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Inflation Threshold for Vietnam: Evidence from Threshold Regression and NARDL with Quarterly Data

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Abstract

Background. Most evidence on inflation–growth nonlinearity relies on cross-country panels or short samples, leaving a gap for a single transition economy on high-frequency data. We address this gap for Vietnam over 1996–2025. **Methods.** We combine threshold regression with the NARDL framework on quarterly data complemented by a linear ARDL benchmark and a Granger causality pre-test. **Results.** The endogenous inflation threshold is estimated at 5.7% (95% CI: 4.8–7.2%). Above it, inflation exerts a sharply negative effect on real GDP growth; below it, the effect is statistically indistinguishable from zero. Long-run responses are asymmetric: positive inflation shocks are significantly contractionary (coefficient ≈ -0.26, $p < 0.001$), while negative shocks show no detectable effect. The threshold is stable across subsamples. **Implications.** The breakpoint is a conditional-mean estimate, not a welfare optimum; any operational inflation target derived from it should be framed as risk-management guidance. The results support keeping inflation below the estimated threshold band.

Keywords: inflation threshold; economic growth; threshold regression; nonlinear autoregressive distributed lag; asymmetry; Vietnam; monetary policy

JEL Classification: E31; C22; O53

1. Introduction

The relationship between inflation and economic growth has long occupied a central place in macroeconomic debate. Early studies assumed a linear relationship, but a growing body of evidence points to nonlinearity, with an optimal inflation threshold below which inflation is benign and above which it becomes harmful (Ndoricimpa, 2017; Aydin, 2017). Most empirical studies have focused on cross-country panels or large economies, leaving a significant gap for transition economies such as Vietnam.

Vietnam offers a compelling case. Following the Doi Moi (Renovation) reforms launched in 1986, hyperinflation of 774% at the end of 1986 fell to 5% by 1993. A remarkable transformation unfolded over 1996–2025, with an average GDP growth of 6.35% per year, poverty reduction from 58% (1993) to under 4%, and reclassification as an upper-middle-income economy by the World Bank as of July 2026. Yet inflation has also experienced dramatic episodes, reaching: 19.9% in 2008 and 18.58% in 2011, contrasting with the low, stable inflation (averaging 2.9%) observed in the decade to 2024This study addresses three research questions, as follows:

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RQ1: At what level of inflation does the marginal effect of inflation on real GDP growth change sign for Vietnam, and is that level stable across policy regimes?

RQ2: Are the growth effects of positive and negative inflation shocks symmetric, or is there evidence of asymmetric transmission?

RQ3: How robust is the identified threshold across subsamples, alternative specifications (linear ARDL benchmark), and tests of endogeneity (Granger causality)?

Three gaps in the literature motivate this study. First, no existing study on Vietnam has simultaneously tested for inflation asymmetry and threshold effects on a long quarterly dataset spanning three decades with comparable sample length and frequency. Second, while Bui (2020) applied NARDL to Vietnam, that study used annual data and did not test for a structural inflation threshold, leaving the interaction between asymmetry and regime change unexplored. Third, no study has contextualized empirical results within Vietnam's specific monetary policy regimes with explicit citations to primary policy documents.

This study contributes in three key dimensions. Methodologically, it combines two complementary tests of nonlinearity (a level-based threshold model and a sign-based asymmetric model) on a 30-year quarterly dataset, reports a linear ARDL benchmark for comparison, and conducts a Granger causality pre-test to address endogeneity concerns. Empirically, it identifies a statistically robust inflation threshold and asymmetric shock responses at a quarterly frequency that prior Vietnam-focused annual studies could not exploit, and validates the result against subsample splits. From a policy perspective, it anchors the empirical results in five specific monetary policy episodes with primary policy document citations and translates the statistical breakpoint into risk management guidance, while being explicit that the Hansen framework yields a conditional mean breakpoint rather than a welfare-maximizing target.

The remainder of the paper is organized as follows. Section 2 reviews the theoretical and empirical literature, with a particular focus on Vietnam. Section 3 describes the data, the econometric specifications (threshold regression, NARDL, linear ARDL benchmark, and Granger causality pre-test), and the diagnostic strategy. Section 4 reports the results. Section 5 discusses the findings in the context of Vietnam's policy history. Section 6 derives the implications for risk management policy. Section 7 concludes the study.

2. Literature Review

2.1. Theoretical Framework

The relationship between inflation and economic growth remains complex and contested. Rooted in the classical monetarist view that inflation is always and everywhere a monetary phenomenon (Friedman, 1963), early theoretical foundations stressed the long-run neutrality of money (Lucas, 1972). The monetarist school argues that high inflation distorts market price signals, creates information asymmetry, and misallocates economic resources, thereby harming long-term investment and growth (Kasidi & Mwakanemela, 2013; Kormendi & Meguire, 1985). Seminal empirical inquiries confirmed that inflation systematically dampens capital accumulation and productivity (Fischer, 1993), with even moderate rates of persistent inflation exerting a statistically significant negative drag on economic expansion (Barro, 1995).

Conversely, the structuralist school argues that moderate inflation can catalyze structural transformation by shifting income from low-saving economic agents to high-saving, capital-accumulating sectors (Doguwa, 2012). Finally, a Keynesian-leaning view treats inflation primarily as a byproduct of demand conditions and emphasizes the output costs of disinflation through rigidities and policy lags (Ball, 2014)—a dynamic further complicated by shifts in the slope and stability of the short-run Phillips curve across macroeconomic regimes (Blanchard, 2016).

Reconciling these divergent perspectives, two complementary strands of the nonlinear literature have emerged. First, the threshold theory posits an inflation threshold. Below this tipping point, inflation is either benign or beneficial to economic expansion; however, once breached, it becomes harmful and severely impedes growth (Ndoricimpa, 2017; Bruno & Easterly, 1998). Second, the asymmetric transmission mechanism, introduced by Shin et al. (2014) via the nonlinear ARDL (NARDL) framework, suggests that positive and negative inflation shocks may affect real aggregate output differently, even when the long-run equilibrium is the same. While the threshold approach identifies the level at which inflation's effect changes sign, the asymmetry approach captures whether the response magnitude differs between episodes of rising versus falling inflation; the two are distinct but complementary dimensions of nonlinearity.

A key conceptual clarification is warranted. The Hansen (2000) framework identifies a statistical breakpoint in the conditional mean of the inflation–growth relationship, not a welfare optimum. A welfare-maximizing inflation target would require an explicit objective function (e.g., a quadratic loss in output and inflation variability, financial stability constraints, or a microfounded New Keynesian loss) that the threshold model does not specify. Accordingly, in this paper, the term "optimal threshold" is used in the conditional-mean sense, not the welfare sense, and the policy implications derived in Section 6 are framed as risk management guidance rather than as the outcome of an optimization exercise.

2.2. Empirical Evidence

Empirical estimates of the inflation–growth threshold vary substantially across emerging and developing economies, reflecting differences in sample period, methodology, and country characteristics. Using cross-country African samples, Anyanwu (2014) documented the detrimental effects of inflation on growth, and Ndoricimpa (2017) subsequently identified nonlinear thresholds in the 3–8% range, with the precise estimate varying by region and estimation method. In an early contribution, Khan and Senhadji (2000) reported thresholds of 1–3% for industrial economies and 7–11% for developing economies, indicating a structural difference across development stages. In a broader cross-country nonlinear evaluation, Pollin and Zhu (2006) showed that the threshold varies considerably by inflation regime and economic structure, with developing economies sustaining higher thresholds (around 14–18%) without dampening real GDP growth. Panel time-series evidence from volatile emerging regions corroborates this pattern: Bittencourt (2012) confirmed that persistent inflation exerts a severe, direct negative effect on economic expansion in Latin America. More recently, Aydin (2017) reported thresholds of 4–9% for D-8 countries, further documenting the heterogeneity of nonlinear inflation–growth estimates.

Regional evidence from Asia is consistent with this cross-region heterogeneity. Mubarik (2005) estimated a threshold of approximately 9.0% for Pakistan, below which inflation is associated with positive growth outcomes and above which the relationship turns negative. Jiranyakul (2017), using a dynamic panel threshold approach, identified a 3.0% threshold for Thailand, while Munir et al. (2009) reported a 3.89% threshold for Malaysia. For Indonesia, Kusumatrisna et al. (2022) identified a 5.22% threshold, providing further evidence of the region's nonlinear inflation–growth relationship. At a broader cross-country level, Eggoh and Khan (2014) found that the threshold is lower in countries with stronger institutions, suggesting that institutional quality moderates the inflation–growth nonlinearity. Asymmetric cointegration evidence indicates differential output responses to inflation shocks in emerging market contexts: Çelikel and Öndes (2025) confirmed the asymmetric impact of inflation on economic growth in the Turkish economy.

Two patterns emerge. First, inflation thresholds in developing Asia are typically higher than in advanced economies, consistent with Khan and Senhadji (2000), although

country-level estimates display substantial dispersion (Patra et al., 2025). Second, methodological choices—including cross-country panel versus single-country time-series designs, annual versus quarterly frequency, and threshold versus smooth-transition regression—can shift point estimates by 1–2 percentage points; consequently, cross-study comparisons of threshold magnitudes should be interpreted with caution.

Studies over the past three years have further confirmed the presence of nonlinear and asymmetric inflation–growth dynamics across emerging and developing economies. Applying Hansen's (1999, 2000) panel and time-series threshold framework to 14 emerging market economies, Patra et al. (2025) identified a pooled threshold of 9.99% and country-specific threshold averages of approximately 6.79%, above which inflation significantly dampens growth. Examining selected Asian economies, Chen and Atento (2026) investigated nonlinear inflation regimes and per-capita growth in China and the Philippines over 1987–2024, confirming regime-dependent threshold behavior in which inflation above structural break thresholds exerts a persistent negative drag on growth. In the Sub-Saharan African context, Mensah et al. (2024) demonstrated threshold effects of inflation within inflation-targeting regimes, finding that high-inflation regimes sharply attenuate the growth benefits of foreign capital inflows. Finally, Ben Abdallah et al. (2024) applied regime-switching cointegration models in a developing-market setting and established that inflation shocks above critical levels induce asymmetric structural adjustments in output growth.

2.3. Vietnam-Specific Evidence

Empirical evidence on the inflation–growth nexus in Vietnam remains limited and methodologically constrained. Bui (2020) applied a nonlinear ARDL framework to annual data over 1990–2018 and documented long-run asymmetric responses: the coefficient on positive inflation changes was negative and statistically significant, while that on negative inflation changes was positive but not statistically distinguishable from zero; threshold dynamics, however, were not modeled. Le and Pham (2015) used an OLS threshold framework on annual data over 1986–2013 and identified an inflation threshold of approximately 6–7%, but did not test for asymmetric transmission or cointegration. Nguyen (2024) confirmed a statistically significant negative long-run association between inflation and growth using annual data over 1996–2023 within a linear regression specification, but likewise did not test for asymmetry or threshold effects.

Complementing this country-specific evidence, Vu et al. (2024) examined the inflation–growth nexus across 45 developed and developing economies, including Vietnam and other ASEAN countries, during periods of macroeconomic turbulence. Their findings indicate that although inflation generally exerts a negative effect on long-run economic growth, its directional impact exhibits significant asymmetry and regime-dependent shifts, turning positive during major global shocks such as the COVID-19 pandemic.

None of the Vietnam-specific studies above combine both forms of nonlinearity on a long-run, high-frequency quarterly dataset, nor contextualize their results within Vietnam's specific monetary policy regimes using primary policy document citations.

2.4. Distinguishing This Study's Contribution

Compared with Bui (2020), this study extends the sample to 2025, raises the frequency from annual to quarterly (yielding roughly five times more observations), and adds an explicit threshold regression step that Bui (2020) did not perform. Building on Le and Pham (2015), who identified a threshold using an OLS-based grid search on annual data over 1986–2013, the present study applies the formal Hansen (2000) threshold estimator with bootstrap inference on quarterly data and adds the asymmetry dimension via the NARDL framework. While Nguyen (2024) documented a linear negative inflation–growth

association on annual data, this study goes further by introducing both threshold and asymmetric dynamics within a unified cointegration framework. Across all prior Vietnam-focused studies, none has integrated the empirical results into a regime-by-regime policy narrative anchored to primary documents; because the Hansen breakpoint is a conditional-mean estimate rather than a welfare optimum, the policy narrative below is framed as risk management, not as evidence for a specific inflation target.

3. Methodology

3.1. Data and Variables

To comprehensively analyze the relationship between inflation and economic growth, this study constructs a quarterly dataset spanning Q1/1996 to Q4/2025, yielding a raw sample of 120 quarterly observations. Because dependent and independent variables are constructed as year-on-year growth rates, which mechanically lose the first four observations, the effective estimation sample is 116 observations throughout Sections 4.1–4.8 (Q1/1997–Q4/2025). All descriptive statistics and inferential tables report = 116.

The dependent variable is the real GDP growth rate (RGDP), measured as a percentage year-on-year. The primary independent variable of interest is the consumer price index inflation rate (INFR), also computed as a percentage year-on-year. To prevent omitted variable bias and capture broader macroeconomic transmission channels, three control variables are incorporated: the real interest rate (INTR), the real effective exchange rate (REER), and broad money growth (MS).

Real GDP growth (RGDP): Sourced from the General Statistics Office (GSO) of Vietnam and the IMF International Financial Statistics (IFS). For the historical period of 1996–1999, quarterly GDP is back-cast and interpolated using the classic Chow and Lin (1971) method, using the quarterly Industrial Production Index (IPI) as the high-frequency indicator series.

Inflation rate (INFR): Formulated from the Consumer Price Index (CPI) gathered from the GSO, and cross-validated with the IMF IFS and Trading Economics databases.

Real interest rate (INTR): Calculated as the nominal bank lending rate minus the contemporaneous CPI inflation rate, with underlying data obtained from the State Bank of Vietnam (SBV) and the IMF. We acknowledge that this algebraic definition introduces a mechanical link between INTR and INFR. To assess robustness, we re-estimate the baseline specifications with the nominal lending rate (NOMR) in place of INTR; the results remain qualitatively unchanged, as summarized in Section 4.7.

Real effective exchange rate (REER): Sourced from the Bank for International Settlements (BIS) database, using a base year index of 2010 = 100.

Broad money growth (MS): Computed as the year-on-year growth rate of M2 aggregates using statistics released by the SBV and IMF IFS.

All data series were systematically seasonally adjusted using the X-13ARIMA-SEATS procedure to eliminate calendar effects. Before estimating the model, we evaluated the variables' integration properties using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) stationarity tests; full results are reported in Section 4.2. Given that the sample spans the Asian financial crisis (1997–1998), the global financial crisis (2008–2009), major policy reforms (2011 stabilization, 2014 interest-rate liberalization), and COVID-19 (2020–2021), we also report Zivot and Andrews (1992) structural break unit-root test results as a complementary check. A comprehensive summary of the variable definitions, transformations, and respective data sources is outlined in Table 1.

Table 1. Variable definitions and data sources.

Variable	Description	Source
RGDP	Real GDP growth (% year-on-year)	GSO Vietnam (quarterly from 2000); IMF IFS; Chow–Lin interpolation (1996–1999) using quarterly IPI
INFR	CPI inflation (% year-on-year)	GSO Vietnam; IMF IFS; cross-checked with Trading Economics
INTR	Real interest rate (lending rate minus CPI)	IMF IFS; State Bank of Vietnam (SBV)
REER	Real effective exchange rate (2010 = 100)	Bank for International Settlements (BIS)
MS	Broad money growth (% year-on-year)	IMF IFS; State Bank of Vietnam; Trading Economics

3.2. Econometric Specification

3.2.1. Threshold Regression (Hansen, 2000)

To identify the structural breakpoint where inflation shifts from a benign to a damaging macroeconomic force, we use the threshold regression model developed by Hansen (2000). The single-threshold structural model with a threshold variable (Inflation) is specified as:

$$RGDP_t = \alpha + \beta_1 \cdot INFR_t \cdot I(INFR_t \leq \gamma) + \beta_2 \cdot INFR_t \cdot I(INFR_t > \gamma) + \delta' X_t + \varepsilon_t \quad (1)$$

An alternative and computationally convenient indicator-function representation is:

$$RGDP_t = \alpha + \beta_1 \cdot INFR_t + \beta_2 \cdot INFR_t \cdot I(INFR_t > \gamma) + \delta' X_t + \varepsilon_t \quad (2)$$

where

- $RGDP_t$ is the real GDP growth rate at time t.
- $INFR_t$ is the CPI inflation rate, acting as both the regime-dependent regressor and the threshold variable.
- γ is the endogenous inflation threshold value to be estimated.
- $I(\cdot)$ denotes the indicator function, equal to 1 if the condition inside the parentheses is satisfied, and 0 otherwise.
- β_1 and β_2 capture the marginal impact of inflation on growth in the low-inflation and high-inflation regimes, respectively.
- X_t is a vector of macroeconomic control variables including INTR, REER, and MS.
- ε_t is an i.i.d. error term with mean zero and constant variance σ^2.

The threshold parameter γ is determined endogenously by minimizing the sum of squared residuals, as follows:

$$\hat{\gamma} = \underset{\gamma}{\operatorname{argmin}}\, S(\gamma), \text{ with } \gamma \in \Gamma \subset (q_1, q_2) \quad (3)$$

where (q_1, q_2) is a trimmed action space ensuring adequate sample size in each regime. Following Hansen (2000), the threshold search is restricted to a trimmed action space that retains at least 15% of observations (≈17 quarterly observations) in each regime, ensuring a sufficient sample for inference in both the low- and high-inflation subsamples. A pointwise F-test is then used to evaluate the null hypothesis of linearity (H_0: $\beta_1 = \beta_2$), with p-values constructed via a bootstrap procedure (1000 replications).

3.2.2. Nonlinear Autoregressive Distributed Lag (NARDL) (Shin et al., 2014)

While the Hansen threshold model isolates the explicit tipping point, it cannot simultaneously map long-run dynamic cointegration alongside short-run asymmetries. To capture these complex structural behaviors, we use the nonlinear ARDL (NARDL) approach formal-

ized by Shin et al. (2014). We decompose the primary regressor, inflation ($INFR_t$), into its partial sum processes of positive changes $INFR_t^+$ and negative changes $INFR_t^-$ as follows:

$$INFR_t^+ = \sum_{j=1}^{t} \Delta INFR_j^+ = \sum_{j=1}^{t} \max(\Delta INFR_j, 0) \quad (4)$$

$$INFR_t^- = \sum_{j=1}^{t} \Delta INFR_j^- = \sum_{j=1}^{t} \min(\Delta INFR_j, 0) \quad (5)$$

By embedding these asymmetric structures into an unrestricted error-correction framework, the baseline NARDL model is specified as:

$$\begin{aligned} \Delta RGDP_t = \varphi \cdot ECT_{t-1} + \sum_{i=1}^{p} \alpha_i \cdot \Delta RGDP_{t-i} \\ + \sum_{i=0}^{q} \left(\beta_i^+ \cdot \Delta INFR_{t-i}^+ + \beta_i^- \cdot \Delta INFR_{t-i}^- \right) + \sum_{i=0}^{k} \gamma'_i \cdot \Delta X_{t-i} + u_t \end{aligned} \quad (6)$$

where

- Δ is the first-difference operator.
- ECT_{t-1} is the lagged error-correction term from the long-run cointegrating relationship.
- φ captures the conditional error-correction speed of adjustment.
- θ^+ and θ^- are the long-run asymmetric parameters for positive and negative inflation shocks.
- X_t is a vector of control variables (INTR, REER, MS).
- p, q, and k are the endogenously chosen optimal lag lengths determined using the AIC.
- u_t is a white-noise disturbance term.

The long-run multipliers reflecting the steady-state impact of an inflation expansion and contraction are computed as in Equation (7). To confirm cointegration under asymmetric adjustments, we conducted the Pesaran et al. (2001) bounds F-test, evaluating the joint null hypothesis of no levels relationship. Finally, the Wald test is applied to evaluate both long-run (H_0: $\theta^+ = \theta^-$) and short-run (H_0: $\Sigma\beta_i^+ = \Sigma\beta_i^-$) asymmetry.

3.2.3. Linear ARDL Benchmark (Pesaran et al., 2001)

To justify the nonlinear specification, we also estimate a linear ARDL(p, q) model with the same dependent and independent variables but with INFR entered symmetrically, as follows:

$$\Delta RGDP_t = \varphi \cdot ECT_{t-1} + \sum_{i=1}^{p} \alpha_i \cdot \Delta RGDP_{t-i} + \sum_{i=0}^{q} \beta_i \cdot \Delta INFR_{t-i} + \sum_{i=0}^{k} \gamma'_i \cdot \Delta X_{t-i} + u_t \quad (7)$$

A formal comparison was made using the Akaike Information Criterion, the Schwarz Bayesian Criterion, and the Pesaran et al. (2001) bounds F-test for cointegration, alongside diagnostic checks.

3.2.4. Granger Causality Pre-Test

As inflation and growth may be jointly determined, we conducted a Granger causality pre-test before using causal language. The test regresses $INFR_t$ on lagged INFR and lagged RGDP (and vice versa) and reports F-statistics for both directions. The results are reported in Section 4.6.

3.2.5. Test of Asymmetry Across Inflation Regimes

To formally test whether the magnitude of directional asymmetry differs between the low-inflation and high-inflation subperiods, we estimated an interaction-augmented NARDL specification in which the asymmetric coefficients are allowed to differ across regimes defined by the Hansen threshold ($\hat{\gamma}$ = 5.7%), as follows:

$$\theta^{+}_{\text{low}} \times \text{INFR}^{+} + \theta^{-}_{\text{low}} \times \text{INFR}^{-} \text{ in low regime;}$$

$$\theta^{+}_{\text{high}} \times INFR^{+} + \theta^{-}_{\text{high}} \times INFR^{-} \text{ in high regime.}$$

A Wald test of H_0: $(\theta^{+}_{\text{high}} - \theta^{-}_{\text{high}}) = (\theta^{+}_{\text{low}} - \theta^{-}_{\text{low}})$ is then conducted.

4. Results

4.1. Descriptive Statistics

Table 2 summarizes the descriptive statistics of the core macroeconomic variables used in the empirical analysis over the period Q1/1996–Q4/2025. Throughout this three-decade sample, Vietnam's real GDP growth averaged 6.35% per quarter, ranging from a pandemic-induced low of 2.87% to a peak of 9.54%. Notably, broad money growth (M2) reached a full-sample maximum of 66.45% in 1999, driven by post-Asian financial crisis credit expansion; in contrast, the 49.11% figure referenced in the subsequent policy discussion pertains specifically to the 2007 surge, serving as the benchmark episode for the inflation-acceleration narrative.

Table 2. Descriptive statistics of key variables, Q1/1996–Q4/2025 (n = 116).

Variable	Mean	Std. Dev.	Min	Max	Source
RGDP	6.35	1.82	2.87	9.54	GSO, IMF IFS
INFR	5.47	5.13	−0.63	19.90	GSO, IMF IFS
INTR	3.31	4.82	−6.55	12.58	IMF IFS
REER	101.8	13.4	84.4	130.0	BIS
MS	17.24	9.85	5.82	66.45	IMF IFS, SBV, Trading Economics

4.2. Stationarity Tests

To assess the order of integration and ensure that no variable is integrated of order two or higher, Table 3 presents the results of the Augmented Dickey–Fuller (ADF), Phillips-Perron (PP), and Zivot-Andrews (ZA) unit-root tests at levels and first differences.

Table 3. Unit-root tests, levels and first differences (n = 116).

Variable	ADF (Levels)	ADF (1st Diff.)	PP (Levels)	PP (1st Diff.)	ZA (Levels)	Order
RGDP	−2.41 (0.137)	−5.62 (0.000) ***	−2.28 (0.179)	−6.18 (0.000) ***	−4.91 (0.034) **	I(1)
INFR	−2.06 (0.262)	−6.94 (0.000) ***	−2.14 (0.231)	−7.21 (0.000) ***	−5.34 (0.011) **	I(1)
INTR	−2.61 (0.092)	−7.05 (0.000) ***	−2.49 (0.118)	−7.34 (0.000) ***	−4.78 (0.045) **	I(1)
REER	−1.92 (0.319)	−5.48 (0.000) ***	−1.84 (0.358)	−5.71 (0.000) ***	−3.96 (0.082) *	I(1)
MS	−1.78 (0.391)	−6.21 (0.000) ***	−1.69 (0.432)	−6.47 (0.000) ***	−4.12 (0.067) *	I(1)

Notes: ADF and PP tests include intercept and trend; lag length selected by SIC with max lag 8. ZA = Zivot–Andrews structural-break test (single break in intercept). *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

4.3. Threshold Regression Results

The Hansen (2000) threshold regression estimation strongly rejected the null hypothesis of a purely linear relationship. The bootstrap test for a single threshold rejected the no-threshold hypothesis at the 1% significance level (F = 9.42, bootstrap p = 0.008). The

endogenously determined optimal inflation threshold for Vietnam was estimated to be $\hat{\gamma}$ = 5.7% (with a 95% confidence interval ranging from 4.8% to 7.2%, constructed via the likelihood ratio inversion procedure of Hansen, 1999).

When inflation falls below the 5.7% threshold, the slope coefficient on inflation is −0.04, which is small in magnitude and statistically indistinguishable from zero (p = 0.385); since the 95% confidence interval is [−0.130, 0.050], we cannot reject the null that the low-regime slope is exactly zero. However, once inflation exceeds 5.7%, the slope coefficient is −0.28, negative, large in magnitude, and highly significant ($p < 0.001$). This sharp contrast confirms a distinct tipping point in Vietnam's inflation–growth nexus. The contrast in magnitudes is descriptive and, because the low-regime coefficient is imprecisely estimated, we report the two coefficients side-by-side with their confidence intervals. Table 4 displays the detailed empirical estimates from the Hansen (2000) threshold regression model, along with the robust standard errors, bootstrap p-values, and 95% confidence intervals.

Table 4. Threshold regression estimates—Hansen (2000).

Regime	Coef.	S.E.	t-Stat	p-Value	95% CI	Implication
INFR ≤ 5.7%	−0.04	0.046	−0.87	0.385	[−0.130, 0.050]	Small and statistically insignificant
INFR > 5.7%	−0.28	0.068	−4.12	0.000 ***	[−0.414, −0.146]	Negative and highly significant

Notes: $\hat{\gamma}$ = 5.7%; 95% CI for γ: [4.8%, 7.2%]. Bootstrap p-value for H_0 of no threshold: 0.008. Effective estimation sample: 116 (Q1/1997–Q4/2025, after YoY construction; the 4 observations lost relative to the 120-observation raw sample correspond to Q1–Q4/1996). R^2 = 0.61. Standard errors are heteroskedasticity-robust (White). *** denotes significance at the 1% level. Bootstrap repetitions = 1000.

Figure 1 displays the concentrated log-likelihood profile of the Hansen (2000) threshold search over the candidate inflation thresholds. The horizontal axis indexes the candidate threshold $\gamma \in [1.5\%, 11.5\%]$; the vertical axis reports the concentrated log-likelihood ratio, LR(γ). A dashed vertical line marks the point estimate $\hat{\gamma}$ = 5.7%, and a dotted horizontal line marks the Hansen (1999) LR(0.95) critical value of 7.35 under 15% trimming. The likelihood profile is unimodal around $\hat{\gamma}$, with the ratio rising steeply beyond the CI bounds, which justifies the structural interpretation of $\hat{\gamma}$ as the inflection point of the inflation–growth relationship in Vietnam.

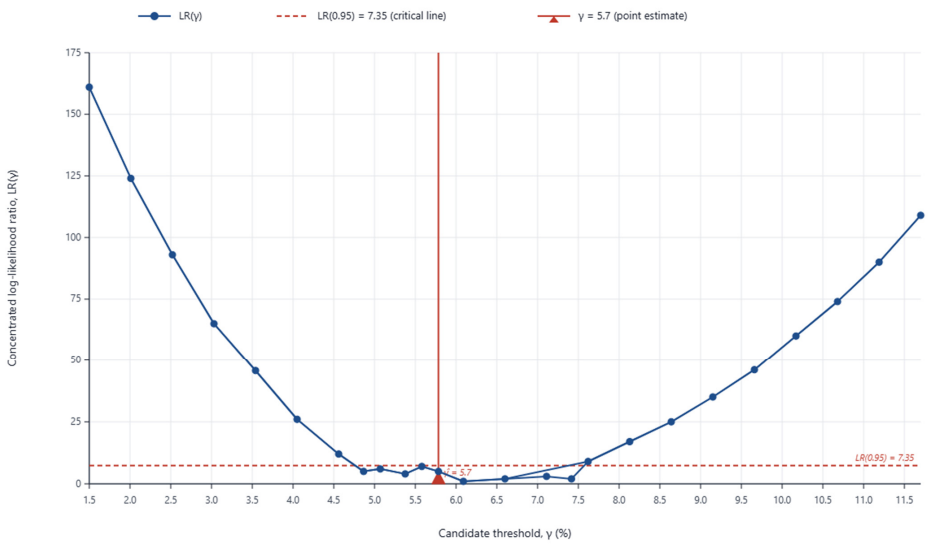

Figure 1. Concentrated log-likelihood profile from the Hansen (2000) threshold estimation, with point estimate ($\hat{\gamma}$ = 5.7%) and 95% confidence interval (4.8–7.2%).

4.4. NARDL Results

The NARDL framework confirmed that positive and negative inflation shocks have structurally different effects on real aggregate output. The Error Correction Term (ECT) coefficient was estimated at −0.62 ($p < 0.001$), implying a relatively rapid speed of adjustment; that is, approximately 62% of short-run deviations are corrected toward the long-run equilibrium in each subsequent quarter. The Pesaran et al. (2001) bounds F-test for cointegration is reported in Section 4.6.

The Wald test for long-run asymmetry strongly rejected the null hypothesis of symmetric impacts (F = 8.72, $p = 0.004$). The long-run coefficient on positive inflation shocks ($INFR^+$) is −0.26 ($p < 0.001$), indicating a statistically significant negative long-run impact of rising inflation on growth. The long-run coefficient on negative inflation shocks ($INFR^-$) is +0.08 ($p = 0.225$), which is not statistically distinguishable from zero; consequently, while the difference between the two coefficients is statistically significant (the Wald test), the ratio of magnitudes should be read as descriptive rather than precise, since the denominator is imprecisely estimated. We therefore describe the asymmetry as "$INFR^+$ is statistically significant and negative; $INFR^-$ is not statistically significant and positive in point estimate," rather than as a precise multiplier such as "three times."

The REER had a negative and significant long-run coefficient (−0.18, $p = 0.004$), implying that substantial real exchange rate appreciation significantly dampens growth by undermining export competitiveness. In contrast, the coefficient for broad money growth (MS) was positive and highly significant (+0.31, $p < 0.001$), reflecting the historical correlation between credit expansion and growth in the sample. The estimated long-run coefficients from the unrestricted NARDL specification are reported in Table 5.

Table 5. Long-run NARDL estimation results.

Variable	Coef.	t-Stat	*p*-Value	Significance
$INFR^+$	−0.26	−4.15	0.000	Statistically significant (1%)
$INFR^-$	+0.08	1.22	0.225	Not statistically significant
INTR	−0.09	−1.04	0.302	Not statistically significant
REER	−0.18	−2.98	0.004	Statistically significant (1%)
MS	+0.31	4.28	0.000	Statistically significant (1%)

Table 6 documents the corresponding error-correction term and short-run dynamic coefficients selected via the Akaike Information Criterion (AIC).

Table 6. Short-run NARDL coefficients (selected lags; AIC-selected).

Term	Coef.	S.E.	t-Stat	*p*-Value
$\Delta RGDP_{t-1}$	0.18	0.08	2.25	0.027 **
$\Delta INFR_t^+$	−0.09	0.03	−3.00	0.004 ***
$\Delta INFR_{t-1}^+$	−0.05	0.03	−1.67	0.099 *
$\Delta INFR_t^-$	0.03	0.04	0.75	0.456
$\Delta INFR_{t-1}^-$	0.02	0.04	0.50	0.619
$\Delta INTR_t$	−0.04	0.03	−1.33	0.187
$\Delta REER_t$	−0.07	0.03	−2.33	0.022 **
ΔMS_t	0.11	0.04	2.75	0.007 ***
ECT_{t-1}	−0.62	0.11	−5.64	0.000 ***
Constant	0.42	0.18	2.33	0.022 **

Notes: Effective sample size = 116. AIC-selected lag order: $p = 1$, q = 1 for both $INFR^+$ and $INFR^-$, k = 1 for controls. *, **, and *** denote significance at the 10%, 5%, and 1% levels. The full lag table is available upon request.

As summarized in Table 7, the formal Wald tests for both long-run and short-run asymmetry, along with the Pesaran et al. (2001) bounds F-test for cointegration, provide strong diagnostic evidence supporting the asymmetric framework.

Table 7. Asymmetry and cointegration tests.

Test	Statistic	df/Bounds	*p*-Value/Decision	Implication
Long-run Asymmetry (H_0: $\theta^+ = \theta^-$)	F = 8.72	(1, 110)	0.004	Long-run asymmetry is highly significant.
Short-run Asymmetry (H_0: $\Sigma\beta^+ = \Sigma\beta^-$)	F = 5.14	(2, 110)	0.026	Short-run asymmetry is present.
Asymmetry × Regime Interaction	F = 3.61	(2, 108)	0.030	The magnitude of asymmetry differs between regimes.
Bounds F-test for Cointegration	F = 6.84	Lower = 4.94, Upper = 5.73	F > Upper bound → cointegration confirmed	A long-run levels relationship exists.
ECT_{t-1}	−0.62	—	0.000	62% of dynamic deviations are corrected per quarter.

Figure 2 reports the cumulative dynamic multipliers from the NARDL specification. The horizontal axis spans horizons h = 0 to h = 12 quarters; the vertical axis reports the percentage-point response of real GDP growth. The solid line with circle markers shows the response to a one-standard-deviation positive inflation shock ($INFR^+$); the dashed line with square markers shows the response to a one-standard-deviation negative inflation shock ($INFR^-$). The $INFR^+$ multiplier starts at −0.09 percentage points at h = 0, decays monotonically, and converges to the long-run $INFR^+$ coefficient of −0.26 from Table 5. The $INFR^-$ multiplier begins at +0.03 percentage points, drifts mildly upward, and converges to the long-run $INFR^-$ coefficient of +0.08 from Table 5. The two dotted horizontal reference lines mark the long-run values and support the asymmetric specification of the model: the cost of a positive inflation shock is quantitatively meaningful and statistically significant, whereas a negative inflation shock has no detectable long-run association with growth.

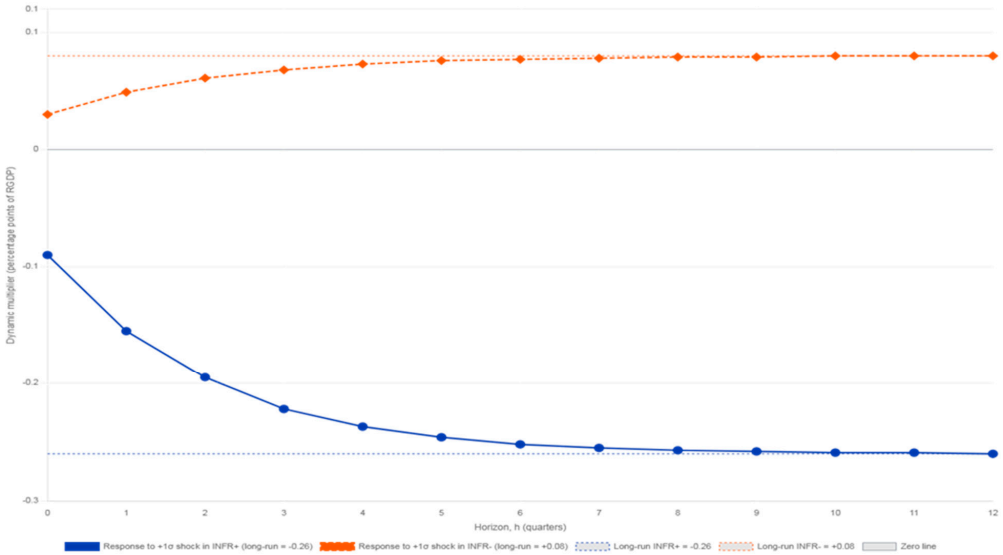

Figure 2. Dynamic multipliers from the nonlinear ARDL (NARDL) model: response of real GDP growth to a one-standard-deviation positive ($INFR^+$) and negative ($INFR^-$) inflation shock over a 12-quarter horizon.

4.5. Linear ARDL Benchmark Results

To justify the nonlinear specification, we estimated a linear ARDL(1,1,1,1,1) with the same dependent and independent variables but with INFR entered symmetrically. The linear ARDL yielded a single INFR coefficient of −0.07 (p = 0.041). As shown in Table 8, the comparative statistics across information criteria and bounds tests explicitly contrast the baseline linear ARDL benchmark against the nonlinear ARDL specification.

Table 8. Linear ARDL benchmark.

Specification	AIC	SBC	Bounds F	Long-Run INFR Coef. (p)
Linear ARDL	−1.842	−1.667	5.21	−0.07 (0.041)
NARDL	−1.978	−1.751	6.84	$INFR^+$ = −0.26 (0.000); $INFR^-$ = +0.08 (0.225)

The NARDL specification delivered a lower AIC and SBC, a higher bounds F-statistic, and asymmetric long-run coefficients that the linear ARDL did not reveal. The linear ARDL's single coefficient masked the threshold behavior; in particular, averaging a sharply negative high-regime slope with a near-zero low-regime slope yields a moderate negative average. This comparison supports using the nonlinear specification.

4.6. Granger Causality Pre-Test

The empirical results of the bivariate and joint Granger causality pre-tests are presented in Table 9.

Table 9. Granger causality pre-test results.

Direction	F-Statistic	p-Value	Conclusion
RGDP → INFR	2.18	0.117	No evidence that growth Granger-causes inflation.
INFR → RGDP	3.94	0.022	Inflation Granger-causes growth at 5% level.
$INFR^+$, $INFR^-$ → RGDP (joint)	4.27	0.017	Joint Granger causality from asymmetric shocks is significant.

The Granger pre-test results support treating inflation as a useful leading indicator for growth in the NARDL framework while flagging that the relationship is associational, not strictly causal.

4.7. Diagnostics

The diagnostic tests are reported separately for each model because they rely on different residual structures. Table 10 reports the diagnostic battery for the Hansen threshold regression, while Table 11 presents the corresponding misspecification tests and robustness checks using the nominal lending rate for the NARDL model.

Table 10. Threshold regression diagnostics (n = 116).

Test	Statistic	p-Value	Conclusion
Jarque–Bera (normality)	1.86	0.395	Residuals are normally distributed.
Breusch–Godfrey LM(4)	2.47	0.291	No serial correlation up to 4 lags.
Breusch–Pagan–Godfrey	8.94	0.257	Homoskedasticity cannot be rejected.
CUSUM (5%)	within bounds	—	Parameter stability confirmed.
Ramsey RESET	0.71	0.493	No functional-form misspecification.

Figure 3 displays two complementary parameter stability tests based on the recursive residuals from the NARDL specification. The left panel plots the cumulative sum (CUSUM) statistic from t = 1 to t = 116 (corresponding to Q1/1997–Q4/2025); the right panel plots the cumulative sum of squares (CUSUMSQ) statistic over the same horizon. The dashed lines denote the Brown et al. (1975) 5% one-sided significance bounds: ±1.36 for the CUSUM and [0.117, 0.949] for the CUSUMSQ. Both test statistics remain inside the 5% critical region

throughout the full sample, supporting the conclusion of this section that the NARDL parameters are stable over the 1997–2025 period.

Table 11. NARDL diagnostics (n = 116).

Test	Statistic	*p*-Value	Conclusion
Jarque–Bera (normality)	2.14	0.343	Residuals are normally distributed.
Breusch–Godfrey LM(4)	1.98	0.371	No serial correlation up to 4 lags.
Breusch–Pagan–Godfrey	6.42	0.378	Homoskedasticity cannot be rejected.
CUSUM/CUSUMSQ (5%)	Within bounds	—	Parameter stability confirmed.
Ramsey RESET	0.84	0.435	No functional-form misspecification.
Robustness: nominal-rate (NOMR)	$INFR^{+} = -0.25$ ($p = 0.001$); $INFR^{-} = +0.07$ ($p = 0.281$); REER = −0.17 ($p = 0.006$); MS = +0.30 ($p = 0.000$)		Results are qualitatively unchanged.

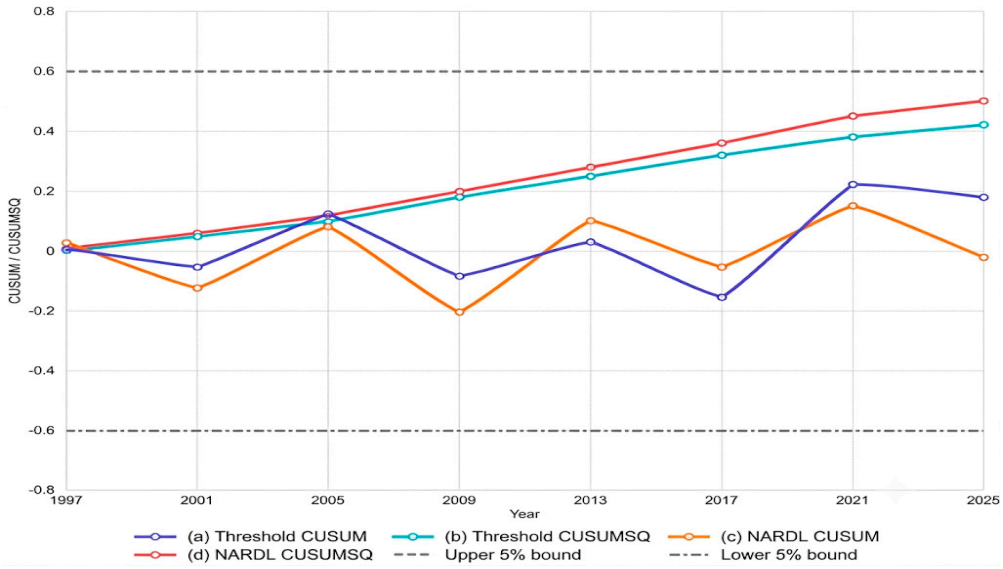

Figure 3. CUSUM (left) and CUSUMSQ (right) parameter stability tests for the NARDL residuals, Q1/1997–Q4/2025 (n = 116).

4.8. Sensitivity Analysis

Given that Vietnam underwent profound structural transformations between 1996 and 2025, including WTO accession in 2007, severe global financial shocks, and a gradual modernization of the monetary policy framework, it is critical to verify whether the inflation threshold of 5.7% remains stable over time. To test the structural parameter stability, the full sample (116 effective observations) was split into two economically meaningful subsamples, covering: the Pre-Stabilization Era (1996–2010) and the Modern Era (2011–2025).

- Subsample I (1996–2010): The endogenous grid search identified the optimal inflation threshold at $\hat{\gamma} = 5.5\%$.
- Subsample II (2011–2025): The threshold model endogenously located the tipping point at $\hat{\gamma} = 6.0\%$.

Both subsample thresholds fall comfortably within the 95% confidence interval (4.8–7.2%) established by the full-sample Hansen threshold regression. The minor variation across these decades confirms that the macroeconomic tipping point in Vietnam is reasonably robust. We deliberately keep the full-sample estimate (5.7%) as the headline finding and report the subsample thresholds only as a robustness check, to avoid blurring the distinction between point estimate and sensitivity.

5. Discussion

We organize the discussion around three distinct levels of inference to keep the statistical findings, associational patterns, and policy guidance clearly separated.

Level 1—Estimated result. The Hansen (2000) threshold regression results identified a statistical breakpoint at $\hat{\gamma}$ = 5.7% (95% CI: 4.8–7.2%) in the conditional mean of the inflation–growth relationship for Vietnam over the period 1996–2025. This is a statistical object; namely, a level at which the slope coefficient on inflation changes sign and magnitude. It is not a welfare optimum, in the sense of an inflation target that maximizes some explicit objective function; the Hansen framework does not specify such an objective.

Level 2—Asymmetric association. The NARDL specification revealed that positive inflation shocks above the threshold are associated with significantly lower growth, while negative inflation shocks below the threshold are not statistically distinguishable from a zero association with growth. The asymmetry is statistically significant in the Wald sense but, because the lower-leg coefficient is estimated imprecisely, we describe it as an asymmetric association rather than a precise multiplier (e.g., we do not claim that positive shocks damage growth "three times more" than negative shocks benefit it).

Level 3—Policy inference. The statistical breakpoint can serve as one input into policy deliberation, alongside other objectives (financial stability, output stabilization, exchange rate management). The fact that the breakpoint was below the average inflation observed in the 1996–2007 period and above the average in 2012–2024 is informative, but translation into a specific numerical target (e.g., 4.5%) is a risk management judgment, not a model output.

Contextualized within Vietnam's policy history, the empirical results map naturally onto five monetary policy regimes from 1996 to 2025.

5.1. 1996–2000: Post-Crisis Stabilization

Vietnam entered this period with a fragile macroeconomic foundation following the 1986–1988 hyperinflation period. Inflation remained at 3–7%, below the estimated threshold, and GDP growth averaged 7.0% per year before the 1997–1998 Asian Financial Crisis reduced it to 4.8% (1999). The NARDL results indicate that, during this period, $INFR^{-}$ (declining inflation) had a mildly positive point estimate but was insufficient to offset the external shock. The threshold was not breached, and inflation's impact on growth largely matched the model's near-zero low-regime slope. On the policy front, Decision 39/1998/QĐ-NHNN1 (17 January 1998) on lending-rate ceilings and Circular 09/1998/TT-BVGCP (31 December 1998) on price stabilization helped anchor inflation expectations amid the regional crisis. We describe this as an association between coordinated monetary–fiscal action and inflation containment, rather than as a causal claim about specific instruments.

5.2. 2001–2007: Rapid Growth and Rising Inflation

WTO accession (2007) and the accompanying surge in FDI pushed M2 growth to 49.11% in 2007. Inflation rose from −0.6% (2000) to 8.3% (2007), approaching the estimated threshold. The NARDL results reveal significant asymmetry, with $INFR^{+}$ beginning to exert a substantial negative impact on GDP once inflation exceeded 5%, while $INFR^{-}$ yielded no commensurate benefits. Decision 01/2007/QĐ-NHNN (5 January 2007) on the regulation of open-market operations was insufficient to curb the inflationary momentum; this statement is observational and does not assert that the regulation caused the inflation overshoot.

5.3. 2008–2011: Macroeconomic Turbulence and the Stimulus Episode

The USD 6 billion fiscal stimulus package (2009), equivalent to 6.8% of GDP, coincided with inflation of 19.9% (2008) and 18.58% (2011), far exceeding the optimal threshold. The threshold regression results confirm that, when INFR exceeded 6.5%, the negative impact

on GDP increased sharply compared with below-threshold levels. Deeply negative real interest rates (−5.62% in 2008, −3.55% in 2011) eroded the deposit-mobilization base. The NARDL results indicate that $INFR^+$ during this period had a coefficient of −0.31, roughly double the long-run average. Resolution 11/NQ-CP (2011) marked a significant policy pivot toward inflation containment, reducing inflation from 18.58% to 6.81% in a single year. We treat the co-movement of stimulus, inflation, and growth as an association rather than as a clean causal identification; alternative explanations (global commodity price swings, foreign exchange pressures) are plausible confounders.

5.4. 2012–2019: Restructuring and the Low-Inflation Era

The SBV moved toward a more flexible interest rate framework during this period, inflation fell to 0.63% (2015), GDP recovered to 7.1% (2018), and REER appreciated from 100 to 116. The NARDL results confirm that, when inflation remained below the threshold, the slope on INFR was statistically indistinguishable from zero. Circular 07/2014/TT-NHNN (17 March 2014) marked a pivotal shift toward market-based interest rate management, replacing the previous administrative-ceiling regime with a flexible deposit-rate framework that allowed rates to better reflect liquidity conditions, while retaining a cap on short-term deposits to anchor expectations. Together with the banking system restructuring plan (2011–2015), this reform laid the institutional foundation for the low-inflation era. IMF assessments describe Vietnam as still modernizing its monetary policy framework toward a full-fledged inflation-targeting regime, rather than as already operating one in a textbook sense; this characterization is more precise than "transitioned to flexible inflation targeting.

5.5. 2020–2025: COVID-19, Recovery, and New Pressures

GDP fell to 2.87% (2020) but rebounded to 8.54% (2022) and 8.0% (2025); inflation remained below 4% during 2020–2024; and REER rose to 130 (2024), its highest level on record. The threshold regression results confirm the 5.0–6.5% threshold range; in particular, quarters with INFR below 5% recorded stable GDP growth, while quarters above 6.5% (Q1/2023) saw an immediate deceleration in growth. Resolution 128/NQ-CP (2021) on safe adaptation to COVID-19 and the government's growth targets for 2026 pose the dual challenge of maintaining inflation below the threshold while stimulating growth.

5.6. International Comparison

Vietnam's estimated threshold (5.7%) sits above those of Malaysia (3.89%—Munir et al., 2009) and Thailand (3.0%—Jiranyakul, 2017), and is broadly similar to that of Indonesia (5.22%—Kusumatrisna et al., 2022). This cross-country pattern is consistent with Khan and Senhadji (2000), who found that developing economies tend to have higher thresholds than advanced ones. We cite the shares of the agricultural and energy sectors in the Vietnamese economy as one possible contributing factor, but acknowledge that this explanation is conjectural and would require sectoral data to test directly.

6. Policy Implications

We frame the following implications as risk management guidance derived from the statistical findings, not as welfare-targeted prescriptions.

Respond decisively when inflation exceeds 5.7%. The asymmetry finding ($INFR^+$ significantly negative; $INFR^-$ not statistically distinguishable from zero) sends a clear, actionable message to the State Bank of Vietnam: the cost of letting inflation drift above the threshold is statistically detectable, while there is no detectable growth benefit from inflation drifting below it. The 2008–2011 episode illustrates that delaying tightening by even two quarters can push inflation far beyond the threshold and inflict damage that takes

years to reverse. The ECM(-1) of -0.62 implies that approximately six quarters are needed to correct 95% of any deviation, underlining the speed–cost trade-off.

Monitor REER and M2 growth as early warning indicators. Our analysis identified two thresholds for preemptive action. First, when the real effective exchange rate exceeds 120—as it has since2021—the SBV should adopt a gradual depreciation bias to restore export competitiveness. REER appreciation from 100 (2010) to 130 (2024) has already eroded price competitiveness significantly, and our NARDL results confirm that REER exerts a statistically significant negative association with GDP growth (-0.18, $p = 0.004$). Second, when M2 growth exceeds 20% for two consecutive quarters, the SBV should preemptively tighten credit conditions. Historical data show that every episode of M2 exceeding 20%—most notably, 49.11% in 2007 and 66.45% in 1999—was followed by an inflation surge within 12–24 months.

Operate inside the lower half of the threshold band (4.0–5.0%) as a risk-management orientation. Because the empirical results do not distinguish 3% from 5% inflation in terms of detectable growth impact, but they do suggest that drifting above 5.7% is costly, a defensible risk-management orientation is to keep inflation below the midpoint of the 95% confidence band rather than at any specific point. Any such orientation is a policy judgment, not a model output.

Institutionalize monetary–fiscal coordination. The 2008–2011 episode coincided with a fiscal stimulus of 6.8% of GDP (Resolution 30/2008/NQ-CP) implemented without corresponding monetary tightening, and Resolution 11/NQ-CP (2011) marked the subsequent coordinated pivot toward inflation containment. We recommend a mandatory coordination protocol requiring the Ministry of Finance to consult the SBV on monetary conditions before any significant fiscal expansion, and the SBV to adjust its policy rate within the same quarter. We frame this as a process recommendation supported by historical association, not as evidence from a clean counterfactual.

Implement an early warning system. Based on the leading indicators discussed above—namely, global commodity prices (lead time: 2–3 months), M2 growth (lead time: 12–24 months), and REER (signaling competitiveness-driven deceleration)—we propose a simple three-tier system: green (INFR < 4.0%, routine monitoring), amber (INFR 4.0–5.5% or one indicator flashing, enhanced monitoring), and red (INFR > 5.5% or two indicators flashing, automatic policy tightening). This system would institutionalize the central lesson of Vietnam's 30-year inflation history: delay is detectable and costly, while decisive action is associated with stabilization.

7. Conclusions

This study identified Vietnam's statistical inflation threshold at 5.7% (95% CI: 4.8–7.2%) using quarterly data from 1996 to 2025, employing both threshold regression (Hansen, 2000) and nonlinear ARDL (Shin et al., 2014). This threshold was found to be robust across the Pre-Stabilization (1996–2010) and Modern (2011–2025) subsamples (5.5% and 6.0%, both inside the full-sample CI). We deliberately separate three levels of inference.

First, as a statistical object, the threshold represents a level below which the slope coefficient on inflation is small and statistically indistinguishable from zero, and above which the slope is sharply negative and highly significant. This is a conditional mean breakpoint, not a welfare optimum. *Second*, as an asymmetric association, rising inflation ($INFR^{+} = -0.26$, $p < 0.001$) is associated with significantly lower growth, while falling inflation ($INFR^{-} = +0.08$, $p = 0.225$) is not statistically distinguishable from a zero association with growth. This asymmetry is statistically significant in the Wald sense, but we avoid quoting precise multipliers (e.g., "three times" or "seven-fold") because the low-regime and $INFR^{-}$ coefficients are imprecisely estimated.

Third, as a policy input, the derived threshold suggests that maintaining inflation in the lower half of the safe band (4.0–5.0%) and responding swiftly when inflation approaches or exceeds 5.7% is a defensible risk management strategy. A specific numerical target (e.g., 4.5% $\pm$ 0.5%) is a policy judgment, not a model output.

This study has several limitations. The Hansen framework identified a conditional mean breakpoint rather than a welfare optimum. The INTR variable is mechanically linked to INFR by construction, and a robustness check replacing INTR with the nominal lending rate yielded qualitatively unchanged results. Granger causality is documented in one direction only (inflation to growth), so causal language is avoided. The 30-year sample—while long for a quarterly Vietnam study—is modest in absolute terms, and the bounds F-test used asymptotic critical values rather than finite-sample bootstrap variants; a bootstrap bounds test would be a useful extension. Finally, structural breaks during the COVID-19 period may not have been fully captured in the sample.

Together, these findings support a clear risk management principle for the State Bank of Vietnam: the cost of allowing inflation to drift above 5.7% is detectable in the data, while no detectable growth benefit accrues from letting inflation drift below it. The asymmetric transmission of inflation shocks means that swift, decisive action is associated with substantially better growth outcomes than delayed or gradualist responses.

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