targeting the volatility of profitability. The results indicate that good profitability is not the only factor affecting the good banking performance in ASEAN-5 countries, but also how banks will perform in the future under various economic conditions.

4. CONCLUSION

This study aimed to analyze the determinants of the profitability stability of commercial banks in the ASEAN-5 countries over the period 2015–2024 by using the fixed-effects panel regression model, which was the proxy for profitability stability in this study namely Volatility of Return on Assets (VolROA). The results show that bank-specific and macro-economic factors have significant impacts on bank profitability stability. Lower earnings volatility is related to non-interest income diversification, larger bank size, higher loan intensity, higher deposit funding, favorable GDP growth, exchange rate conditions, and real interest rates, all of which imply more stable profitability of banks. By contrast, banks with higher equity appear to be more prone to volatility in profitability, which could imply that higher equity levels lead to more risk-taking activities by the banks. This study is an extension into the banking and financial stability literature which brings an alternative measure of bank performance, that of the VolROA, on board instead of traditional profitability measures like ROA and ROE. Additionally, this study proposes an integrated empirical framework, which incorporates both bank-specific and macroeconomic variables, to analyze the stability of profits of the commercial banks in ASEAN-5 countries which is relatively under-researched in previous studies on emerging banking markets. This study also offers more recent empirical evidence on the importance of income diversification, funding structure, credit growth and macroeconomic conditions for ensuring the banking sector's resilience and stable profitability using panel data for the 2015-2024 period. Thus, the implications of this study can be used as a reference to the regulators in drafting policies that would enhance the stability of financial system and to the bank management in formulating policies to maintain stable and resilient profitability in the context of dynamic global economic conditions. The findings suggest that profitability of the banks is not enough if the earnings are not consistent and stable over time. Therefore, banking regulators and bank management should pay attention to diversifying, exercising prudence in credit growth, maintaining stability in funding sources, and managing macroeconomic risks well to bolster banking resilience. Future research is encouraged to use more banking stability indicators to enrich the understanding of the profitability stability of banking sector, and to cover more developing economies.

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