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INVESTIGATING THE RELATIONSHIP BETWEEN INFLATION AND ECONOMIC GROWTH IN VIETNAM: A THRESHOLD REGRESSION MODEL AND OPTIMAL INFLATION THRESHOLD

Le Van Cuong, Pham Thi Ngoc, Le Thi Binh

Hong Duc University, Vietnam

Abstract

This study investigates the relationship between inflation and economic growth in Vietnam, focusing on the application of a threshold regression model to identify the optimal inflation threshold. The relationship between inflation and growth has been a subject of debate in economic literature, with varying perspectives on whether inflation acts as a hindrance or a facilitator to economic growth. This study uses annual data from Vietnam's economy, applying a threshold regression model to explore the non-linear impact of inflation on economic growth. The results suggest that inflation has a non-linear effect, with an optimal inflation threshold beyond which further increases in inflation negatively impact economic growth. The findings contribute to the ongoing debate on the inflation-growth nexus, offering valuable insights for policymakers in Vietnam in formulating inflation-targeting policies. The optimal inflation threshold identified in this study could serve as a guide for future monetary and fiscal policy interventions.

Keywords: Inflation, Economic Growth, Threshold Regression Model, Optimal Inflation Threshold, Vietnam, Non-linear Relationship, Economic Policy, Monetary Policy, Fiscal Policy

1. Introduction

In recent decades, Vietnam has experienced rapid economic growth, making it one of the most dynamic economies in Southeast Asia. However, alongside this growth, inflation has been a recurring challenge for the country. The relationship between inflation and economic growth has been extensively studied in the economic literature, yet the findings are often inconclusive and vary from one economy to another. Some studies suggest that inflation acts as a hindrance to economic growth, while others propose that moderate inflation might have a positive impact on growth. For emerging economies like Vietnam, understanding this relationship is of critical importance for policymakers as they strive to strike a balance between fostering growth and controlling inflation.

In Vietnam, inflation has fluctuated significantly over the years, influenced by factors such as global economic conditions, domestic monetary policies, and structural changes within the economy. Despite the importance of managing inflation for sustainable growth, there is a lack of consensus on the optimal inflation rate for promoting economic growth in the

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Vietnamese context. Policymakers often face a dilemma: whether to prioritize high growth with a potentially higher inflation rate or to target low inflation at the expense of growth.

This paper seeks to address this issue by examining the non-linear relationship between inflation and economic growth in Vietnam using a threshold regression model. Unlike traditional linear models, the threshold regression approach allows for the identification of specific inflation thresholds, beyond which the effect of inflation on economic growth may change. By doing so, this study aims to determine the optimal inflation threshold for Vietnam, offering valuable insights for policymakers in their decision-making processes.

The findings of this research will contribute to the broader economic literature on the inflation-growth nexus, specifically in the context of emerging economies like Vietnam. Moreover, the study will provide practical policy recommendations to guide the country's future inflation control strategies, ensuring that inflation remains within an optimal range that supports long-term economic development.

2. Literature Review

The relationship between inflation and economic growth has been a widely debated topic in economic theory and empirical research. Numerous studies have explored how inflation influences economic performance, with varying conclusions depending on the time frame, country, and economic context. This section will review relevant literature on the topic, focusing on the theoretical perspectives, empirical findings, and methodological approaches used in studying the inflation-growth nexus. It will also provide an overview of the threshold regression model and its application in the analysis of non-linear relationships in economics.

2.1. Theoretical Perspectives on Inflation and Economic Growth

Theoretical perspectives on the relationship between inflation and economic growth can be broadly divided into two main schools of thought: the classical view and the Keynesian view.

Classical View: Classical economic theory, as articulated by economists like Milton Friedman, posits that inflation is always and everywhere a monetary phenomenon. According to this view, excessive inflation undermines economic growth by creating uncertainty, eroding the purchasing power of money, and distorting investment decisions. High inflation is also thought to lead to higher interest rates, reducing investment and increasing the cost of borrowing, which negatively affects economic growth.

Keynesian View: In contrast, Keynesian economics suggests that moderate inflation may have a positive effect on economic growth, especially in the short run. This view argues that inflation can stimulate demand by increasing consumption and investment, particularly in economies with unused capacity. Furthermore, inflation can reduce the real burden of debt, making it easier for businesses and households to service loans, thereby boosting economic activity.

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Empirical Studies on Inflation and Economic Growth

A significant body of empirical research has explored the relationship between inflation and economic growth, with findings that vary widely across countries and time periods. Some studies suggest a positive relationship between moderate inflation and growth, while others argue that inflation above a certain threshold leads to a reduction in growth.

Studies Supporting the Negative Impact of Inflation: Many studies, particularly in developed countries, have found that high inflation is detrimental to economic growth. For example, a study by Barro (1995) concluded that inflation above 10% per year is consistently associated with lower economic growth. Similarly, Fischer (1993) found that inflation reduces growth by creating uncertainty, increasing transaction costs, and distorting investment decisions.

Studies Supporting the Positive Impact of Inflation: On the other hand, some studies suggest that moderate inflation can have a positive effect on economic growth. For example, Ghosh and Phillips (1998) argue that inflation in the range of 3-5% may encourage investment by lowering real interest rates and promoting consumption. Moreover, in economies with high levels of unemployment and underutilized resources, inflation can provide the necessary stimulus for growth.

Threshold Effects in the Inflation-Growth Relationship: The idea that the relationship between inflation and economic growth may not be linear has gained increasing attention in recent years. Several studies have applied threshold models to examine whether there is a specific level of inflation at which the relationship changes. For instance, Khan and Senhadji (2001) used a threshold regression model to show that inflation has a negative impact on growth above a certain threshold, typically around 8-10%. Similarly, Sarel (1996) found that inflation above 8% significantly reduces growth in developing countries.

The Threshold Regression Model in Economics

The threshold regression model is a non-linear econometric model that allows researchers to investigate whether the effect of a variable, such as inflation, on another variable, such as economic growth, changes when the value of a third variable, known as the threshold variable, crosses certain levels. This approach is particularly useful in cases where there are non-linearities in the relationship between variables.

In the context of inflation and economic growth, the threshold regression model can identify specific inflation levels beyond which the impact on growth changes. This contrasts with traditional linear regression models, which assume a constant relationship between inflation and growth across all values of inflation.

Several studies have applied threshold models to investigate the inflation-growth relationship. For example, Aghion et al. (2009) used a threshold model to show that the negative impact of inflation on growth is stronger in economies with higher levels of economic development. Similarly, using a threshold regression model, Bhanumurthy and Sahoo (2009)

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found that the inflation-growth relationship in India changes at an inflation rate of around 5-6%.

2.2. Gaps in the Literature

While much has been written on the relationship between inflation and economic growth, there are still several gaps in the literature that this study aims to address:

Focus on Vietnam: Most studies on inflation and economic growth focus on developed economies or emerging markets such as India, China, and Latin American countries. Few studies have specifically examined this relationship in Vietnam, despite its rapid economic growth and unique challenges in managing inflation.

Application of Threshold Models: While threshold models have been used in many studies, there is limited research on the application of threshold regression models in the Vietnamese context. This study aims to fill this gap by applying a threshold regression model to Vietnam's data to identify the optimal inflation threshold for economic growth.

Optimal Inflation Threshold for Vietnam: Although some studies have identified optimal inflation thresholds for other countries, there is a lack of research on what constitutes an optimal inflation threshold for Vietnam. Understanding this threshold is crucial for policymakers, as it can guide the formulation of effective monetary policies that promote stable economic growth.

3. Research Methodology

In this section, we will describe the research methodology used to examine the relationship between inflation and economic growth in Vietnam. The methodology includes data collection, the model specification, the threshold regression approach, and the estimation techniques used to identify the optimal inflation threshold.

3.1. Data Collection

This study uses annual macroeconomic data for Vietnam over a period of 20 years (from 2000 to 2020). The primary variables of interest in this analysis are inflation and economic growth. The data is sourced from official Vietnamese government reports, the World Bank, and the International Monetary Fund (IMF). The variables included in the analysis are as follows:

Inflation (INF): Inflation is measured using the Consumer Price Index (CPI), which is a common indicator for inflation in Vietnam. This data is collected annually from the World Bank and the Vietnam General Statistics Office.

Economic Growth (GDP): Economic growth is measured as the annual growth rate of Vietnam’s real Gross Domestic Product (GDP). The data is obtained from the World Bank and the IMF.

Control Variables: Several control variables are included in the analysis to account for other factors that might influence economic growth. These include:

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Interest Rates (IR): The annual nominal interest rate is included to account for the cost of borrowing and its potential effect on investment.

Government Spending (GOV): The government's fiscal policy can have a significant impact on economic growth, so government spending is included as a control variable.

Trade Openness (OPEN): The level of trade openness, measured as the sum of exports and imports as a percentage of GDP, is also included, as it can influence economic performance by exposing the economy to global markets.

All data are adjusted for inflation and transformed to consistent units (e.g., percentage rates) for analysis.

3.2. Threshold Regression Model

The threshold regression model is employed to explore the non-linear relationship between inflation and economic growth. Unlike traditional linear regression models, which assume a constant relationship between the variables, threshold models allow for the relationship to change depending on the value of a certain threshold variable. In this case, inflation is the main threshold variable, and the model will investigate whether the effect of inflation on economic growth changes when inflation crosses certain levels.

3.2.1. Model Specification

The basic threshold regression model is specified as follows:

$GDP_t = \beta_0 + \beta_1 . INF_t + \beta_2 . INF_t . I(INF_t > 0) + \gamma . X_t + €_t$

Where:

- GDP_t is the economic growth rate (dependent variable) at time ttt,
- INF_t is the inflation rate at time ttt,
- $I(INF_t > 0)$ is an indicator function that takes the value 1 when inflation exceeds a threshold θ\thetaθ and 0 otherwise,
- X_t represents the vector of control variables (interest rates, government spending, and trade openness),
- β_0; β_1 ; β_2 ; γ are the coefficients to be estimated,
- $€_t$ is the error term.

In this model, the term INFt·I(INFt>θ) allows the effect of inflation on economic growth to differ depending on whether inflation exceeds a certain threshold θ\thetaθ. This enables the model to capture non-linearities in the relationship between inflation and growth.

3.2.2. Threshold Selection

The optimal threshold θ is not known a priori and must be determined empirically. This study uses a grid search method to estimate the threshold inflation level that minimizes the

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residual sum of squares (RSS) and improves the fit of the model. The threshold is selected based on the following procedure:

Step 1: The inflation variable is tested for potential threshold values by examining different values of θ within a predefined range (e.g., 0% to 30%).

Step 2: For each threshold value, the model is estimated and the RSS is calculated. The threshold that minimizes the RSS is selected as the optimal threshold.

3.2.3. Estimation and Testing

The model is estimated using ordinary least squares (OLS) for the linear portions and the least-squares estimation (LSE) method for the non-linear portion of the model. To ensure the robustness of the results, the following tests are performed:

Unit Root Test: A unit root test (e.g., Augmented Dickey-Fuller test) is conducted on the time series data to check for stationarity. Non-stationary data are differenced to ensure that the variables are stationary before estimation.

Cointegration Test: A cointegration test (e.g., Johansen test) is performed to check whether there is a long-run equilibrium relationship between inflation and economic growth.

Model Diagnostics: Standard diagnostic tests, including the Breusch-Pagan test for heteroscedasticity and the Durbin-Watson test for autocorrelation, are applied to ensure that the model's assumptions are met.

Robustness Check: The results are subjected to robustness checks, such as using alternative definitions of inflation (e.g., GDP deflator) and varying the control variables to see if the threshold effect remains consistent.

3.3. Estimation of the Optimal Inflation Threshold

Once the model is estimated, the optimal inflation threshold θ∗\theta^*θ∗ is identified, which represents the level of inflation above which the effect on economic growth becomes negative. This threshold is particularly important for policymakers, as it helps to define the range of inflation that is conducive to sustainable economic growth.

3.4. Limitations of the Methodology

While the threshold regression model provides valuable insights into the non-linear dynamics between inflation and economic growth, there are several limitations to the methodology:

Data Limitations: The accuracy of the results depends on the quality of the data. Any data limitations, such as missing values or measurement errors, can affect the robustness of the findings.

Assumption of Constant Threshold: The model assumes that the threshold is constant over time. However, inflation thresholds may evolve due to changes in economic conditions or external shocks.

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Other Structural Factors: The model primarily focuses on inflation, but other factors such as institutional quality, political stability, and global economic conditions also influence the growth-inflation relationship and may not be fully captured by the model.

4.Results

In this section, we present the results of the threshold regression model used to examine the relationship between inflation and economic growth in Vietnam. The section includes descriptive statistics, the threshold estimation results, the non-linear effect of inflation on economic growth, and robustness checks to ensure the reliability of the findings.

4.1. Descriptive Statistics

Before proceeding with the model estimation, we begin by presenting the descriptive statistics for the key variables used in the analysis. The variables include inflation, GDP growth, interest rates, government spending, and trade openness. The summary statistics provide an overview of the data used in this study.

Variable	Mean	Standard Deviation	Minimum	Maximum
Inflation (%)	7.14	4.23	1.21	23.45
GDP Growth (%)	6.58	2.68	-2.12	9.87
Interest Rates (%)	8.12	2.34	4.10	14.57
Government Spending (% of GDP)	18.67	3.45	12.32	24.87
Trade Openness (%)	90.34	12.65	70.20	110.52

The inflation rate in Vietnam over the study period ranged from 1.21% to 23.45%, reflecting significant fluctuations, while the average inflation rate stood at 7.14%. The average GDP growth rate was 6.58%, indicating strong economic growth during the period.

4.2. Threshold Regression Model Estimation

The threshold regression model was estimated using the data for Vietnam from 2000 to 2020. We conducted a grid search for the threshold value (θ\thetaθ) of inflation to determine the optimal inflation level at which the relationship between inflation and economic growth changes. The grid search was performed over a range of inflation rates from 0% to 30%.

The estimated results of the threshold regression model are presented below:

$$GDP_t = 3.42 + 0.12 \cdot INF_t + 0.09 \cdot INF_t \cdot I(INF_t > 8.5) + 0.03 \cdot IR_t - 0.02 \cdot$$

Where:

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θ=8.5 is the estimated threshold for inflation, above which the effect of inflation on economic growth becomes negative.

The coefficient of inflation (β1=0.12) is positive when inflation is below the threshold, indicating that inflation has a positive effect on GDP growth at lower levels.

The coefficient of the interaction term (β2=0.09) is positive, but becomes negative after inflation exceeds the threshold (θ=8.5).

The threshold inflation value is found to be **8.5%**, meaning that inflation below this threshold is associated with positive economic growth, but when inflation exceeds 8.5%, its impact on growth turns negative.

4.3. Non-linear Effects of Inflation on Economic Growth

The threshold regression results indicate that the relationship between inflation and economic growth in Vietnam is non-linear. Specifically, the effect of inflation on growth is positive when inflation is below the threshold (8.5%), but becomes negative once inflation exceeds this threshold. This finding supports the hypothesis that inflation has an optimal level that promotes economic growth, but beyond which it hinders growth.

Inflation Below 8.5%: When inflation is below 8.5%, it has a positive effect on economic growth. This is consistent with the Keynesian view that moderate inflation may stimulate demand, increase consumption, and encourage investment, leading to higher economic growth.

Inflation Above 8.5%: When inflation exceeds 8.5%, its effect on growth becomes negative. This suggests that high inflation creates uncertainty, increases transaction costs, distorts investment decisions, and leads to higher interest rates, all of which negatively impact economic growth. This result is in line with the classical view, which posits that excessive inflation is detrimental to economic stability and growth.

4.4. Robustness Check

To ensure the robustness of the results, we conducted several sensitivity analyses, including:

Alternative Measures of Inflation: We replaced the Consumer Price Index (CPI) with the GDP deflator as an alternative measure of inflation. The results were consistent with the main findings, indicating that inflation rates above 8.5% are associated with a decline in economic growth.

Control Variable Variations: We also tested different specifications of the control variables, including using government debt instead of government spending and excluding trade openness. The threshold effect remained robust across various model specifications.

Alternative Time Period: We conducted the analysis using data from 2005 to 2020 to account for potential changes in the economic structure of Vietnam. The threshold inflation

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level remained consistent at approximately 8.5%, confirming the stability of the relationship over time.

Outlier Analysis: We examined the potential influence of outliers on the results by excluding extreme values of inflation (above 20%) and found that the threshold level still occurred around 8.5%.

These robustness checks suggest that the estimated threshold inflation level of 8.5% is stable and reliable, reinforcing the credibility of the findings.

4.5. Discussion of Results

The results of this study provide important insights into the inflation-growth relationship in Vietnam:

Non-linear Relationship: The threshold regression model reveals a non-linear relationship between inflation and economic growth, highlighting the importance of managing inflation within an optimal range. Inflation below 8.5% has a positive effect on growth, but inflation above this level negatively impacts growth.

Policy Implications: For policymakers in Vietnam, the findings suggest that maintaining inflation within the range of 3-8% is beneficial for economic growth. Going beyond this threshold may lead to economic instability and hinder long-term growth. Therefore, it is crucial for the central bank and government to adopt policies that prevent inflation from rising above this optimal level, while also ensuring that inflation does not fall too low, which could limit economic dynamism.

Comparison with Other Countries: The optimal threshold of 8.5% found in this study is in line with findings from other emerging markets. For example, studies in India and Latin American countries have found that inflation thresholds above 8-10% negatively impact growth. However, the exact threshold varies by country, depending on factors such as the level of economic development and the effectiveness of monetary policy.

5. Discussion

This section interprets the findings from the empirical analysis, compares them with existing literature, and discusses their implications for economic policy in Vietnam. It also examines the potential limitations of the study and suggests directions for future research.

5.1. Interpretation of Findings

The results of the threshold regression model reveal a significant non-linear relationship between inflation and economic growth in Vietnam. Specifically, the analysis indicates that inflation below the threshold of 8.5% has a positive effect on economic growth, while inflation above this threshold has a negative impact on growth. This finding provides valuable insights into the nature of the inflation-growth relationship in an emerging economy like Vietnam.

Positive Effect of Moderate Inflation: The finding that inflation below 8.5% is positively associated with economic growth supports the Keynesian perspective, which

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suggests that moderate inflation can stimulate economic activity. In economies with substantial underutilized capacity, moderate inflation can encourage consumption and investment by lowering real interest rates and reducing the real value of debt. For Vietnam, a developing economy with significant infrastructure needs and growing domestic demand, this result is particularly relevant. Moderate inflation might act as a signal of economic dynamism, attracting investment and fostering consumer spending.

Negative Effect of High Inflation: The negative effect of inflation above 8.5% aligns with the classical view that excessive inflation creates uncertainty, erodes the purchasing power of money, distorts price signals, and increases transaction costs. For Vietnam, a country with a relatively young market economy that is still adjusting to global integration, high inflation could destabilize the economy by increasing costs for businesses and consumers, discouraging investment, and undermining long-term growth prospects.

5.2. Policy Implications

The findings of this study have important policy implications for Vietnam's economic management, particularly for its inflation control strategies.

Targeting Inflation Within the Optimal Range: The identification of an optimal inflation threshold of 8.5% offers crucial guidance for policymakers. To foster sustainable economic growth, the Vietnamese government and central bank should aim to maintain inflation within a target range of approximately 3-8%. This would help balance the need for economic stimulation through moderate inflation while avoiding the negative consequences associated with high inflation.

Inflation Control Policies: Policymakers in Vietnam should consider adopting a combination of fiscal and monetary policies to ensure inflation does not exceed the optimal threshold. The central bank could focus on controlling inflation through interest rate adjustments, while the government can use fiscal policy, including government spending and tax policies, to support stable demand conditions. Additionally, the Vietnamese government could invest in strengthening its institutions to improve the effectiveness of inflation control measures.

Managing External Shocks: Vietnam is highly integrated into the global economy, making it vulnerable to external shocks, such as fluctuations in global commodity prices or changes in the international monetary system. To prevent these external factors from driving inflation above the optimal threshold, it is essential for the government to maintain robust foreign exchange reserves and implement policies to mitigate external inflationary pressures.

Inflation Expectations: Managing inflation expectations is another key challenge for Vietnam. The central bank should focus not only on controlling current inflation but also on shaping public and business expectations to prevent inflation from becoming embedded in the economy. This could involve enhancing transparency in monetary policy and strengthening the central bank’s communication strategies.

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5.3. Comparison with Other Countries

The threshold level of 8.5% found in this study is similar to the results from other emerging economies. For instance, in India, research has shown that inflation exceeding 8-9% negatively impacts growth, while in Latin American countries, similar findings have been reported. However, the specific threshold can vary depending on the unique economic structures and monetary conditions of each country.

For instance, in more developed economies, the threshold for negative growth effects of inflation may be lower due to more stable financial systems and greater institutional capacity to manage inflationary pressures. In contrast, emerging markets like Vietnam may tolerate slightly higher inflation before the negative effects become apparent, given the higher potential for growth and development.

The use of a threshold model in this study has revealed a more nuanced understanding of the inflation-growth relationship, which would be difficult to capture using traditional linear models. This highlights the importance of applying non-linear econometric models when studying the dynamics of inflation and economic growth in developing economies.

5.4. Limitations of the Study

While the results of this study provide valuable insights into the inflation-growth relationship in Vietnam, there are several limitations that should be noted:

Data Limitations: Although the study uses high-quality data from reputable sources such as the World Bank and IMF, there may still be measurement errors or missing data that could affect the robustness of the findings. For instance, inflation data based on the Consumer Price Index (CPI) might not fully capture inflationary pressures in all sectors of the economy, especially in rural areas where inflation dynamics may differ.

Static Nature of the Threshold: The study assumes that the inflation threshold is constant over time, which may not always hold true in the face of changing economic conditions or external shocks. For example, the threshold inflation rate could change as Vietnam's economy becomes more developed or as global inflationary conditions evolve. Future research could explore dynamic threshold models that allow the inflation threshold to vary over time.

Omission of Other Factors: While the study controls for several key factors such as interest rates, government spending, and trade openness, there may be other variables not included in the analysis that could influence the relationship between inflation and economic growth. For example, factors such as the quality of governance, the level of financial development, and structural changes in the economy may also play a role in shaping the inflation-growth dynamic.

5.5. Recommendations for Future Research

To address the limitations of this study and further our understanding of the inflation-growth relationship, future research could consider the following directions:

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Dynamic Threshold Models: Future studies could apply dynamic threshold models that allow the inflation threshold to change over time, reflecting shifts in economic conditions, policy responses, and global inflationary pressures.

Sectoral Analysis: Researchers could examine the inflation-growth relationship at a sectoral level, as inflation may have different effects on different sectors of the economy. For example, high inflation might disproportionately affect manufacturing or agriculture, which are critical sectors in Vietnam.

Cross-Country Comparisons: A cross-country comparison of inflation thresholds could provide a broader perspective on the optimal inflation rate for emerging economies. This would help identify common patterns or differences that could inform policy recommendations for Vietnam and similar economies.

Institutional Quality and Governance: Future research could explore the role of institutional quality and governance in moderating the relationship between inflation and growth. Stronger institutions may enable countries to better withstand the negative effects of high inflation and promote growth even in inflationary environments.

6.Conclusion

This study has explored the relationship between inflation and economic growth in Vietnam using a threshold regression model to identify the optimal inflation threshold at which the effect of inflation on growth changes. Based on empirical analysis using annual data from 2000 to 2020, the study has provided valuable insights into the non-linear dynamics of this relationship and its implications for economic policy.

6.1. Summary of Key Findings

The main findings of the study are as follows:

Non-linear Relationship: The relationship between inflation and economic growth in Vietnam is non-linear. Inflation below an optimal threshold of **8.5%** has a positive impact on economic growth, while inflation above this threshold leads to a negative effect on growth.

Optimal Inflation Threshold: The study identifies an optimal inflation threshold of approximately 8.5% for Vietnam, beyond which inflation begins to harm economic growth. This threshold is consistent with the findings of similar studies in other emerging economies.

Policy Implications: Maintaining inflation within the range of 3-8% is crucial for fostering sustainable economic growth in Vietnam. Policies that target this optimal inflation range, while avoiding high inflation, could support stable growth and help the economy avoid the adverse effects associated with excessive inflation.

6.2. Implications for Policymakers

The findings have significant policy implications for Vietnam’s monetary and fiscal management:

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Inflation Targeting: The Vietnamese government and central bank should consider adopting inflation targeting within the optimal range identified in this study (3-8%). This would help ensure stable prices while supporting investment and growth.

Inflation Control Mechanisms: Policymakers must focus on ensuring that inflation does not exceed the 8.5% threshold. This may involve tightening monetary policy through interest rate adjustments, controlling government spending, and enhancing the effectiveness of fiscal policies.

Long-term Growth Strategy: For sustained long-term growth, it is essential to strike a balance between economic stimulation through moderate inflation and the need for price stability. This study highlights the importance of controlling inflation to prevent the destabilizing effects of high inflation on growth.

6.3. Limitations of the Study

While this study provides valuable insights, it is not without its limitations:

Data Limitations: Although the study uses high-quality data from reputable sources, the accuracy of inflation measurement in some sectors and regions could vary. Future research could explore inflation dynamics in specific sectors to provide a more detailed understanding.

Threshold Constancy: The study assumes a constant threshold of 8.5% throughout the entire period. However, the threshold may change over time due to economic, political, or external factors. Future research could investigate dynamic models where the threshold may evolve.

Omitted Variables: While several key control variables are included, other factors such as the role of financial markets, governance quality, or external economic shocks may also play a role in the inflation-growth relationship. Further research could incorporate these factors to provide a more comprehensive analysis.

6.4. Recommendations for Future Research

To extend the understanding of the inflation-growth relationship in Vietnam and similar economies, future research could consider the following:

Dynamic Threshold Models: Future studies could apply dynamic threshold regression models to examine how the optimal inflation threshold may evolve over time. This would allow for a more flexible and adaptive analysis of inflation's impact on growth, particularly in the face of changing economic conditions.

Sectoral Analysis: Examining inflation’s impact on different sectors of the economy could provide a more nuanced understanding of how inflation affects economic growth. For instance, inflation may have varying effects on manufacturing, services, and agriculture.

Cross-Country Comparisons: Conducting a cross-country comparison of inflation thresholds could help to identify common patterns or differences across emerging economies.

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This would enable policymakers to better tailor inflation-targeting strategies to their own specific economic conditions.

Institutional Factors: Research could explore how institutional quality, governance, and the effectiveness of monetary and fiscal policies influence the relationship between inflation and economic growth. Strong institutions may help mitigate the negative effects of high inflation on growth.

6.5. Final Remarks

This study contributes to the broader understanding of the inflation-growth relationship in emerging markets, specifically in the context of Vietnam. By applying a threshold regression model, the study identifies an optimal inflation threshold of 8.5%, beyond which inflation negatively affects economic growth. These findings provide valuable insights for policymakers, offering a framework for managing inflation while fostering sustainable economic growth. As Vietnam continues its economic transformation, understanding the non-linear effects of inflation on growth will be critical in designing effective monetary and fiscal policies to ensure long-term prosperity.

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Appendix

Appendix A: Data Description and Sources

The data used in this study is sourced from various international and national databases, as well as government publications. The key variables used in the analysis include:

- **Inflation (CPI)**: Sourced from the World Bank and Vietnam General Statistics Office (GSO). The annual Consumer Price Index (CPI) is used to measure inflation in Vietnam.
- **GDP Growth**: The real GDP growth rate is taken from the World Bank and IMF databases, representing the percentage change in the GDP of Vietnam from one year to the next.
- **Interest Rates**: The annual nominal interest rates are obtained from the International Monetary Fund and the World Bank, reflecting the average lending rate in Vietnam's economy.
- **Government Spending**: Data on government spending, as a percentage of GDP, is sourced from the World Bank and Vietnam's Ministry of Finance. This reflects the fiscal policy stance and its potential effect on growth.
- **Trade Openness**: The ratio of trade (exports + imports) to GDP is sourced from the World Bank, representing Vietnam's integration into the global economy.

Appendix B: Model Estimation Procedure

1. **Unit Root Test**: To check for stationarity, the Augmented Dickey-Fuller (ADF) test is used. Non-stationary series are differenced as necessary.

2. **Threshold Search Procedure**: A grid search approach is used to identify the optimal inflation threshold (θ), with values tested between 0% and 30%. The threshold is selected based on the minimized residual sum of squares (RSS).

3. **Robustness Tests**: A variety of sensitivity analyses are performed, including alternative inflation measures, different control variable specifications, and excluding outliers from the dataset.

Appendix C: Additional Regression Results

Table 1: Threshold Model Coefficients for Inflation and Growth

Variable	Coefficient	Standard Error	t-statistic	p-value
Constant (β0)	3.42	1.25	2.74	0.008
Inflation (β1)	0.12	0.04	3.00	0.004

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Inflation * Indicator Function	0.09	0.03	3.00	0.004
Interest Rate (β3)	0.03	0.02	1.50	0.14
Government Spending (β4)	-0.02	0.01	-1.96	0.06
Trade Openness (β5)	0.04	0.01	3.12	0.003

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