



Relationship Between Inflation and Financial Stability: A Case Study of ASEAN Nations

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Abstract—Inflation is a key macroeconomic indicator that plays a critical role in shaping the direction and stability of financial systems, especially in the ASEAN region, where countries exhibit diverse levels of economic development. Persistent inflationary pressures may lead to systemic risks in the financial sector through rising non-performing loans and declining investor confidence. This study investigates the impact of inflation on financial stability in ASEAN countries, while controlling for exchange rate fluctuations. Utilizing annual panel data from 2000 to 2021, the study employs the Panel Autoregressive Distributed Lag (Panel ARDL) approach. Financial stability is proxied by the banking sector's Z-score index, with inflation as the primary independent variable and the exchange rate included as a control variable. Prior to estimation, panel unit root, cross-sectional dependence, and cointegration tests are conducted to ensure model robustness. The long-run estimation results show that inflation has a significant negative effect on financial stability (coefficient = -0.206173, $p = 0.0256$), while the exchange rate is insignificant ($p = 0.7967$). In the short run, inflation exhibits a temporary positive effect (coefficient = 0.118962, $p = 0.0784$), whereas the exchange rate remains insignificant. The error correction term (ECT) is negative and significant (coefficient = -0.616539, $p = 0.0190$), indicating that 61.65% of short-term disequilibrium is corrected toward long-run equilibrium within one period. These findings underscore the critical importance of inflation control as a strategic policy tool to preserve long-term financial stability in ASEAN, alongside consistent macroprudential measures to mitigate external shocks, including exchange rate volatility.

Keywords: Inflation; Exchange Rate; Financial Stability; Panel ARDL

1. INTRODUCTION

Inflation is widely recognized as one of the most critical macroeconomic indicators, reflecting not only price stability but also the overall direction and credibility of a nation's economic policy framework (Ahiadorme, 2022). It serves as a barometer for the economic health of a country and plays a pivotal role in influencing both domestic and international perceptions of macroeconomic management (Kim & Le, 2024). Within the ASEAN region, which encompasses economies at varying stages of development from emerging markets such as Indonesia, the Philippines, and Vietnam, to advanced economies like Singapore its significance is multifaceted and deeply embedded in policy considerations. Inflation exerts substantial influence over key macroeconomic variables, including purchasing power, interest rates, exchange rates, and the patterns of international capital movement (Ishikawa, 2021).

A stable inflation rate can promote investor confidence, facilitate economic planning, and enhance growth prospects, whereas persistent or volatile inflation often disrupts economic equilibrium (Khan, 2022). Mismanaged inflation can impose substantial burdens on households through rising living costs, eroding disposable incomes, and altering consumption patterns, while simultaneously undermining the stability of the national financial system (Pallotti et al., 2024). This instability may manifest in several ways, including an increase in non-performing loans (NPL) as borrowers struggle to meet repayment obligations, reduced investor confidence due to heightened uncertainty, and an elevated probability of liquidity crises within the banking sector (Tarkom & Ujah, 2023). The dual impact on both the real and financial sectors underscores why inflation management is often prioritized in macroeconomic stabilization programs across ASEAN countries (Bilalli et al., 2024).

Since the early 2000s, inflation trends within ASEAN have exhibited considerable heterogeneity, reflecting both domestic structural conditions and varying degrees of exposure to global economic shocks (Luanglath, 2022). The Philippines, for instance, experienced notable inflationary spikes in the mid-2000s, primarily driven by the combined effects of the global financial crisis and surging international commodity prices, particularly in the energy and food sectors (Vallespin et al., 2024). These inflationary episodes placed pressure on household budgets, spurred wage adjustment demands, and strained monetary policy frameworks (Saefullah et al., 2024). Nevertheless, subsequent stabilization measures including targeted subsidies, tighter monetary policy, and enhanced fiscal discipline proved effective in restoring relative price stability in the years that followed. Malaysia, on the other hand, maintained relatively steady inflation over the same period, benefiting from a diversified economic structure and well-coordinated macroeconomic management (Yusof et al., 2021). However, it was not entirely insulated from shocks, experiencing occasional surges in consumer prices and deflationary pressures during the COVID-19 pandemic, when supply chain disruptions and subdued demand exerted contrasting pressures on prices (Ha et al., 2023). Singapore, leveraging its open, trade-oriented economy and highly efficient market institutions, sustained low and stable inflation for most of the period, with occasional deflationary episodes linked to global commodity price declines and domestic demand adjustments (Zhou & Feng, 2023). In contrast, Indonesia's inflation trajectory was marked by pronounced volatility, particularly in the aftermath of policy reforms such as the removal of energy subsidies, which led to sharp cost-push inflation, coupled with the pass-through effects of global price fluctuations (Indrawati et al., 2024). Nevertheless, since



the mid-2010s, improved monetary policy credibility, stronger fiscal frameworks, and better coordination between central and local governments have contributed to enhanced inflation stability (Chow, 2023). These diverse trajectories highlight the interplay between domestic policy frameworks, structural economic characteristics, and external shocks in shaping inflation dynamics across ASEAN.

Financial stability, meanwhile, forms the backbone of a well-functioning economic system, ensuring that financial intermediaries, particularly banks, can effectively perform their intermediation functions of channeling savings into productive investments (Ruof, 2023). It is a multidimensional concept encompassing the resilience of financial institutions, the efficiency of markets, and the robustness of financial infrastructure in absorbing shocks (Kamble et al., 2025; Tang et al., 2022). The 1997 Asian financial crisis provided a stark reminder of the potential systemic consequences when external shocks such as sharp exchange rate volatility and high inflation interact with structural vulnerabilities in the financial system (Ramoni-Perazzi & Romero, 2022). During that crisis, rapid currency depreciation and inflationary surges destabilized banking systems, triggering widespread defaults and capital flight. In the current era of deepening economic integration under the ASEAN Economic Community (AEC), the potential for cross-border risk transmission has grown substantially, as financial linkages, trade relationships, and investment flows have become increasingly intertwined (Kenedi, 2022). This interdependence means that financial instability in one member state, potentially triggered by inflationary pressures, can quickly propagate to others (Anvari-Clark & Miller, 2023; Ba, 2021). Understanding the precise mechanisms through which inflation impacts financial stability in this interconnected regional context is therefore of paramount importance (Shimizu, 2021), particularly for designing preventive macroprudential policies and coordinated crisis responses.

Inflation can affect financial stability through several well-documented channels. The most direct pathway is via the erosion of purchasing power, which constrains households' and firms' ability to service debt obligations, thereby increasing default risk (Diaz et al., 2024). In banking systems, this risk materializes as a higher NPL ratio and deteriorating asset quality, which, if unaddressed, can weaken bank balance sheets and restrict credit supply (Park & Shin, 2021). Another important channel is the compression of net interest margins, which occurs when inflationary pressures force central banks to raise policy rates or when deposit rates adjust faster than lending rates in the context of monetary uncertainty (Glebocki & Saha, 2024). These conditions can significantly reduce bank profitability, particularly in economies with high sensitivity to interest rate fluctuations (Jiang et al., 2025). To monitor such risks, researchers and policymakers frequently employ the bank Z-score, a composite measure that integrates profitability, leverage, and return volatility to gauge the probability of insolvency (Grandi & Guille, 2023). In the ASEAN context, this indicator reveals notable disparities: Singapore consistently achieves the highest Z-scores, reflecting strong capital buffers, prudent regulation, and high operational efficiency; Malaysia occupies a middle position with stable but moderate scores; while the Philippines and Indonesia, though historically lower, have demonstrated gradual improvements attributable to strengthened regulatory frameworks and banking reforms (Dao et al., 2023).

Multiple empirical studies lend strong support to these observations (Chowdhury & Sundaram, 2023; Mehar, 2023) both emphasize that timely, well-coordinated monetary policy interventions such as pre-emptive interest rate hikes, forward guidance, and liquidity provision are critical for containing inflationary pressures in developing economies. The effectiveness of these measures, however, is often conditioned by external factors, including stability in global energy prices, the pace of supply chain recovery, and the implementation of effective fiscal measures (Platitas & Ocampo, 2025). Domestic factors, such as the quality of institutions, the credibility of central banks, and the transparency of monetary policy frameworks, also exert a decisive influence on the ability of authorities to manage inflation effectively (Kwabi et al., 2020). When monetary authorities maintain clear, consistent communication and demonstrate policy commitment, inflation expectations are more likely to remain anchored, thereby reducing financial market volatility and mitigating the destabilizing effects of external shocks (Coibion et al., 2020). Given ASEAN's pronounced exposure to global commodity cycles, fluctuating capital flows, and geopolitical uncertainties, these institutional and policy factors assume heightened importance (Ogawa & Luo, 2025).

In addition to these macro-financial linkages, empirical evidence underscores that the consequences of inflation extend beyond aggregate economic indicators to directly influence financial sector soundness (Batayneh et al., 2021). Persistent inflation erodes the real value of financial assets, thereby undermining the wealth of both households and institutional investors. It also compresses banks' interest margins, particularly in highly competitive markets, and elevates credit risk by increasing the probability of borrower default. These effects tend to be most pronounced in less-developed financial systems where risk management capacities and capital buffers are limited (Qin et al., 2025). To address such vulnerabilities, coordinated use of monetary, fiscal, and macroprudential policies is indispensable (Agénor et al., 2021). This requires not only domestic policy alignment but also regional cooperation within ASEAN to prevent destabilizing spillovers.

While inflation is the primary focus of this study, the exchange rate is also incorporated as a critical control variable, given its well-established role in influencing financial stability. Depreciation of the domestic currency can raise the foreign debt burden of both corporate and public sectors, as well as inflate the value of liabilities denominated in foreign currency (Fisera et al., 2021). Such dynamics can impair credit portfolio quality, weaken borrower repayment capacity, and amplify systemic vulnerabilities in the banking sector. Conversely, in open economies with strong export sectors, currency depreciation can also have beneficial effects by boosting export competitiveness, improving the trade balance, and supporting overall economic growth and employment (Bosupeng et al., 2024). The



net impact of exchange rate movements on financial stability thus depends on a country's economic structure, foreign currency exposure, and the credibility of its macroeconomic management.

While existing literature confirms that inflation significantly affects financial stability, there is a noticeable gap in empirical research that simultaneously examines both the short-run and long-run dynamics within a panel data framework for ASEAN economies. Much of the prior work relies on time-series approaches applied to individual countries, thereby overlooking regional interdependencies that arise from deepening trade and financial integration. Moreover, the moderating role of exchange rate volatility in the inflation–stability relationship remains underexplored, particularly using advanced econometric methods that can accommodate variables with mixed integration orders. The Panel Autoregressive Distributed Lag (Panel ARDL) methodology offers a suitable framework to address these gaps, as it allows for heterogeneous short-run dynamics across countries while identifying a common long-run relationship.

Building upon these findings and research gaps, this study aims to empirically examine the long-run relationship between inflation and financial stability in ASEAN countries using the Panel ARDL approach, analyze the short-run dynamics and speeds of adjustment toward long-run equilibrium through the Error Correction Term (ECT), and assess the role of exchange rate fluctuations as a control variable in moderating the inflation–stability nexus. By adopting this approach, the research captures both the persistent and transitory effects of inflation while controlling for exchange rate impacts, thereby providing a more comprehensive understanding of macro-financial linkages in the ASEAN context.

The study's outcomes will have two primary policy contributions. First, by quantifying both immediate and sustained effects of inflation on financial stability, policymakers can design targeted interventions—such as calibrated interest rate adjustments, liquidity management tools, and countercyclical capital buffers—tailored to the ASEAN policy environment. Second, by evaluating the influence of exchange rates, the research provides insights into how external sector policies, including exchange rate management, foreign reserve accumulation, and capital flow measures, can complement inflation control strategies. From an academic perspective, the study enriches the empirical literature by applying the Panel ARDL framework to a cross-country dataset covering the period 2000–2021. This methodological choice ensures robustness to different integration orders and heterogeneity across countries, thereby addressing a critical limitation of earlier studies that relied solely on cointegration techniques requiring uniform stationarity across variables.

2. RESEARCH METHODS

This study utilizes cross-country data from Indonesia, Malaysia, Singapore, and the Philippines for the period 2000–2021. All data are obtained from the World Development Indicators (WDI) published by the World Bank. Inflation is measured using the Consumer Price Index (CPI), while financial stability is proxied by the Bank Z-score, an indicator that combines profitability, leverage, and volatility of returns to assess the risk of insolvency in the banking sector. The Real Effective Exchange Rate (REER) is included as a control variable to capture the influence of currency fluctuations on the financial system.

The conceptual framework of this study posits that inflation exerts both direct and indirect effects on financial stability. Higher inflation can erode purchasing power, elevate credit risk, and compress net interest margins, thereby weakening the stability of the banking sector. The exchange rate, serving as a control variable, can influence this relationship through its impact on external debt servicing, trade competitiveness, and capital flows. The framework assumes that these interactions may differ in the short and long run, making it essential to employ a methodology that captures dynamic adjustments.

2.1 Operational Descriptions of the Variables

Financial Stability (STA): Measured by the Bank Z-score, calculated as (ROA + Capital-Asset Ratio) / Standard Deviation of ROA, with higher values indicating greater stability and lower insolvency risk. Inflation (INF): Measured by the annual percentage change in the Consumer Price Index (CPI), reflecting the average change over time in the prices of a basket of goods and services. Exchange Rate (ER): Represented by the Real Effective Exchange Rate (REER), which is an index measuring the value of a country's currency against a basket of other currencies, adjusted for inflation differentials.

This operationalization ensures that each variable is clearly defined and measurable, allowing for consistent and replicable empirical analysis. The main objective of this research is to analyze the long-term relationship between inflation and financial stability in ASEAN countries, while also examining short-term dynamics and the role of exchange rate fluctuations as a moderating factor. This relationship is represented through a linear empirical model estimated using the Panel Autoregressive Distributed Lag (Panel ARDL) approach.

$$STA_{i,t} = \beta_0 + \beta_1 INF_{i,t} + \beta_2 ER_{i,t} + \varepsilon_{i,t} \quad (1)$$

STA represents financial stability, INF is the inflation rate, and ER denotes the exchange rate. This study employs the Panel ARDL (Autoregressive Distributed Lag), which offers advantages over traditional cointegration methods. It is effective for variables integrated at I(0), I(1), or cointegrated, and is suitable for small samples and mixed integration orders. The Panel ARDL model is specified as follows:



$$\Delta STA_{i,t} = \alpha_0 + \alpha_1 STA_{i,t-1} + \alpha_2 INF_{i,t-1} + \alpha_3 ER_{i,t-1} + \sum_{j=1}^q \beta_1 \Delta STA_{i,t-j} + \sum_{j=1}^q \beta_2 \Delta INF_{i,t-j} + \sum_{j=1}^q \beta_3 \Delta ER_{i,t-j} + \varepsilon_{i,t} \quad (2)$$

Where Δ denotes the first difference, α_0 is the constant, and q is the optimal lag length selected using the Akaike Information Criterion (AIC). $\alpha_1, \alpha_2, \alpha_3$ represent long-run coefficients, $\beta_1, \beta_2, \beta_3$ are short-run coefficients, and $\varepsilon_{i,t}$ is the error term. Once cointegration is confirmed, the next step is to estimate both long- and short-run relationships. Based on the previous equation, the Panel Error Correction Model (PECM) is formulated as follows:

$$\Delta STA_{i,t} = \gamma_0 + \sum_{i=1}^q \gamma_1 \Delta STA_{i,t-i} + \sum_{i=1}^q \gamma_2 \Delta INF_{i,t-i} + \sum_{i=1}^q \gamma_3 \Delta ER_{i,t-i} + \theta ECM_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Where $ecm_{i,t-1}$ is the error correction term and θ represents the speed of adjustment toward long-run equilibrium. A negative and significant θ indicates that any short-term deviation will gradually return to the long-run equilibrium between inflation and the explanatory variables.

3. RESULTS AND DISCUSSION

3.1 Descriptive Statistic

This subsection outlines the descriptive statistics of the variables employed in the analysis, including financial stability (STA), inflation (INF), and exchange rate (ER). The descriptive measures summarize the data by presenting their mean, median, maximum, minimum, and standard deviation, offering an initial understanding of the distribution, variability, and overall characteristics of the dataset before proceeding to further econometric analysis.

Table 1. Descriptive Statistic

	STA	INF	ER
Mean	18,31830	3,370931	2746,714
Median	19,76934	2,838425	23,26462
Maximum	38,57995	13,10867	14582,20
Minimum	0,000000	-1,138702	1,249676
Std. Dev.	10,69015	2,830289	4877,472
Observations	88	88	88

Table 1 summarizes the descriptive statistics for financial stability (STA), inflation (INF), and exchange rate (ER) across 88 observations. The mean value of STA is 18.32 with a standard deviation of 10.69, indicating moderate variability in financial stability among the sampled countries. INF has an average of 3.37, with values ranging from -1.14 to 13.11, suggesting periods of both mild deflation and high inflation within the observation period. The exchange rate (ER) shows a wide dispersion, with a mean of 2,746.71 and a high standard deviation of 4,877.47, reflecting substantial fluctuations and potential differences in exchange rate regimes across countries. The maximum ER value of 14,582.20 suggests the presence of extreme observations or currency-specific volatility. Overall, the data reveal considerable variation in macroeconomic conditions, underscoring the importance of controlling for such heterogeneity in the subsequent econometric analysis to ensure robust and reliable results.

3.2 Panel Unit Root Test

The Unit Root Test is used to examine whether the variables are stationary before applying the Panel ARDL model. This model is only applicable if the variables are stationary at level $I(0)$ or first difference $I(1)$, but not at $I(2)$. The test is based on ADF and PP with specific critical values.

Table 2. Panel Unit Root Test

Variable	LLC test		ADF-Fisher test	
	Level	1st Different	Level	1st Different
STA	-2,95948***	-9.95933***	27,1875***	76.7933***
INF	-5.24284***	-11.4593***	29.7299***	82.3436***
ER	-0.18547	-5.46480***	4.63147	34.1483***

Note: The optimal lag length for all variables is determined using the AIC.
(***) indicates significance at the 1% level.

Table 2 reports the results of the panel unit root tests using both the Levin, Lin & Chu (LLC) and ADF-Fisher methods at the level and first difference forms. The results show that STA and INF are statistically significant at the 1% level in both the level and first difference, indicating that these variables are stationary at level $I(0)$. In contrast, ER is not significant at the level in either test but becomes highly significant at the first difference, suggesting that it is stationary at $I(1)$. These findings imply that the dataset contains a mix of $I(0)$ and $I(1)$ variables, with no evidence of $I(2)$ integration. This satisfies the prerequisites for applying the Panel ARDL model, which can accommodate variables with different integration orders up to $I(1)$. The use of AIC to determine the optimal lag length ensures that the model specification captures the relevant dynamics without overfitting.



3.3 Cross-sectional Dependence Test

The Cross-sectional Dependence Test is used to examine whether there is interdependence among cross-sectional units in panel data. Such dependence can affect the validity of the model estimation results.

Table 3. Cross-sectional Dependence Test

Variable	Breusch-Pagan LM	Pesaran scaled LM	Pesaran CD
STA	15.83671*	2.839615**	2.019446*
INF	25.30527***	5.572951***	4.682389***
ERS	33.53560***	7.948844***	3.464466***

Note: *, **, *** indicate significance levels at 10%, 5%, and 1%, respectively.

Table 3 presents the results of the cross-sectional dependence tests using three approaches: Breusch-Pagan LM, Pesaran scaled LM, and Pesaran CD. For STA, all three tests indicate statistical significance, with results at the 10% and 5% levels, suggesting the presence of cross-sectional dependence across countries. INF shows strong significance across all tests at the 1% level, indicating that inflation rates in one country are likely influenced by or correlated with inflation trends in other countries within the panel. Similarly, ERS exhibits high significance at the 1% level across all methods, confirming substantial cross-sectional dependence in exchange rate movements. These findings imply that shocks or policy changes in one country can potentially transmit to other countries, reinforcing the need for models that account for such interdependencies. Ignoring cross-sectional dependence could lead to biased estimations and misleading inferences in the subsequent econometric analysis.

3.4 Panel Co-integration Test

The Panel Co-integration Test is used to examine the existence of a long-run relationship among variables in panel data. If the variables are cointegrated, then even though they are not individually stationary, their linear combination remains stationary.

Table 4. Panel Co-integration Test

Alternative hypothesis: common AR coeffs. (within-dimension)				
	Statistic	Prob.	Weighted	
			Statistic	Prob.
Panel v-Statistic	-0.523894	0,047916667	-0.486824	0,047222222
Panel rho-Statistic	-3.366717***	00.00	-2.108512**	00.01
Panel PP-Statistic	-5.934080***	00.00	-4.856930***	00.00
Panel ADF-Statistic	-8.457993***	00.00	-5.835686***	00.00
Alternative hypothesis: individual AR coeffs. (between-dimension)				
	Statistic	Prob.		
Group rho-Statistic	-0.697808	00.24		
Group PP-Statistic	-4.052806***	00.00		
Group ADF-Statistic	-5.372519***	00.00		

Note: The optimal lag length for all variables is determined using the AIC.
(**, ***) indicates significance at the 5 and 1% level.

Table 4 presents the results of the panel cointegration tests using both within-dimension (common AR coefficients) and between-dimension (individual AR coefficients) approaches. In the within-dimension results, the Panel v-Statistic is not significant, indicating no strong evidence of cointegration from this measure. However, the Panel rho-, PP-, and ADF-Statistics are all statistically significant at either the 1% or 5% level, suggesting the presence of a long-run relationship among the variables. The significance of the Panel PP and Panel ADF tests reinforces this conclusion, as these tests are generally more robust in the presence of serial correlation and heteroskedasticity.

For the between-dimension results, the Group Rho-Statistic is not significant, but both the Group PP- and Group ADF-Statistics are significant at the 1% level. This further supports the evidence of cointegration across the panel, even when allowing for heterogeneous autoregressive coefficients across countries. Overall, these findings indicate that the variables financial stability (STA), inflation (INF), and exchange rate (ER) share a stable long-run equilibrium relationship. This justifies the use of the Panel ARDL framework, as it requires confirmation of cointegration to estimate both long-run coefficients and short-run dynamics effectively.

3.5 Panel ARDL Model Estimation

The Panel ARDL model estimation is employed to examine both the short- and long-run relationships between inflation, exchange rates, and financial stability across ASEAN countries. This approach accommodates mixed integration orders, allowing for robust analysis even with variables integrated at different levels, while capturing dynamic adjustment processes.



Table 5. Estimation Results of the Panel ARDL Model

Dependent Variable: STA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Long-run Estimation				
INF	-0.206173**	0.089973	-2.291496	0.0256
ER	3.41E-05	0.000132	0.258782	0.7967
Short-run Estimation				
COINTEQ01	-0.616539**	0.255609	-2.412038	0.0190
D(STA(-1))	0.148245	0.144183	1.028171	0.3081
D(INF)	0.118962*	0.066385	1.791996	0.0784
D(INF(-1))	-0.185007	0.203350	-0.909792	0.3667
D(ER)	3.784390	4.598772	0.822913	0.4139
D(ER(-1))	-14.14371	14.38475	-0.983243	0.3296
C	13.59624*	6.810902	1.996246	0.0506

Note: The optimal lag length for all variables is determined using the AIC.

(*,**) indicates significance at the 10 and 5 % level.

The estimation results of the Panel ARDL model, as presented in Table 5, are divided into long-run and short-run estimations, including the error correction term (ECT), which captures the speed of adjustment toward long-run equilibrium.

In the long-run estimation, inflation (INF) has a coefficient of -0.206173 with a standard error of 0.089973 , yielding a t-statistic of -2.291496 and a probability value of 0.0256 , indicating significance at the 5% level. This means that, holding other factors constant, a change in INF is associated with a proportional change in the dependent variable over the long term. The exchange rate (ER) has a coefficient of $3.41E-05$ with a standard error of 0.000132 , a t-statistic of 0.258782 , and a probability value of 0.7967 , showing no significant long-term effect.

In the short-run estimation, the ECT (COINTEQ01) has a coefficient of -0.616539 with a standard error of 0.255609 , a t-statistic of -2.412038 , and a probability value of 0.0190 , significant at the 5% level. The negative and significant ECT confirms cointegration and indicates that approximately 61.65% of short-run disequilibria are corrected within one period. The lagged dependent variable $D(STA(-1))$ has a coefficient of 0.148245 with a probability of 0.3081 , implying no significant short-term persistence.

For inflation in the short run, $D(INF)$ has a coefficient of 0.118962 with a p-value of 0.0784 , significant at 10%, indicating a temporary positive association. The lagged difference $D(INF(-1))$ is statistically insignificant. Exchange rate variations, both contemporaneous and lagged, are statistically insignificant, as shown by their high p-values. The constant term (C) is significant at the 10% level, indicating a non-zero baseline level of financial stability in the absence of changes in explanatory variables.

3.6 Discussion

The results of the Panel ARDL estimation reveal important dynamics in the relationship between inflation, exchange rate movements, and financial stability in ASEAN countries over the 2000–2021 period. In the long run, inflation exhibits a statistically significant and negative effect on financial stability, as indicated by its coefficient of -0.206173 ($p = 0.0256$). From an econometric perspective, this suggests that persistent inflationary pressures erode the stability of the banking sector over time (Canepa, 2024). This finding is consistent with financial instability hypotheses (Dotsis & Loizos, 2025) and the credit risk channel framework (Jung et al., 2025; Redondo & Aracil, 2024), which posit that sustained inflation increases uncertainty, weakens asset quality, and heightens default risk through the non-performing loans (NPL) mechanism (Sintos, 2023). The long-run negative impact also aligns with prior empirical studies, such as (Eggoh & Khan, 2014; Su & Soon, 2024), which documented similar effects in Indonesia, and (Hafeez et al., 2022; Qin et al., 2025), who found that high inflation undermines bank Z-scores across emerging markets.

In contrast, the exchange rate variable (ER) does not demonstrate a significant effect on financial stability in the long run. This may indicate that ASEAN's macroprudential frameworks and exchange rate stabilization mechanisms have been relatively effective in mitigating the long-run systemic risks associated with currency volatility (Hui, 2022). Such resilience could stem from the increased use of hedging instruments, stronger foreign reserve positions, and exchange rate flexibility policies that absorb external shocks (Carrière-Swallow et al., 2021; Precious Ginika Ogundu, 2025).

In the short run, inflation displays a transitory positive effect on financial stability, as reflected by the coefficient of 0.118962 ($p = 0.0784$). This counterintuitive result may reflect short-term policy responses such as interest rate adjustments or liquidity support that temporarily bolster confidence in the financial system before the longer-term adverse effects materialize (Deng & Wu, 2023). The lack of statistical significance for $D(INF(-1))$ suggests that this effect is not persistent beyond the current period. Similarly, short-run exchange rate fluctuations, both contemporaneous and lagged, have no significant effect, indicating that any immediate shocks may be absorbed without major disruptions to financial stability (Lal et al., 2023).



The error correction term (ECT) is both negative and significant (-0.616539 , $p = 0.0190$), which confirms the presence of cointegration and indicates a relatively rapid adjustment speed toward long-run equilibrium. The magnitude implies that approximately 61.65% of deviations from the equilibrium level of financial stability are corrected within one year, underscoring the self-correcting nature of the system in the ASEAN context.

From a policy standpoint, the findings highlight that inflation control remains a critical macroeconomic priority for sustaining long-term financial stability. Persistent inflationary pressures must be addressed through a combination of credible monetary policy, targeted fiscal interventions, and strengthened macroprudential regulations. The results also suggest that while exchange rate stability is important, its long-run impact on financial stability may be less pronounced when effective policy frameworks and market-based risk management tools are in place.

Overall, the empirical evidence supports the argument that maintaining low and stable inflation is a key pillar in safeguarding financial system resilience in ASEAN economies. The dual nature of inflation's impact short-term positive and long-term negative calls for a balanced policy mix that is responsive in the short run yet firmly anchored in long-term stability objectives.

4. CONCLUSION

This study examined the relationship between inflation, exchange rate fluctuations, and financial stability in selected ASEAN countries Indonesia, Malaysia, Singapore, and the Philippines over the period 2000–2021 using the Panel Autoregressive Distributed Lag (Panel ARDL) approach. The results reveal that inflation exerts a significant negative impact on financial stability in the long run, indicating that persistent inflationary pressures undermine the resilience of the banking sector. In the short run, inflation demonstrates a temporary positive effect, suggesting that immediate policy responses may mitigate adverse impacts before they fully materialize. Exchange rate movements, both in the short and long term, do not exhibit statistically significant effects on financial stability, implying that macroprudential and exchange rate stabilization mechanisms in the region have been relatively effective. The significant and negative error correction term confirms the presence of a long-run equilibrium relationship and indicates a relatively rapid adjustment toward stability when deviations occur. From a policy perspective, the findings underscore the importance of maintaining inflation at manageable levels through credible monetary policy, targeted fiscal measures, and consistent macroprudential regulations. Policymakers should prioritize inflation control as a strategic instrument for safeguarding long-term financial stability, while also enhancing the resilience of financial institutions against potential exchange rate volatility. Additionally, strengthening regional policy coordination under ASEAN frameworks could help mitigate cross-border spillover risks. Despite its contributions, this study has certain limitations. The analysis is restricted to four ASEAN countries and may not fully capture the heterogeneity of the entire region. Furthermore, the model primarily focuses on inflation and exchange rates, without incorporating other potential determinants of financial stability, such as credit growth, capital flows, or global financial shocks. Future research could address these gaps by expanding the country sample, integrating additional macro-financial variables, and exploring non-linear or asymmetric effects.

REFERENCES

- Agénor, P.-R., Jackson, T., & Jia, P. (2021). Macroprudential policy coordination in a currency union. *European Economic Review*, 137, 103791. <https://doi.org/10.1016/j.euroecorev.2021.103791>
- Ahiadorme, J. W. (2022). Monetary policy in search of macroeconomic stability and inclusive growth. *Research in Economics*, 76(4), 308–324. <https://doi.org/10.1016/j.rie.2022.08.002>
- Anvari-Clark, J., & Miller, J. (2023). Financial Interdependence: A Social Perspective. *Encyclopedia*, 3(3), 996–1008. <https://doi.org/10.3390/encyclopedia3030072>
- Ba, H. (2021). Hegemonic instability: complex interdependence and the dynamics of financial crisis in the contemporary international system. *European Journal of International Relations*, 27(2), 369–402. <https://doi.org/10.1177/1354066120967048>
- Batayneh, K., Al Salamat, W., & Momani, M. Q. M. (2021). The impact of inflation on the financial sector development: Empirical evidence from Jordan. *Cogent Economics & Finance*, 9(1). <https://doi.org/10.1080/23322039.2021.1970869>
- Bilalli, A., Sadiku, M., & Sadiku, L. (2024). The Impact of Inflation on Financial Sector Performance: Evidence from OECD Countries. *ECONOMICS*, 12(2), 263–276. <https://doi.org/10.2478/eoik-2024-0028>
- Bosupeng, M., Naranpanawa, A., & Su, J.-J. (2024). Does exchange rate volatility affect the impact of appreciation and depreciation on the trade balance? A nonlinear bivariate approach. *Economic Modelling*, 130, 106592. <https://doi.org/10.1016/j.econmod.2023.106592>
- Canepa, A. (2024). Inflation dynamics and persistence: The importance of the uncertainty channel. *The North American Journal of Economics and Finance*, 72, 102135. <https://doi.org/10.1016/j.najef.2024.102135>
- Carrière-Swallow, Y., Magud, N. E., & Yépez, J. F. (2021). Exchange rate flexibility, the real exchange rate, and adjustment to terms-of-trade shocks. *Review of International Economics*, 29(2), 439–483. <https://doi.org/10.1111/roie.12534>
- Chow, H. K. (2023). Inflation Dynamics and Expectations in Singapore (pp. 75–87). https://doi.org/10.1007/978-3-031-27949-2_5
- Chowdhury, A., & Sundaram, J. K. (2023). Inflation and Development: Central Bank Stabilization Policies Revisited. *Development*, 66(1–2), 3–14. <https://doi.org/10.1057/s41301-023-00359-2>
- Coibion, O., Gorodnichenko, Y., Kumar, S., & Pedemonte, M. (2020). Inflation expectations as a policy tool? *Journal of International Economics*, 124, 103297. <https://doi.org/10.1016/j.jinteco.2020.103297>



- Dao, T. H., Pugliese, A., & Ronen, J. (2023). Assessing banks' resilience: A complementary approach to stress testing using fair values from banks' financial statements. *Journal of Business Finance & Accounting*, 50(7–8), 1206–1239. <https://doi.org/10.1111/jbfa.12663>
- Deng, C., & Wu, J. (2023). Macroeconomic downside risk and the effect of monetary policy. *Finance Research Letters*, 54, 103803. <https://doi.org/10.1016/j.frl.2023.103803>
- Diaz, E. M., Cunado, J., & de Gracia, F. P. (2024). Global drivers of inflation: The role of supply chain disruptions and commodity price shocks. *Economic Modelling*, 140, 106860. <https://doi.org/10.1016/j.econmod.2024.106860>
- Dotsis, G., & Loizos, K. (2025). Contingent claim analysis and Minsky's financial instability hypothesis. *Journal of Post Keynesian Economics*, 48(1), 44–60. <https://doi.org/10.1080/01603477.2024.2328009>
- Eggoh, J. C., & Khan, M. (2014). On the nonlinear relationship between inflation and economic growth. *Research in Economics*, 68(2), 133–143. <https://doi.org/10.1016/j.rie.2014.01.001>
- Fisera, B., Workie Tiruneh, M., & Hojdan, D. (2021). Currency depreciations in emerging economies: A blessing or a curse for external debt management? *International Economics*, 168, 132–165. <https://doi.org/10.1016/j.inteco.2021.09.003>
- Glebocki, H., & Saha, S. (2024). Global uncertainty and exchange rate conditions: Assessing the impact of uncertainty shocks in emerging markets and advanced economies. *Journal of International Financial Markets, Institutions and Money*, 96, 102060. <https://doi.org/10.1016/j.intfin.2024.102060>
- Grandi, P., & Guille, M. (2023). Banks, deposit rigidity and negative rates. *Journal of International Money and Finance*, 133, 102810. <https://doi.org/10.1016/j.jimonfin.2023.102810>
- Ha, J., Kose, M. A., & Ohnsorge, F. (2023). One-stop source: A global database of inflation. *Journal of International Money and Finance*, 137, 102896. <https://doi.org/10.1016/j.jimonfin.2023.102896>
- Hafeez, B., Li, X., Kabir, M. H., & Tripe, D. (2022). Measuring bank risk: Forward-looking z-score. *International Review of Financial Analysis*, 80, 102039. <https://doi.org/10.1016/j.irfa.2022.102039>
- Hui, H. C. (2022). The long-run effects of geopolitical risk on foreign exchange markets: evidence from some ASEAN countries. *International Journal of Emerging Markets*, 17(6), 1543–1564. <https://doi.org/10.1108/IJOEM-08-2020-1001>
- Indrawati, S. M., Satriawan, E., & Abdurrohmah. (2024). Indonesia's Fiscal Policy in the Aftermath of the Pandemic. *Bulletin of Indonesian Economic Studies*, 60(1), 1–33. <https://doi.org/10.1080/00074918.2024.2335967>
- Ishikawa, K. (2021). The ASEAN Economic Community and ASEAN economic integration. *Journal of Contemporary East Asia Studies*, 10(1), 24–41. <https://doi.org/10.1080/24761028.2021.1891702>
- Jiang, W., Hu, Y., Nistor, S., & Xu, Y. (2025). Bank profitability under environmental and climate pressures: the case of European banks. *Journal of Applied Economics*, 28(1). <https://doi.org/10.1080/15140326.2025.2491397>
- Jung, H., Engle, R. F., & Berner, R. (2025). CRISK: Measuring the climate risk exposure of the financial system. *Journal of Financial Economics*, 171, 104076. <https://doi.org/10.1016/j.jfineco.2025.104076>
- Kamble, P. A., Mehta, A., & Rani, N. (2025). Measuring Multidimensional Financial Resilience: An Ex-ante Approach. *Social Indicators Research*, 176(2), 533–567. <https://doi.org/10.1007/s11205-024-03476-8>
- Kenedi, K. (2022). Pengaruh Konsumsi Energi dan Pajak Dengan Mediasi Pertumbuhan Ekonomi Terhadap Polusi di 9 Negara ASEAN. *Jurnal Bina Bangsa Ekonomika*, 15(1), 201–210. <https://doi.org/10.46306/jbbe.v15i1.156>
- Khan, N. (2022). Does Inflation Targeting Really Promote Economic Growth? *Review of Political Economy*, 34(3), 564–584. <https://doi.org/10.1080/09538259.2021.1902165>
- Kim, M.-J., & Le, T.-T.-H. (2024). Influence Analysis of Real Exchange Rate Fluctuations on Trade Balance Data Using Feature Important Evaluation Methods. *Information*, 15(3), 156. <https://doi.org/10.3390/info15030156>
- Kwabi, F. O., Boateng, A., & Du, M. (2020). Impact of central bank independence and transparency on international equity portfolio allocation: A cross-country analysis. *International Review of Financial Analysis*, 69, 101464. <https://doi.org/10.1016/j.irfa.2020.101464>
- Lal, M., Kumar, S., Pandey, D. K., Rai, V. K., & Lim, W. M. (2023). Exchange rate volatility and international trade. *Journal of Business Research*, 167, 114156. <https://doi.org/10.1016/j.jbusres.2023.114156>
- Luanglath, I. (2022). INFLATION: Challenges and Threats to Economic Growth in ASEAN. *The Liberal Arts Journal*, Mahidol University, 5(2), 332–368. <https://so02.tci-thaijo.org/index.php/lajournal/article/view/258241>
- Mehar, M. A. (2023). Role of monetary policy in economic growth and development: from theory to empirical evidence. *Asian Journal of Economics and Banking*, 7(1), 99–120. <https://doi.org/10.1108/AJEB-12-2021-0148>
- Ogawa, E., & Luo, P. (2025). Global Risk Factors and Their Impacts on Interest and Exchange Rates: Evidence from ASEAN+4 Economies. *Journal of Risk and Financial Management*, 18(7), 344. <https://doi.org/10.3390/jrfm18070344>
- Pallotti, F., Paz-Pardo, G., Slacalek, J., Tristani, O., & Violante, G. L. (2024). Who bears the costs of inflation? Euro area households and the 2021–2023 shock. *Journal of Monetary Economics*, 148, 103671. <https://doi.org/10.1016/j.jmoneco.2024.103671>
- Park, C.-Y., & Shin, K. (2021). COVID-19, nonperforming loans, and cross-border bank lending. *Journal of Banking & Finance*, 133, 106233. <https://doi.org/10.1016/j.jbankfin.2021.106233>
- Platitas, R. J. C., & Ocampo, J. C. G. (2025). From bottlenecks to inflation: Impact of global supply-chain disruptions on inflation in select Asian economies. *Latin American Journal of Central Banking*, 6(1), 100141. <https://doi.org/10.1016/j.latecb.2024.100141>
- Precious Ginika Ogundu. (2025). The strategic implications of financial derivatives in hedging corporate exposure to global economic volatility. *World Journal of Advanced Research and Reviews*, 25(2), 1218–1234. <https://doi.org/10.30574/wjarr.2025.25.2.0482>
- Qin, X., Peng, G., & Zhao, M. (2025). Effects of inflation and macroprudential policies on bank risk: Evidence from emerging economies. *International Review of Financial Analysis*, 97, 103841. <https://doi.org/10.1016/j.irfa.2024.103841>
- Ramoni-Perazzi, J., & Romero, H. (2022). Exchange rate volatility, corruption, and economic growth. *Heliyon*, 8(12), e12328. <https://doi.org/10.1016/j.heliyon.2022.e12328>
- Redondo, H., & Aracil, E. (2024). Climate-related credit risk: Rethinking the credit risk framework. *Global Policy*, 15(S1), 21–33. <https://doi.org/10.1111/1758-5899.13315>
- Ruof, C. (2023). Foundations of Financial Regulation (pp. 9–41). https://doi.org/10.1007/978-3-031-32971-5_2



- Saefullah, E., Kenedi, K., & Khaerudin, D. (2024). Reducing Greenhouse Gas Emissions in Beef Cattle Farming through the Implementation of Animal Welfare Principles, as Part of Sustainable Rural Area Development. *Jurnal Penelitian Pendidikan IPA*, 10(4), 1468–1476. <https://doi.org/10.29303/jppipa.v10i4.6824>
- Shimizu, K. (2021). The ASEAN Economic Community and the RCEP in the world economy. *Journal of Contemporary East Asia Studies*, 10(1), 1–23. <https://doi.org/10.1080/24761028.2021.1907881>
- Sintos, A. (2023). Does inflation worsen income inequality? A meta-analysis. *Economic Systems*, 47(4), 101146. <https://doi.org/10.1016/j.ecosys.2023.101146>
- Su, S. K. W., & Soon, S. V. (2024). The impact of inflation on economic growth. *Issues and Perspectives in Business and Social Sciences*, 4(2), 187–201. <https://doi.org/10.33093/ipbss.2024.4.2.6>
- Tang, C., Liu, X., & Zhou, D. (2022). Financial market resilience and financial development: A global perspective. *Journal of International Financial Markets, Institutions and Money*, 80, 101650. <https://doi.org/10.1016/j.intfin.2022.101650>
- Tarkom, A., & Ujah, N. U. (2023). Inflation, interest rate, and firm efficiency: The impact of policy uncertainty. *Journal of International Money and Finance*, 131, 102799. <https://doi.org/10.1016/j.jimonfin.2022.102799>
- Vallespin, M. R., Lazaro, E., Nunez Jr., D., Sandoval, V., Tuazon, R., & Villareal, T. (2024). Philippine Inflation Trends and Effects: A Comparative Analysis Across Four Recent Administrations and Regional Predictions. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4715451>
- Yusof, N., Nin, L. F., Md Kamal, H. K., Ahmad Taslim, J. R., & Zainoddin, A. I. (2021). Factors that Influence the Inflation Rate in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 11(9). <https://doi.org/10.6007/IJARBS/v11-i9/10838>
- Zhou, S., & Feng, Q. (2023). Trade policy review of Singapore. *The World Economy*, 46(12), 3472–3481. <https://doi.org/10.1111/twec.13391>