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Two-Sided Mirror: An Analysis of Inflation's Dual Impact on China's Economic Growth

Ke Chen[†]
Chungnam National University
17864287951@163.com

Jongheuk Kim[††]
Chungnam National University
jongheuk@g.cnu.ac.kr

This study investigates the impact of inflation rate fluctuations on economic growth in China, with a particular focus on potential non-linear characteristics. The global economic impact of the COVID-19 pandemic notably heightens the study's relevance. The research that the unidirectional causal relationship from inflation to economic growth in China first strengthens and then weakens over time. Furthermore, there is an inflation rate threshold effect on economic growth, identified at 2%. Below this threshold, inflation positively influences economic growth, whereas above it, the impact turns negative. This finding underscores the importance of balancing economic growth with inflation control in the formulation of monetary policy.

Keywords: Inflation, Economic Growth, Threshold Effect, VAR, Monetary Policy

JEL Classification: E31, E32, E50

I. Introduction

In the realm of macroeconomic analysis, the intricate interplay between inflation and economic growth remains a subject of intense scrutiny and debate, especially in the context of emerging market economies. These economies, characterized by rapid development and dynamic economic landscapes, present unique challenges and opportunities for macroeconomic stabilization policies. These policies aim to foster sustainable growth while managing inflation. Among these economies, China stands

[†] Ph.D Candidate, Chungnam National University, 99, Yuseong-gu, Daejeon, Republic of Korea.
[††] Associate Professor, Chungnam National University, 99, Yuseong-gu, Daejeon, Republic of Korea.

out as a prominent example, having undergone significant economic transformations accompanied by fluctuating inflation levels. This study delves into the complex relationship between inflation and economic growth in China, an economy that not only plays a pivotal role in the global economic arena but also exhibits high volatility in its growth and inflation rates. The necessity of this investigation is underscored by the cyclical nature of inflation within the business cycle, typically marked by phases of economic prosperity followed by inflationary downturns, recessions, and disinflationary expansions. This pattern raises pivotal questions about the transmission channels through which inflation impacts economic growth and the variations that exist across different countries or regions. The recent COVID-19 pandemic has added layers of complexity to this dynamic, introducing unprecedented levels of uncertainty and instability in both inflation and economic growth. In countries like China, which are already characterized by high volatility in growth and inflation rates, the pandemic has exacerbated these challenges, making the need for a nuanced understanding of the inflation-growth relationship even more critical. This paper uses the latest data and combines both threshold and Vector Autoregression (VAR) models to conduct a comprehensive analysis of the relationship between inflation and economic growth. Set against the backdrop of significant fluctuations in China's inflation and economy due to the COVID-19 pandemic, this study holds substantial contemporary relevance.

Our study utilizes annual data from China, covering the period from 1987 to 2021, to explore the complexities of the relationship between inflation and economic growth. We employ threshold models and Vector Autoregression (VAR) models for this analysis. The threshold model, known for its effectiveness in analyzing nonlinear relationships between variables, helps us investigate whether there is a specific inflation threshold in China. Beyond this threshold, we hypothesize that the impact of inflation on economic growth may change significantly. Conversely, the VAR model enables us to examine the dynamic interactions and mutual influences between inflation and economic growth. By using these methods, our study aims to provide a more comprehensive understanding of the relationship between these two critical economic factors, offering deeper insights into their interconnectedness.

The empirical findings of our study indicate a significant threshold effect in the relationship between inflation and economic growth in China. Specifically, when inflation exceeds 2%, it adversely affects economic growth. In contrast, inflation below this threshold appears to positively influence growth. At low inflation rates, consumer and business confidence is bolstered, leading to increased consumption and investment, which in turn stimulates economic demand. Low inflation enhances the propensity to purchase, particularly in long-term consumer goods like durable items and real estate. It also encourages businesses to expand production and investment, creating job opportunities. Furthermore, low-interest rate policies, often associated with low inflation, reduce borrowing costs, promoting further investment and consumption. On the other hand, high inflation rates devalue currency, increase economic uncertainty and risk, impact long-term planning and investment decisions, and lead to distorted resource allocation, all of which constrain economic growth. Additionally, our analysis using the Vector Autoregression (VAR) model reveals a unidirectional causal relationship between inflation and economic growth. It also shows the diminishing contribution of inflation to economic growth over time, a key insight from our quantitative analysis. These findings have undergone rigorous robustness checks, enhancing the reliability of our research. However, the methodological approach of this study has certain limitations from an economic perspective. The annual time series data used spans from 1987 to 2021. While this is adequate for analyzing long-term economic trends, the granularity of annual data may not capture the nuanced effects of economic fluctuations and policy shifts within shorter periods. For a comprehensive understanding of economic cycles, future research should consider incorporating quarterly or monthly data. This would provide a higher temporal resolution, allowing for a more sensitive and accurate analysis of short-term fluctuations and their impact on long-term trends. Such an approach would offer a more robust foundation for economic policy formulation.

This research confirms the existence of an inflation threshold level in emerging market economies, significantly enriching the existing academic literature. This concept, which has evolved to reflect a deeper understanding of the inflation-economic growth relationship, marks a departure from early economic research that primarily relied on a linear assumption. In this traditional view, inflation was seen as having a consistent, unidirectional effect on economic growth, regardless of its level. Early economic theories varied in their perspectives on inflation's impact. Tobin (1965) highlighted the positive role of monetary supply in fostering economic growth, while Sidrauski (1967) and Mundell (1965) pointed out the adverse effects of inflation, such as inefficient resource allocation and economic instability. Recent studies, however, suggest a nonlinear relationship. Bruno and Easterly (1998) argued that high inflation could lead to economic instability and slow growth, potentially triggering self-fulfilling inflationary cycles or reducing investment and consumption due to increased production costs and decreased purchasing power. Wu and Zhang (2012) used a dynamic panel smooth transition regression (PSTR) model to study China's economy, finding that low inflation rates positively affect economic growth, but as inflation increases, its impact becomes mixed. Further supporting this nonlinear perspective, Phiri (2018) identified a specific inflation threshold in South Africa, with inflation below 5.4% positively affecting economic growth and higher levels having a negative impact. Ngoc (2020) also observed asymmetric influences of inflation on Vietnam's economic growth, indicating that inflation negatively and unevenly affects long-term growth. These findings collectively challenge the traditional linear assumption, suggesting that the relationship between inflation and economic growth is more complex and varies across different economic contexts.

This study confirms the existence of a threshold level of inflation in an emerging market economy, aligning with previous research such as Khan and Senhadji (2001), Eggoh and Khan (2014), Mubarik and Riazuddin (2005), Fakhri (2011), and Vinayagathasan (2013). Unlike traditional linear models, our threshold model captures nonlinear effects, indicating that the impact of inflation on economic growth may significantly change when it reaches a certain level. This approach provides a comprehensive understanding of the inflation-economic growth relationship, revealing potential threshold effects. However, the 2% inflation threshold identified for the Chinese economy in this study is notably lower than those found in other studies. For instance, Khan and Senhadji (2001) suggested a threshold of 11% for developing countries, Mubarik and Riazuddin (2005) found 9% for Pakistan, and Fakhri (2011) estimated 13% for Azerbaijan. Vinayagathasan (2013) identified a 5.43% threshold across 32 Asian countries, noting that inflation rates above this level adversely affect economic growth. The relatively low inflation threshold in China can be attributed to its unique economic structure and development strategy, including a deep dependence on manufacturing and exports, rapid industrialization and urbanization processes, and a high emphasis on price stability. These factors collectively shape the sensitivity of the Chinese economy to inflation, leading to the need for a delicate balance between maintaining economic growth and controlling inflation. Firstly, as the "world's factory," China's reliance on manufacturing and exports compels policymakers to maintain a low inflation rate to keep its goods competitively priced on the global market (Lardy, 2002). This dependence means that fluctuations in external market demand can significantly impact the Chinese economy, while maintaining price stability is key to attracting foreign direct investment. Secondly, China's rapid industrialization and urbanization have driven substantial demand for infrastructure and housing, necessitating governmental measures to keep inflation low to reduce financing costs and support continued economic expansion (Yao and Zhang, 2001). Lastly, the Chinese government places a high priority on price stability, viewing it as crucial for maintaining consumer and business confidence and promoting healthy economic growth. Through effective macroeconomic policies, the government strives to control inflation to avoid its potential negative impacts on economic growth and social stability (Hu and Reardon, 2014). Additionally, the proactive inflation control policies of the People's Bank of China and the country's sensitivity to international capital flows, export competitiveness, and foreign investment due to its open economy status may contribute to this lower threshold. Our study also employs the VAR model to examine the dynamic interplay between inflation and economic growth in China. Understanding the formation of inflation expectations and underlying drivers is crucial. In this context, the study by Arce-Alfaro and Blagov (2023) is pertinent. Using U.S. data and a stochastic volatility-in-mean structural VAR model, they found that monetary policy uncertainty reduces both inflation expectations and actual inflation, a link that has persisted since the global financial crisis. Furthermore, Finck and Tillmann (2022) explored the effects of global and domestic shocks on inflation dynamics in Asia, highlighting the significant role of global shocks in influencing the inflation and output dynamics of emerging Asian economies. Other notable studies employing VAR models include Wang (2009), who found a bi-directional Granger causality between inflation and economic growth in China, and Kim and Lee (2014), who revealed a bi-directional long- and short-term causal relationship between these variables in South Korea. Our study's identification of a specific inflation threshold in China contributes valuable insights and policy implications for monetary policymakers, particularly in the context of emerging market economies.

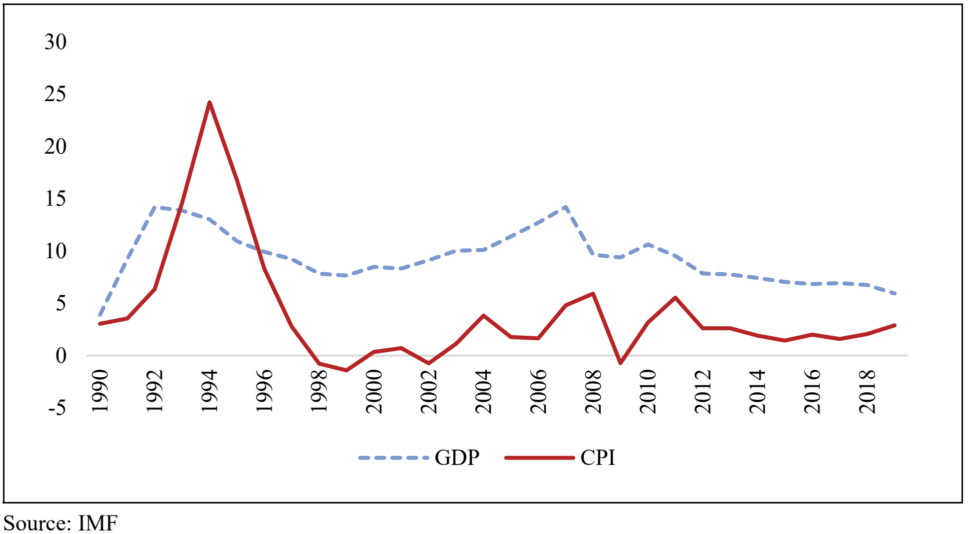
The structure of this paper is organized as follows: Section 2 examines the relationship between inflation and economic growth in China. Section 3 introduces the data and variables utilized in this study, and details the model and theoretical framework employed. Section 4 presents the results of the empirical analysis. Section 5 concludes the paper, summarizing key findings and implications.

II. China's Inflation and Economic Growth

From 1987 to 2021, China's economy experienced rapid expansion, a trend that is demonstrated in Figure 1 through the data on the real GDP growth rate (denoted as "GDP"). During the same period, inflation, represented by the Consumer Price Index (CPI) growth rate (indicated by "CPI"), exhibited significant volatility. From Figure 1, we can observe Figure 1 does not offer a "clear" depiction of the relationship between economic growth and inflation rate, making the clarification of the specific relationship between the economic growth rate and inflation rate the primary objective of our study. Notably, in the early 1990s, China experienced exceptionally high inflation rates, peaking at around 25% in 1994. This period presents diverse perspectives on the impact of inflation on economic growth. Some researchers have suggested that elevated inflation during the early 1990s may have contributed to economic instability in China, subsequently slowing economic growth. Lardy (1998) provided a comprehensive analysis of the challenges and processes involved in China's economic reforms. He emphasized that pronounced inflation during the early 1990s emerged from a combination of lenient monetary policies and excessive administrative interventions. This inflation spike created business uncertainty and misdirected resources, negatively impacting economic growth. Similarly, Brandt and Zhu (2000) examined the relationship between growth and inflation in China during its economic reform period. They argued that fiscal decentralization in local governments, coupled with inconsistent monetary policies, were pivotal in causing an inflation surge in the early 1990s. This inflationary environment hindered economic growth by disrupting pricing mechanisms, leading to inefficient resource distribution.

In contrast, some studies have contended that the relationship between inflation and economic growth in China during this era was more nuanced, implying that other variables, like increased investment and exports, may have significantly influenced economic performance. Christoffersen and Doyle (1998) examined China's trajectory from elevated inflation to stable growth. They underscored that despite the adverse effects of inflation, China sustained strong growth in the early 1990s, largely owing to a boost in exports and foreign investments. Kraay (2000) examined the surge in household savings in China and its economic implications. He argued that even during high inflation, increased household savings injected critical capital for investments, thereby underpinning economic growth. Additionally, Rawski (1994) probed China's industrial reforms and their impact on the economy. He highlighted that despite inflation challenges, the nation continued to experience considerable growth, owing to industrial reforms and improvements in production efficiency. Nevertheless, further research and in-depth analyses are essential to better comprehend the relationship between inflation and economic growth, thereby facilitating the formulation of appropriate economic policies.

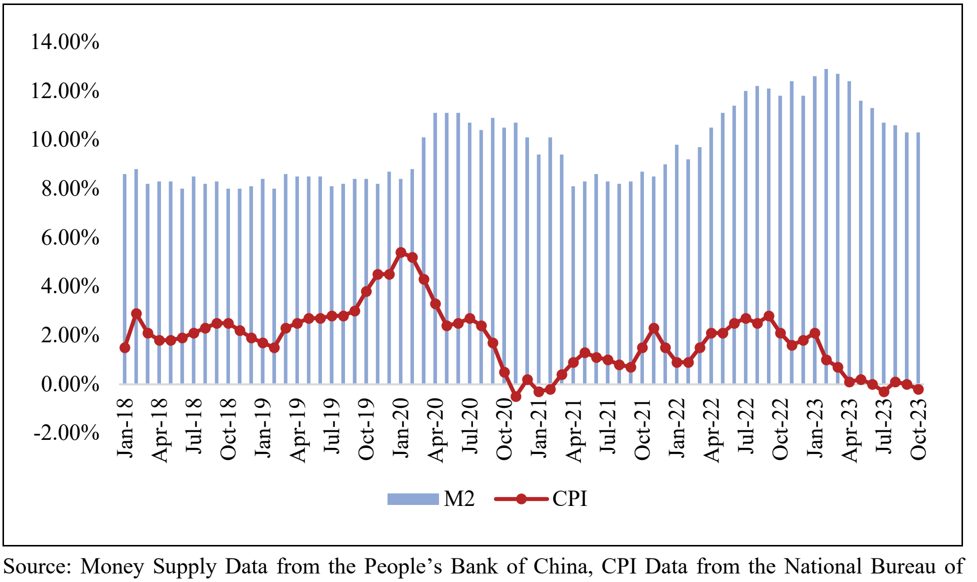
Figure 1. The Relationship between Inflation and GDP Growth Rates (%)



Source: IMF

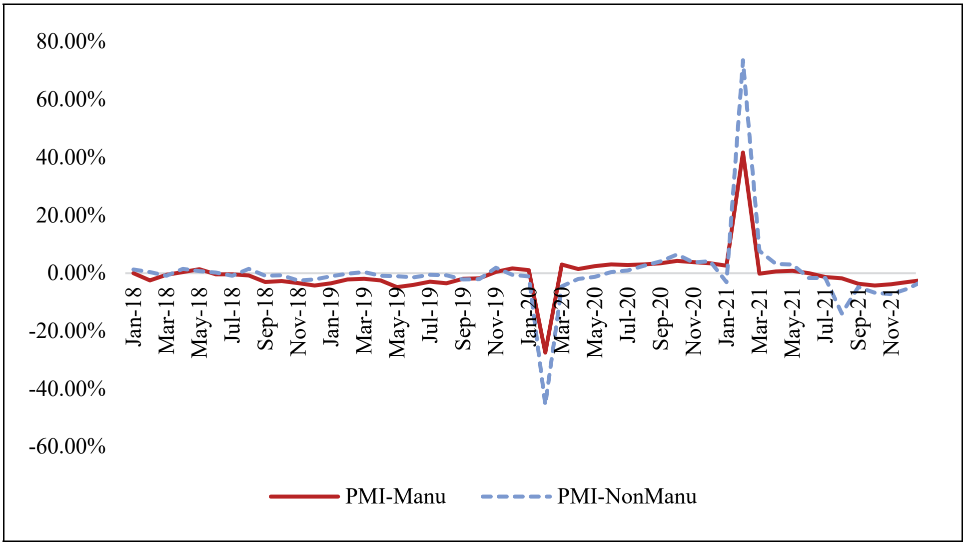
The analysis of Figure 2 highlights the Chinese government's response to the economic shock caused by the COVID-19 pandemic. Proactive monetary policies were implemented, notably increasing the money supply to stimulate the economy. In 2020, the annual growth rate of the M2 money supply surged to 11%, a move aimed at alleviating financial pressures on businesses and consumers by enhancing liquidity. By 2021, as the economy began to recover, the growth rate of the money supply moderated to around 8%. In terms of price levels, the initial stages of the pandemic witnessed a rise in prices due to supply-demand imbalances, with the Consumer Price Index (CPI) climbing to 5.4% at the end of 2019 and the beginning of 2020. However, as the pandemic prolonged and economic activities slowed, the CPI experienced a significant drop towards the end of 2020, nearing 0. This decline likely reflected a sharp decrease in demand and market price adjustments. In 2021, with the economy's gradual recovery and market stabilization, the inflation rate modestly rebounded to about 2%. Figure 3 shows the trajectory of the Purchasing Managers' Index (PMI) in China, a key indicator of economic activity. The PMI experienced a sharp decline in 2020 due to the pandemic. However, with the global pandemic situation improving and the resumption of economic activities in other countries, China's exports increased significantly in 2021, leading to a substantial recovery in the PMI. As a major global manufacturing hub, China benefited from the rebound in global demand, particularly in sectors like electronics, medical supplies, and home goods. The non-manufacturing PMI, in contrast, displayed greater volatility, reflecting the diverse and complex challenges faced by the service industry. The insights from Figures 2 and 3 reveal a close relationship between inflation rates and economic growth. The significant downturn in economic activities at the onset of 2020 was mirrored by a decrease in the inflation rate, while the economic recovery in 2021 was paralleled by a moderate rise in inflation. However, despite the economic recovery signs in 2021, the inflation rate remained relatively low, possibly due to the gradual restoration of supply chains and ongoing market adjustments.

Figure 2. Trends in Money Supply and CPI



Source: Money Supply Data from the People's Bank of China, CPI Data from the National Bureau of Statistics of China.

Figure 3. Trends in Manufacturing and Non-Manufacturing PMI



Source: China Federation of Logistics and Purchasing Website.

III. Data and Methodologies

1. Variables and Data

The main goal of this study is to examine the relationship between inflation and GDP growth rates in China. To do so, we used annual time series data spanning 1987 to 2021 in China, sourced exclusively from the World Bank and Federal Reserve Economic Data (FRED). The main economic variables examined in this study include China's Real GDP expressed in 2017 U.S. dollars (notated as "GDP") and the annual inflation rate measured by the Consumer Price Index (notated as "CPI"). We also included important macroeconomic variables that could potentially affect the growth rate. Furthermore, based on the research by Rey (2015) and Miranda-Agrippino and Rey (2020), which indicates that GDP growth and inflation in open economies are significantly influenced by global factors, we have included variables representing global influences in our model. Consequently, the control variables incorporated into our model consist of Foreign Direct Investment to China (denoted as "FDI"), the Chicago Board Options Exchange Volatility Index: VIX (denoted as "VIX"), the real interest rates in the United States (denoted as “RIR”), and China’s real general government final consumption expenditure expressed in domestic currency (denoted as “GEXP”).

2. Quantitative Regression Model: Threshold Approach

The threshold regression model proposed by Khan and Senhadji (2001) is employed to analyze the threshold level of inflation. It estimates the nonlinear impact of inflation on economic growth in China, both below and above the identified threshold. We initiated our analysis by conducting unit root tests on the observed variables. The results indicated that the data are non-stationary series; however, after taking the first difference of the variables, they were found to be stationary. Additionally, the Johansen cointegration test revealed two cointegration relationships among the variables. This implies that although short-term deviations may exist among these variables, they eventually converge to their long-term equilibrium relationships.

Next, the basic regression model is represented by the following equation:

$$GDP_t = \alpha_0 + \alpha_1 CPI_t + \alpha_2 FDI_t + \alpha_3 VIX_t + \alpha_4 RIR_t + \alpha_5 GEXP_t + \mu_t \quad (1)$$

In Equation (1), t represents the time point (year) at which the data is collected. Based on the above basic model, we build a threshold model, following Khan and Senhadji (2001), with reference to the model specifications of Mubarik and Riazuddin (2005) and Fakhri (2011). The inflation threshold effect on economic growth is represented by the following equation.

$$GDP_t = \alpha_0 + \alpha_1\, CPI_t + \alpha_2\, D_t\, (CPI_t - k) + \boldsymbol{A_t}\, \boldsymbol{Z_t} + \varepsilon_t \quad (2)$$

where vector $\boldsymbol{Z_t}$ includes three control variables from equation (1)— FDI_t, VIX_t, RIR_t and $GEXP_t$ and D_t is a dummy variable which is defined by the following equation:

$$D_t = \begin{cases} 1, & if\ CPI_t > k \\ 0, & if\ CPI_t \leq k \end{cases} \quad (3)$$

The parameter k represents the threshold inflation level. As indicated by Mubarik and Riazuddin (2005) and Frimpong and Oteng-Abayie (2010), the threshold value k signifies a turning point; when inflation reaches or surpasses k, its influence on economic growth experiences a noteworthy shift. Within this model, α_1 and α_2 are regression coefficients, detailing the impacts of low and high inflation on economic growth, respectively. If the inflation rate stays below k, then α_1 is the dominant influencing factor. However, once inflation exceeds k, the cumulative effects of α_1 and α_2 ($\alpha_1 + \alpha_2$) dictate inflation's effect on growth. To determine the optimal threshold k, researchers conduct regression analyses across various k values, aiming to identify the value k that optimizes the R-squared value (or to minimize the Residual Sum of Squares). This paper references the studies of Mubarik and Riazuddin (2005) and Fakhri (2011), adopting the criteria of maximizing R2 and minimizing the residual sum of squares (RSS) for selecting the optimal threshold k. Additionally, based on the research by Hansen (2000), the optimal threshold is determined through minimizing the sequence of residual sum of squares during threshold estimation. Hansen discussed the application of Least Squares (LS) estimation in threshold regression models and detailed how to use LS estimation to find the threshold that minimizes RSS. This process involves trying different thresholds on a given dataset and selecting the one that minimizes the total residual sum of squares of the model as the optimal threshold. The optimal threshold determined by minimizing the residual sum of squares has the characteristic of significantly impacting economic growth at that threshold level. This means that the effect of inflation on economic growth differs below this threshold compared to when it exceeds this threshold. Further, Khan and Senhadji (2001) provided an exhaustive breakdown of the estimation approach and computational methodologies underlying this model. Their study is essential for research in this area.

$$\frac{\partial GDP_t}{\partial CPI_t} = \alpha_1 + \alpha_2, \quad if\ CPI_t > k \tag{4}$$

3. Granger Causality Test and Variance Decomposition Analysis

(1) VAR model

The decision to prioritize VAR-based tests over basic ordinary least squares (OLS) analysis stems from the VAR model's ability in identifying complex relationships that may elude traditional methodologies. The VAR-based tests provide a nuanced understanding of how variables interact over time, including their potential feedback loops, laying the groundwork for subsequent analyses. Following this detailed examination, we performed a core OLS analysis. This phase facilitates a thorough assessment of the linear relationships among the variables, thereby deepening our understanding of the link between inflation and economic growth.

In this study, we conducted the Granger causality test and variance decomposition analysis using the VAR model, along with stationary tests, before applying the regression to the threshold model (2). This approach was adopted primarily because these methods supplement our main model in various ways. The VAR model is widely used to examine the relationships among macroeconomic variables, such as GDP, inflation rate, and interest rate. It is constructed based on the statistical properties of data. In this system, each endogenous variable is considered in terms of the lag values of all other endogenous variables, thereby building the model. This approach extends the univariate autoregressive model into a “vector” autoregressive model, encompassing multiple time series variables.[1] First, the VAR model captures lagged effects between variables, a crucial aspect when analyzing the impact of inflation rate changes on economic growth; these macroeconomic variables often exhibit certain lagged responses. Second, the VAR model addresses autocorrelation error terms by managing the potential issues of serial correlation. However, based on the study by Lütkepohl (2005), the VAR model necessitates a sufficient sample size to ensure the accuracy of its estimates, a criterion our dataset unfortunately did not satisfy. Therefore, despite the VAR model’s significant advantages in multivariate time series analysis, such as its capacity to capture the dynamic interrelations among variables, its limitations are particularly pronounced with an insufficient sample size. These limitations include instability in the estimation results and potential biases. Given these constraints associated with the VAR model, we have pivoted to the simpler threshold regression model in our subsequent analysis. The threshold regression model is capable of more effectively capturing the data’s nonlinear characteristics and dynamic shifts with a smaller sample size. Furthermore, the threshold model allows us to divide the sample into different regions or phases based on predefined values of variables, thereby enabling a more precise analysis of the relationships among variables across various economic conditions or policy settings.

[1] See Luo et al. (2012) for more details.

(2) Granger causality test

The Granger causality test enables the identification of the causal direction between the main variables, i.e., whether one variable can explain the changes in the others, thereby revealing the causal relationships among them. Through variance decomposition analysis, the explanatory power of each variable on the overall volatility can be quantified, revealing the contribution of each variable to the system's volatility. This helps us understand the system's structure and the relative importance of the variables.

Specifically, the Granger causality test was employed to examine the causal relationship between economic growth and inflation. The null hypothesis of the test is that there is no Granger causality between the two variables, indicating that one variable's past values do not provide information about the future values of the other. The alternative hypothesis suggests Granger causality, implying that one variable's past values can be used to predict the future values of the other. When conducting the Granger causality test, we first established a VAR model to determine the optimal lag order. We then estimated two separate autoregressive models for each variable: one included its own lagged values, while the other included the lagged values of both variables. Subsequently, we employed the F-test to compare the predictive ability of the two models. If the F-test indicates that the joint model with both variables provides better predictions than the individual models, we can reject the null hypothesis and conclude that Granger causality exists between the variables. Conversely, if the F-test suggests that the joint model does not offer better predictions than the individual models, we fail to reject the null hypothesis and conclude the absence of Granger causality between the variables.

(3) Variance decomposition

Variance decomposition partitions a variable's total variance into components attributable to various sources or factors. It is commonly used in time series analysis and other statistical modeling to determine the relative importance of different variables or factors in explaining the behavior of a target variable. In a time series analysis, variance decomposition is often employed to decompose the target variable's variance into portions attributable to its own lagged values and those of other related variables. This helps identify the relative importance of these different sources of variation in the behavior of the target variable. Depending on the context and type of model used, different methods are employed to conduct variance decomposition. One commonly used approach involves calculating the contributions of different factors to the target variable's total variance using the variance-covariance matrix of model errors. This method was employed in this study as well.

IV. Estimation Results

1. Stationary Test Results

We initially conducted unit root tests for all variables in regression models (1) and (2). In their original form, the time series of all variables exhibited non-stationarity, indicating the presence of unit roots. However, considering their original differences, we successfully transformed these variables into stable time series, eliminating trends and seasonal fluctuations present in the original series. The Johansen cointegration test was employed, based on the VAR model, to test for cointegration among the time series data. In the Johansen test, the calculated cointegration statistic is compared with the corresponding critical values. If the cointegration statistic exceeds the critical value, we can reject the null hypothesis of no cointegration and conclude that a cointegration relationship exists. According to the results in Table 1, the cointegration statistics reject the null hypothesis at the 10% significance level when considering four or fewer long-run cointegration relationships. However, when considering five long-run cointegration relationships, the obtained cointegration statistic fails to reject the null hypothesis. Therefore, we conclude that four long-run cointegration relationships exist among the variables. This implies that the variables share a common long-term trend over time. While short-term deviations may occur, they eventually revert to a long-term equilibrium state.

Table 1. Results of the Johansen Cointegration Test

	Test	10%	5%	1%
$r \leq 5$	3.65	6.5	8.18	11.65
$r \leq 4$	17.36	15.66	17.95	23.52
$r \leq 3$	35.19	28.71	31.52	37.22
$r \leq 2$	67.04	45.23	48.28	55.43
$r \leq 1$	121.86	66.49	70.6	78.87
$r = 0$	186.39	85.18	90.39	104.2

2. Granger Causality Test Results

The results of the Granger causality tests based on the VAR model are presented in Table 2, indicating the presence of Granger causality between the inflation rate and economic growth. Specifically, the results show that the inflation rate has a causal impact on economic growth, implying that changes in the inflation rate affect economic growth. However, economic growth does not have a causal relationship with the inflation rate, implying that changes in economic growth do not directly lead to changes in the inflation rate. Additionally, we found that FDI has a causal impact on economic growth, implying that changes in FDI influence economic growth. However, economic growth also does not directly affect FDI. The causal relationships between U.S. interest rates, VIX and Chinese government spending with economic growth yielded similar results.

Table 2. Results of the Granger Causality Test

Test Hypotheses	Estimation Results
GDP Granger causes CPI	0.5444
CPI Granger causes GDP	0.0212**
GDP Granger causes FDI	0.8298
FDI Granger causes GDP	0.0005***
GDP Granger causes VIX	0.1202
VIX Granger causes GDP	0.0580*
GDP Granger causes RIR	0.2161
RIR Granger causes GDP	0.0484**
GDP Granger causes GEXP	0.1122
GEXP Granger causes GDP	0.0075***

Note: *, **, and *** denote 10%, 5%, and 1% confidence intervals, respectively.

3. Variance Decomposition Analysis Results

The results of the variance decomposition analysis, presented in Table 3, indicate a trend where the contribution of inflation to China's economic growth initially increases and then decreases. This finding reveals a complex and dynamic relationship between the inflation rate and economic growth. In the initial stages of rising inflation, its positive impact on economic growth is primarily manifested through stimulating consumption and investment to increase economic activity (Tobin, 1965), as well as encouraging economic entities to increase spending by reducing the real burden of debt (Fisher effect). However, as the inflation rate continues to rise, its negative impacts begin to emerge, including decreased consumer and investor confidence due to increased economic uncertainty (Bruno and Easterly, 1998), and reduced efficiency in resource allocation caused by price instability (Fischer, 1993). Moreover, the changing relationship between inflation and economic growth may relate to inflation reaching a threshold beyond which the economy can sustain growth (Khan and Senhadji, 2001). When the inflation rate exceeds this threshold, the stimulating effects on economic growth are offset by negative effects such as increased uncertainty and rising costs. These findings underscore the importance of considering the multifaceted impact of inflation on economic growth when formulating macroeconomic policies and the necessity of implementing moderate inflation control measures to promote economic stability and growth. The observed trend of FDI's contribution to economic growth, which first decreases then increases, can be attributed to adjustments in China's economic structure and industrial upgrading. The initial dependence on foreign capital diminishes as policies are optimized and markets further open, enhancing the quality and efficacy of FDI, thereby making a greater contribution to economic growth (Zhang and Daly, 2011). Concurrently, the increasing contribution of the VIX index to China's economic growth over time may reflect market participants' growing concerns about future uncertainties. While such uncertainties may suppress economic activities in the short term, in the long run, they encourage both enterprises and the government to strengthen risk management and adjust economic structures, potentially indirectly promoting the stability of economic growth (Baker et al., 2016). Additionally, the gradual decline in the contribution of U.S. real interest rates to China's economic growth might reflect the diminishing direct impact of U.S. monetary policy as China's economy matures and the influence of international financial markets changes (Rey, 2015). The decreasing contribution of Chinese government spending to economic growth could indicate a decline in the efficiency of government expenditures, especially in the context of diminishing marginal effects of investments in infrastructure and public services, necessitating a focus on quality and efficiency in government spending as the economy shifts from rapid to high-quality development (Barro, 1990).

Table 3. Results of the Variance Decomposition Analysis

	GDP	*CPI*	*FDI*	*VIX*	*RIR*	*GEXP*
[1]	0.1267	0.2951	0.0169	0.0047	0.1194	0.4372
[2]	0.2190	0.3968	0.0181	0.0054	0.0950	0.2657
[3]	0.3421	0.4473	0.0089	0.0033	0.0606	0.1378
[4]	0.4445	0.4079	0.0066	0.0146	0.0395	0.0869
[5]	0.5358	0.3437	0.0092	0.0208	0.0278	0.0627
[6]	0.5997	0.2974	0.0137	0.0194	0.0221	0.0477
[7]	0.6320	0.2691	0.0191	0.0183	0.0190	0.0426
[8]	0.6514	0.2485	0.0235	0.0192	0.0161	0.0413
[9]	0.6688	0.2314	0.0251	0.0222	0.0137	0.0388
[10]	0.6844	0.2168	0.0251	0.0269	0.0120	0.0349

4. Basic Model Regression Results

The results of the least squares regression based on model equation (1) are presented in Table 4. The results show that the inflation rate negatively impacts economic growth, indicating a negative correlation between increasing inflation rates and decreasing economic growth. This negative effect persists even after controlling for other variables. One possible explanation is the cost-push effect. As the inflation rate increases, certain costs, such as production, labor, and raw material, may increase. This can affect firm profitability and investment decisions, thereby dampening economic growth.[2] Another possible explanation is the expectation effect. An increase in the inflation rate may trigger an increase in expected inflation. Consequently, businesses and individuals may react by accelerating consumption, advancing investments, and purchasing tangible assets. This behavior may provide a short-term boost to economic growth. However, the premature release and offsetting of consumption and investment may constrain long-term economic growth, resulting in a negative impact of inflation rate on economic growth.[3] In addition, both higher CPI inflation and higher VIX (global stock market volatility) have a negative impact on the growth rate. Generally, external foreign shocks are transmitted to the domestic region with a degree of price uncertainty,

[2] Mundell (1965).
[3] Stockman (1981).

such as exchange rate pass-through. If local (domestic) inflation is anchored at a lower level, as we found, these external impacts will not be amplified, exacerbating domestic economic activities.

Table 4. Results of the OLS Regression

Dep. Var.(*GDP*)	(1)	(2)	(3)	(4)	(5)
CPI	-0.0415** (0.0194)	-0.0185** (0.0076)	-0.0250** (0.0080)	-0.02329*** (0.0074)	-0.0127* (0.0259)
FDI		1.0645*** (0.0828)	1.0375*** (0.0803)	0.9010*** (0.0915)	0.7501 (0.0573)
VIX			-0.0142* (0.0074)	-0.0117 (0.0069)	-0.0144 (0.0021)
RIR				-0.0602** (0.0241)	-.0.3477 (0.0078)
GEXP					0.6683*** (0.0402)
R-sq	0.1398	0.8791	0.8940	0.9151	0.9932

Notes: *, **, and *** denote 10%, 5%, and 1% confidence intervals, respectively. Inside the parentheses is the standard error.

5. Threshold Model Regression Results

In our study, we employed the threshold model outlined in equation (2) to investigate the relationship between economic growth and inflation, this exploration conducted across a range of potential inflation thresholds, from k=1(%) to k=16(%). According to Mubarik and Riazuddin (2005), Frimpong and Oteng-Abayie (2010), and Fakhri (2011), the parameter k represents the threshold level of inflation, possessing the following characteristics: When the relationship between economic growth and inflation is: (i) low inflation: α1; (ii) high inflation: α1 + α2. High inflation implies that when inflation estimates are significant, (α1 + α2) are added simultaneously to observe their impact on growth, which would be the threshold level of inflation. The optimal value of k is obtained by estimating regressions for different k values, which are arbitrarily chosen in ascending order (i.e., 1, 2, 3, 4, 5, etc.), by finding the value that maximizes the R-squared (R^2) or minimizes the sum of squared residuals (RSS) of the corresponding regression. The lack of knowledge about the optimal number of threshold points and their values complicates estimation and inference. Although this procedure is widely accepted in empirical literature, it is tedious because multiple regressions must be estimated. Khan and Senhadji (2001) discuss the details of the estimation procedure and computational methods. The findings, as presented in Table 5, reveal that the most satisfactory threshold level of inflation, k, is achieved at 2%. Therefore, when the inflation rate is below 2%, the estimated effect of the inflation rate on economic growth is indicated by the estimated coefficient $\widehat{\alpha_1}$ in Equation (2). However, when the inflation rate exceeds 2%, the estimated effect of the inflation rate on economic growth is the sum of $\widehat{\alpha_1}$ and the interaction term between the dummy variable and the inflation rate $\widehat{\alpha_2}$. In the analysis of the impact of inflation on economic growth in China, this study identifies a critical inflation threshold rate of 2%, a finding that holds significant implications for understanding and formulating macroeconomic policies. From a long-term perspective, when the inflation rate exceeds this threshold, it negatively impacts the Chinese economy, manifested in increased capital costs, reduced purchasing power for consumers, and heightened economic uncertainty, all of which suppress economic growth. Conversely, an inflation rate below 2% indicates a relatively stable price level, conducive to healthy economic development (Svensson, 1997). The inflation threshold identified in this study closely relates to the concept of Non-Accelerating Inflation Rate of Unemployment (NAIRU) within New Keynesian economics. NAIRU represents the lowest unemployment rate an economy can sustain without triggering an increase in the inflation rate (Gordon, 1997). Viewing the 2% inflation rate as a target reflects an attempt to balance economic growth and reduce unemployment without promoting inflation. Many central banks worldwide, including the European Central Bank and the Federal Reserve System of the United States, have set their inflation target at 2%. This target level is deemed to encourage investment and consumption while maintaining the stability of currency value, thereby averting the risks of economic deflation (Bernanke et al., 1997). Thus, adopting a 2% inflation rate as a target is not only theoretically sound but has also been widely accepted in practice. The findings of this paper emphasize the need to consider the relationship between the inflation rate and economic growth in the formulation and adjustment of macroeconomic policies, as well as the importance of stabilizing the price level. Moreover, the 2% inflation threshold provides policymakers with a clear target, guiding the formulation of economic policies towards achieving long-term economic stability and growth.

Specifically, when the inflation rate is below 2%, it has a positive effect of 0.035% on economic growth. When the inflation rate is low, it encourages consumers and businesses to anticipate future price increases, leading to more immediate consumption and investment, thereby stimulating economic demand. Firstly, from the consumer perspective, a stable inflation rate boosts consumer confidence, prompting them to make long-term consumption plans, such as purchasing durable goods and real estate, which directly stimulates economic activity. Then, from the business perspective, a low inflation environment helps companies maintain or increase their profit margins, spurring them to expand production and investment, create jobs, and drive economic growth. Additionally, low-interest rate policies under low inflation reduce borrowing costs, making it easier for individuals and businesses to obtain loans, stimulating investment and consumption, and thereby promoting economic growth. Finally, a low inflation rate typically signifies price stability, high employment rates, and stable currency value, creating a favorable environment for long-term economic planning and sustained growth. Conversely, when the inflation rate exceeds 2%, it has a statistically significant negative impact on economic growth with an estimated volume of -0.002%, indicating a clear nonlinear relationship between the inflation rate and economic growth. A rapid increase in the inflation rate leads to a decline in currency value, thereby affecting people's purchasing power. When people anticipate a rising inflation rate, they tend to increase their consumption to avoid the future erosion of purchasing power.[4] This leads to a decrease in investments and savings, thereby restraining economic growth. High inflation rates increase economic uncertainty and risk. During inflation, businesses face greater challenges in undertaking long-term planning and investment decisions owing to unstable price fluctuations and difficulties in cost forecasting. This reduces business investment willingness, resulting in a negative impact on economic growth. High inflation rates can distort resource allocation within an economy. As the inflation rate increases, some businesses and individuals may engage in speculative activities rather than substantive production and investment. This irrational resource allocation can weaken the economy's productive capacity and growth potential.[5]

We conducted robustness tests to ensure the accuracy of our threshold model test results. Firstly, we used a denser increment of 0.25 percentage points. Secondly, to avoid endogeneity issues in the model, we referenced the studies by Mubarik and

[4] Stockman (1981).
[5] Mundell (1965).

Table 5. Least Squares Estimation of the Inflation Threshold Model from k=1 to k=16

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0416	0.0186	2.2300	0.0360	R-squared:
	D_2*(CPI-1)*	-0.0420	0.0193	-2.1800	0.0400	0.9944
	FDI	0.0713	0.0538	1.3200	0.1980	RSS:
1%	*VIX*	0.0005	0.0021	0.2300	0.8220	0.0614
	RIR	0.0007	0.0075	0.0900	0.9310	
	GEXP	0.6586	0.0376	17.5000	0.0000	
	C	5.1459	0.3027	17.0000	0.0000	
	CPI	0.0353	0.0116	3.0600	0.0060	R-squared:
	D_2*(CPI-2)*	-0.0369	0.0123	-3.0100	0.0030	0.9957
	INFDI	0.0782	0.0502	1.5600	0.1330	RSS:
2%	*VIX*	0.0010	0.0020	0.5200	0.6100	0.0533
	RIR	0.0017	0.0069	0.2500	0.8050	
	GEXP	0.6536	0.0351	18.6000	0.0000	
	C	5.1140	0.2820	18.1400	0.0000	
	CPI	0.0242	0.0081	3.0000	0.0060	R-squared:
	D_2*(CPI-3)*	-0.0264	0.0089	-2.9600	0.0070	0.9951
	INFDI	0.0775	0.0504	1.5400	0.1380	RSS:
3%	*VIX*	0.0000	0.0019	0.0200	0.9880	0.0537
	RIR	0.0014	0.0069	0.2100	0.8380	
	GEXP	0.6580	0.0351	18.7400	0.0000	
	C	5.0795	0.2854	17.8000	0.0000	
	CPI	0.0184	0.0069	2.6800	0.0130	R-squared:
	D_2*(CPI-4)*	-0.0211	0.0080	-2.6500	0.0140	0.9948
	INFDI	0.0681	0.0515	1.3200	0.1990	RSS:
4%	*VIX*	-0.0005	0.0019	-0.2500	0.8030	0.0568
	RIR	0.0014	0.0072	0.2000	0.8430	
	GEXP	0.6655	0.0359	18.5100	0.0000	
	C	5.0820	0.2943	17.2700	0.0000	
	CPI	*0.0140*	0.0060	2.3600	0.0270	R-squared:
	D_2*(CPI-5)*	*-0.0170*	0.0073	-2.3400	0.0280	0.9945
	INFDI	*0.0598*	0.0527	1.1400	0.2680	RSS:
5%	*VIX*	*-0.0009*	0.0019	-0.4800	0.6380	0.0599
	RIR	*0.0006*	0.0073	0.0800	0.9400	
	GEXP	*0.6694*	0.0369	18.1400	0.0000	
	C	*5.1306*	0.2996	17.1300	0.0000	

Table 5. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0114	0.0054	2.1200	0.0450	R-squared:
	D_2*(CPI-6)*	-0.0146	0.0069	-2.1100	0.0460	0.9943
	INFDI	0.0562	0.0536	1.0500	0.3050	RSS:
6%	*VIX*	-0.0011	0.0019	-0.5900	0.5600	0.0621
	RIR	0.0003	0.0075	0.0400	0.9710	
	GEXP	0.6720	0.0376	17.8600	0.0000	
	C	5.1400	0.3051	16.8500	0.0000	
	CPI	0.0107	0.0051	2.0900	0.0480	R-squared:
	D_2*(CPI-7)*	-0.0146	0.0070	-2.0900	0.0480	0.9942
	INFDI	0.0529	0.0537	0.9900	0.3350	RSS:
7%	*VIX*	-0.0010	0.0019	-0.5300	0.6040	0.0624
	RIR	0.0000	0.0075	0.0000	0.9980	
	GEXP	0.6748	0.0378	17.8600	0.0000	
	C	5.1324	0.3064	16.7500	0.0000	
	CPI	0.0103	0.0049	2.1000	0.0470	R-squared:
	D_2*(CPI-8)*	-0.0149	0.0070	-2.1200	0.0450	0.9940
	INFDI	0.0490	0.0536	0.9100	0.3710	RSS:
8%	*VIX*	-0.0009	0.0019	-0.4700	0.6440	0.0638
	RIR	-0.0003	0.0074	-0.0400	0.9650	
	GEXP	0.6775	0.0378	17.9200	0.0000	
	C	5.1339	0.3054	16.8100	0.0000	
	CPI	0.0097	0.0048	2.0400	0.0530	R-squared:
	D_2*(CPI-9)*	-0.0151	0.0074	-2.0600	0.0510	0.9939
	INFDI	0.0471	0.0539	0.8700	0.3920	RSS:
9%	*VIX*	-0.0009	0.0020	-0.4300	0.6680	0.0641
	RIR	-0.0005	0.0074	-0.0700	0.9470	
	GEXP	0.6788	0.0381	17.8300	0.0000	
	C	5.1339	0.3070	16.7200	0.0000	
	CPI	0.0091	0.0047	1.9300	0.0660	R-squared:
	D_2*(CPI-10)*	-0.0153	0.0078	-1.9400	0.0640	0.9935
	INFDI	0.0463	0.0545	0.8500	0.4040	RSS:
10%	*VIX*	-0.0008	0.0020	-0.4100	0.6840	0.0646
	RIR	-0.0006	0.0075	-0.0800	0.9350	
	GEXP	0.6795	0.0385	17.6500	0.0000	
	C	5.1343	0.3102	16.5500	0.0000	

Table 5. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0083	0.0046	1.7900	0.0860	R-squared:
	D_2*(CPI-11)	-0.0150	0.0083	-1.8000	0.0860	0.9933
	INFDI	0.0457	0.0551	0.8300	0.4160	RSS:
11%	*VIX*	-0.0008	0.0020	-0.4000	0.6940	0.0650
	RIR	-0.0008	0.0076	-0.1100	0.9160	
	GEXP	0.6798	0.0390	17.4400	0.0000	
	C	5.1376	0.3139	16.3700	0.0000	
	CPI	0.0072	0.0045	1.6200	0.1180	R-squared:
	D_2*(CPI-12)	-0.0142	0.0088	-1.6200	0.1200	0.9929
	INFDI	0.0454	0.0558	0.8100	0.4240	RSS:
12%	*VIX*	-0.0008	0.0020	-0.3900	0.6970	0.0666
	RIR	-0.0011	0.0076	-0.1400	0.8900	
	GEXP	0.6798	0.0396	17.1900	0.0000	
	C	5.1446	0.3180	16.1800	0.0000	
	CPI	0.0061	0.0043	1.4300	0.1670	R-squared:
	D_2*(CPI-13)	-0.0129	0.0092	-1.4100	0.1730	0.9925
	INFDI	0.0457	0.0566	0.8100	0.4280	RSS:
13%	*VIX*	-0.0008	0.0021	-0.4000	0.6910	0.0683
	RIR	-0.0014	0.0077	-0.1800	0.8560	
	GEXP	0.6792	0.0402	16.9100	0.0000	
	C	5.1556	0.3223	16.0000	0.0000	
	CPI	0.0049	0.0040	1.2200	0.2370	R-squared:
	D_2*(CPI-14)	-0.0110	0.0094	-1.1700	0.2540	0.9921
	INFDI	0.0465	0.0574	0.8100	0.4260	RSS:
14%	*VIX*	-0.0009	0.0021	-0.4300	0.6740	0.0700
	RIR	-0.0018	0.0078	-0.2300	0.8180	
	GEXP	0.6780	0.0407	16.6400	0.0000	
	C	5.1702	0.3263	15.8500	0.0000	
	CPI	0.0042	0.0038	1.1000	0.2810	R-squared:
	D_2*(CPI-15)	-0.0102	0.0097	-1.0500	0.3030	0.9886
	INFDI	0.0469	0.0577	0.8100	0.4250	RSS:
15%	*VIX*	-0.0009	0.0021	-0.4400	0.6650	0.0708
	RIR	-0.0022	0.0078	-0.2700	0.7860	
	GEXP	0.6772	0.0410	16.5300	0.0000	
	C	5.1817	0.3273	15.8300	0.0000	

Table 5. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
16%	*CPI*	0.0041	0.0036	1.1500	0.2630	R-squared:
	D_2*(CPI-16)*	-0.0117	0.0103	-1.1400	0.2670	0.9836
	INFDI	0.0461	0.0575	0.8000	0.4310	RSS:
	VIX	-0.0009	0.0021	-0.4200	0.6780	0.0792
	RIR	-0.0024	0.0078	-0.3100	0.7580	
	GEXP	0.6773	0.0407	16.6300	0.0000	
	C	5.1873	0.3243	15.9900	0.0000	

Riazuddin (2005) and Fakhri (2011), we conducted a two-stage least squares (2SLS) analysis using the lag of inflation and foreign direct investment as instrumental variables. To identify the most suitable instrumental variables, we performed the Underidentification Test, Weak Identification Test, and Overidentification Test. Ultimately, only the lag of inflation and FDI met the necessary conditions to serve as valid instrumental variables. This methodological adjustment aims to enhance the comprehensiveness and reliability of our analysis, ensuring that our research more accurately reflects the complex relationship between inflation rates and economic growth. Tables 6, 7, and 8 display the corresponding results. According to our analysis, the threshold level of inflation remains at 2%, consistent with the results presented in Table 5. Moreover, the regression results of the threshold model confirm that inflation rates below 2% have a positive impact on economic growth, while rates above 2% have a significant negative impact. Thus, the robustness analysis further substantiates the nonlinear relationship between inflation rates and economic growth. These findings deepen our understanding of the relationship between inflation rates and economic growth, indicating the existence of threshold effects at different levels. When inflation rates are low, consumers and businesses anticipate future price increases, leading them to prefer current consumption and investment, thereby stimulating economic growth. However, when inflation exceeds the threshold, its negative impact becomes significant, possibly due to the adverse effects of inflation on economic stability and resource allocation.

Table 6. Least Squares Estimation of the Inflation Threshold Model from k=1 to k=8 (Using a Denser Increment of 0.25 Percentage Points)

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
0.25%	*CPI*	0.0460	0.0296	1.5500	0.1340	R-squared:
	D_2*(CPI-0.25)*	-0.0458	0.0302	-1.5200	0.1430	0.9938
	INFDI	0.0668	0.0564	1.1900	0.2480	RSS:
	VIX	-0.0003	0.0021	-0.1400	0.8910	0.0674
	RIR	-0.0012	0.0077	-0.1600	0.8730	
	GEXP	0.6608	0.0395	16.7400	0.0000	
	C	5.2069	0.3144	16.5600	0.0000	
0.5%	*CPI*	0.0417	0.0249	1.6800	0.1070	R-squared:
	D_2*(CPI-0.5)*	-0.0417	0.0255	-1.6400	0.1150	0.9939
	INFDI	0.0677	0.0560	1.2100	0.2380	RSS:
	VIX	-0.0001	0.0021	-0.0600	0.9500	0.0664
	RIR	-0.0009	0.0077	-0.1200	0.9090	
	GEXP	0.6604	0.0392	16.8600	0.0000	
	C	5.1908	0.3130	16.5900	0.0000	
0.75%	*CPI*	0.0403	0.0214	1.8900	0.0720	R-squared:
	D_2*(CPI-0.75)*	-0.0404	0.0220	-1.8400	0.0790	0.9941
	INFDI	0.0691	0.0552	1.2500	0.2230	RSS:
	VIX	0.0001	0.0021	0.0400	0.9660	0.0647
	RIR	-0.0002	0.0076	-0.0300	0.9750	
	GEXP	0.6598	0.0386	17.0900	0.0000	
	C	5.1705	0.3097	16.7000	0.0000	
1%	*CPI*	0.0416	0.0186	2.2300	0.0360	R-squared:
	D_2*(CPI-1)*	-0.0420	0.0193	-2.1800	0.0400	0.9944
	INFDI	0.0713	0.0538	1.3200	0.1980	RSS:
	VIX	0.0005	0.0021	0.2300	0.8220	0.0614
	RIR	0.0007	0.0075	0.0900	0.9310	
	GEXP	0.6586	0.0376	17.5000	0.0000	
	C	5.1459	0.3027	17.0000	0.0000	
1.25%	*CPI*	0.0140	0.0060	2.3600	0.0270	R-squared:
	D_2*(CPI-1.25)*	0.0419	0.0164	2.5600	0.0180	0.9947
	INFDI	-0.0426	0.0170	-2.5100	0.0200	RSS:
	VIX	0.0735	0.0524	1.4000	0.1740	0.0583
	RIR	0.0008	0.0021	0.4100	0.6880	
	GEXP	0.0013	0.0073	0.1800	0.8620	
	C	0.6570	0.0367	17.9100	0.0000	

Table 6. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0412	0.0145	2.8500	0.0090	R-squared:
	D_2*(CPI-1.5)	-0.0422	0.0151	-2.7900	0.0100	0.9949
	INFDI	0.0756	0.0511	1.4800	0.1530	RSS:
1.5%	*VIX*	0.0012	0.0020	0.5700	0.5760	0.0554
	RIR	0.0016	0.0071	0.2200	0.8250	
	GEXP	0.6551	0.0358	18.3000	0.0000	
	C	5.1222	0.2874	17.8200	0.0000	
	CPI	0.0387	0.0129	3.0000	0.0060	R-squared:
	D_2*(CPI-1.75)	-0.0399	0.0136	-2.9400	0.0070	0.9951
	INFDI	0.0758	0.0504	1.5000	0.1460	RSS:
1.75%	*VIX*	0.0012	0.0020	0.6100	0.5470	0.0539
	RIR	0.0018	0.0070	0.2500	0.8010	
	GEXP	0.6551	0.0353	18.5700	0.0000	
	C	5.1140	0.2837	18.0200	0.0000	
	CPI	0.0353	0.0116	3.0600	0.0060	R-squared:
	D_2*(CPI-2)	-0.0369	0.0123	-3.0100	0.0030	0.9957
	INFDI	0.0782	0.0502	1.5600	0.1330	RSS:
2%	*VIX*	0.0010	0.0020	0.5200	0.6100	0.0533
	RIR	0.0017	0.0069	0.2500	0.8050	
	GEXP	0.6536	0.0351	18.6000	0.0000	
	C	5.1140	0.2820	18.1400	0.0000	
	CPI	0.0318	0.0105	3.0400	0.0060	R-squared:
	D_2*(CPI-2.25)	-0.0335	0.0112	-2.9900	0.0070	0.9952
	INFDI	0.0774	0.0503	1.5400	0.1370	RSS:
2.25%	*VIX*	0.0007	0.0019	0.3800	0.7110	0.0535
	RIR	0.0017	0.0069	0.2400	0.8130	
	GEXP	0.6551	0.0351	18.6400	0.0000	
	C	5.1072	0.2829	18.0500	0.0000	
	CPI	0.0286	0.0095	3.0100	0.0060	R-squared:
	D_2*(CPI-2.5)	-0.0304	0.0103	-2.9600	0.0070	0.9951
	INFDI	0.0761	0.0503	1.5100	0.1440	RSS:
2.5%	*VIX*	0.0005	0.0019	0.2500	0.8080	0.0537
	RIR	0.0016	0.0070	0.2300	0.8210	
	GEXP	0.6569	0.0352	18.6900	0.0000	
	C	5.1006	0.2840	17.9600	0.0000	

Table 6. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
2.75%	*CPI*	0.0259	0.0087	2.9900	0.0060	R-squared:
	D_2*(CPI-2.75)*	-0.0279	0.0095	-2.9500	0.0070	0.9951
	INFDI	0.0760	0.0504	1.5100	0.1450	RSS:
	VIX	0.0002	0.0019	0.1200	0.9040	0.0538
	RIR	0.0014	0.0069	0.2000	0.8430	
	GEXP	0.6578	0.0352	18.7100	0.0000	
	C	5.0944	0.2847	17.8900	0.0000	
3%	*CPI*	0.0242	0.0081	3.0000	0.0060	R-squared:
	D_2*(CPI-3)*	-0.0264	0.0089	-2.9600	0.0070	0.9951
	INFDI	0.0775	0.0504	1.5400	0.1380	RSS:
	VIX	0.0000	0.0019	0.0200	0.9880	0.0537
	RIR	0.0014	0.0069	0.2100	0.8380	
	GEXP	0.6580	0.0351	18.7400	0.0000	
	C	5.0795	0.2854	17.8000	0.0000	
3.25%	*CPI*	0.0226	0.0077	2.9500	0.0070	R-squared:
	D_2*(CPI-3.25)*	-0.0250	0.0086	-2.9200	0.0080	0.9951
	INFDI	0.0757	0.0505	1.5000	0.1470	RSS:
	VIX	-0.0001	0.0019	-0.0600	0.9500	0.0541
	RIR	0.0016	0.0070	0.2300	0.8180	
	GEXP	0.6601	0.0352	18.7600	0.0000	
	C	5.0696	0.2873	17.6400	0.0000	
3.5%	*CPI*	0.0211	0.0074	2.8700	0.0090	R-squared:
	D_2*(CPI-3.5)*	-0.0236	0.0083	-2.8400	0.0090	0.9950
	INFDI	0.0742	0.0509	1.4600	0.1580	RSS:
	VIX	-0.0002	0.0019	-0.1300	0.9010	0.0549
	RIR	0.0017	0.0071	0.2400	0.8140	
	GEXP	0.6619	0.0354	18.6900	0.0000	
	C	5.0627	0.2903	17.4400	0.0000	
3.75%	*CPI*	0.0107	0.0051	2.0900	0.0480	R-squared:
	D_2*(CPI-3.75)*	0.0197	0.0071	2.7700	0.0110	0.9949
	INFDI	-0.0223	0.0081	-2.7400	0.0120	RSS:
	VIX	0.0710	0.0512	1.3900	0.1790	0.0559
	RIR	-0.0004	0.0019	-0.1900	0.8530	
	GEXP	0.0016	0.0071	0.2300	0.8200	
	C	0.6641	0.0357	18.6000	0.0000	

Table 6. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0184	0.0069	2.6800	0.0130	R-squared:
	D_2*(CPI-4)*	-0.0211	0.0080	-2.6500	0.0140	0.9948
	INFDI	0.0681	0.0515	1.3200	0.1990	RSS:
4%	*VIX*	-0.0005	0.0019	-0.2500	0.8030	0.0568
	RIR	0.0014	0.0072	0.2000	0.8430	
	GEXP	0.6655	0.0359	18.5100	0.0000	
	C	5.0820	0.2943	17.2700	0.0000	
	CPI	0.0172	0.0066	2.6000	0.0160	R-squared:
	D_2*(CPI-4.25)*	-0.0200	0.0078	-2.5700	0.0170	0.9947
	INFDI	0.0656	0.0518	1.2700	0.2180	RSS:
4.25%	*VIX*	-0.0006	0.0019	-0.3200	0.7550	0.0576
	RIR	0.0012	0.0072	0.1600	0.8730	
	GEXP	0.6667	0.0362	18.4200	0.0000	
	C	5.0968	0.2956	17.2400	0.0000	
	CPI	0.0160	0.0064	2.5100	0.0190	R-squared:
	D_2*(CPI-4.5)*	-0.0189	0.0076	-2.4900	0.0210	0.9947
	INFDI	0.0634	0.0521	1.2200	0.2360	RSS:
4.5%	*VIX*	-0.0007	0.0019	-0.3700	0.7120	0.0584
	RIR	0.0009	0.0072	0.1200	0.9020	
	GEXP	0.6677	0.0365	18.3200	0.0000	
	C	5.1109	0.2969	17.2200	0.0000	
	CPI	0.0149	0.0061	2.4300	0.0230	R-squared:
	D_2*(CPI-4.75)*	-0.0178	0.0074	-2.4000	0.0250	0.9946
	INFDI	0.0613	0.0524	1.1700	0.2540	RSS:
4.75%	*VIX*	-0.0008	0.0019	-0.4300	0.6730	0.0593
	RIR	0.0006	0.0073	0.0900	0.9310	
	GEXP	0.6686	0.0367	18.2200	0.0000	
	C	5.1243	0.2982	17.1800	0.0000	
	CPI	0.0140	0.0060	2.3600	0.0270	R-squared:
	D_2*(CPI-5)*	-0.0170	0.0073	-2.3400	0.0280	0.9945
	INFDI	0.0598	0.0527	1.1400	0.2680	RSS:
5%	*VIX*	-0.0009	0.0019	-0.4800	0.6380	0.0599
	RIR	0.0006	0.0073	0.0800	0.9400	
	GEXP	0.6694	0.0369	18.1400	0.0000	
	C	5.1306	0.2996	17.1300	0.0000	

Table 6. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
5.25%	*CPI*	0.0132	0.0058	2.2900	0.0310	R-squared:
	D_2*(CPI-5.25)*	-0.0163	0.0072	-2.2800	0.0320	0.9945
	INFDI	0.0587	0.0529	1.1100	0.2790	RSS:
	VIX	-0.0010	0.0019	-0.5200	0.6070	0.0605
	RIR	0.0005	0.0074	0.0700	0.9440	
	GEXP	0.6702	0.0371	18.0600	0.0000	
	C	5.1347	0.3010	17.0600	0.0000	
5.5%	*CPI*	0.0125	0.0056	2.2300	0.0360	R-squared:
	D_2*(CPI-5.5)*	-0.0156	0.0070	-2.2100	0.0370	0.9944
	INFDI	0.0575	0.0532	1.0800	0.2900	RSS:
	VIX	-0.0011	0.0019	-0.5600	0.5790	0.0611
	RIR	0.0005	0.0074	0.0600	0.9490	
	GEXP	0.6709	0.0373	17.9900	0.0000	
	C	5.1389	0.3024	17.0000	0.0000	
5.75%	*CPI*	0.0119	0.0055	2.1700	0.0400	R-squared:
	D_2*(CPI-5.75)*	-0.0150	0.0070	-2.1600	0.0410	0.9944
	INFDI	0.0568	0.0534	1.0600	0.2980	RSS:
	VIX	-0.0011	0.0019	-0.5900	0.5630	0.0617
	RIR	0.0004	0.0074	0.0500	0.9600	
	GEXP	0.6714	0.0375	17.9200	0.0000	
	C	5.1407	0.3037	16.9300	0.0000	
6%	*CPI*	0.0114	0.0054	2.1200	0.0450	R-squared:
	D_2*(CPI-6)*	-0.0146	0.0069	-2.1100	0.0460	0.9943
	INFDI	0.0562	0.0536	1.0500	0.3050	RSS:
	VIX	-0.0011	0.0019	-0.5900	0.5600	0.0621
	RIR	0.0003	0.0075	0.0400	0.9710	
	GEXP	0.6720	0.0376	17.8600	0.0000	
	C	5.1400	0.3051	16.8500	0.0000	
6.25%	*CPI*	0.0110	0.0053	2.0800	0.0490	R-squared:
	D_2*(CPI-6.25)*	-0.0143	0.0069	-2.0700	0.0500	0.9943
	INFDI	0.0556	0.0538	1.0300	0.3120	RSS:
	VIX	-0.0011	0.0019	-0.5700	0.5740	0.0625
	RIR	0.0002	0.0075	0.0300	0.9780	
	GEXP	0.6728	0.0378	17.8100	0.0000	
	C	5.1350	0.3067	16.7400	0.0000	

Table 6. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
6.5%	*CPI*	0.0108	0.0052	2.0700	0.0500	R-squared:
	D_2*(CPI-6.5)*	-0.0143	0.0069	-2.0600	0.0510	0.9943
	INFDI	0.0548	0.0538	1.0200	0.3190	RSS:
	VIX	-0.0011	0.0019	-0.5500	0.5850	0.0626
	RIR	0.0001	0.0075	0.0200	0.9840	
	GEXP	0.6735	0.0378	17.8100	0.0000	
	C	5.1329	0.3071	16.7100	0.0000	
6.75%	*CPI*	0.0108	0.0052	2.0800	0.0490	R-squared:
	D_2*(CPI-6.75)*	-0.0144	0.0070	-2.0700	0.0500	0.9943
	INFDI	0.0539	0.0537	1.0000	0.3270	RSS:
	VIX	-0.0011	0.0019	-0.5400	0.5950	0.0628
	RIR	0.0001	0.0075	0.0100	0.9910	
	GEXP	0.6741	0.0378	17.8400	0.0000	
	C	5.1325	0.3068	16.7300	0.0000	
7%	*CPI*	0.0107	0.0051	2.0900	0.0480	R-squared:
	D_2*(CPI-7)*	-0.0146	0.0070	-2.0900	0.0480	0.9942
	INFDI	0.0529	0.0537	0.9900	0.3350	RSS:
	VIX	-0.0010	0.0019	-0.5300	0.6040	0.0629
	RIR	0.0000	0.0075	0.0000	0.9980	
	GEXP	0.6748	0.0378	17.8600	0.0000	
	C	5.1324	0.3064	16.7500	0.0000	
7.25%	*CPI*	0.0106	0.0051	2.0900	0.0480	R-squared:
	D_2*(CPI-7.25)*	-0.0147	0.0070	-2.1000	0.0470	0.9942
	INFDI	0.0519	0.0537	0.9700	0.3430	RSS:
	VIX	-0.0010	0.0019	-0.5100	0.6140	0.0631
	RIR	-0.0001	0.0074	-0.0100	0.9940	
	GEXP	0.6755	0.0378	17.8800	0.0000	
	C	5.1325	0.3061	16.7700	0.0000	
7.5%	*CPI*	0.0105	0.0050	2.1000	0.0470	R-squared:
	D_2*(CPI-7.5)*	-0.0148	0.0070	-2.1100	0.0460	0.9941
	INFDI	0.0510	0.0536	0.9500	0.3520	RSS:
	VIX	-0.0010	0.0019	-0.5000	0.6240	0.0633
	RIR	-0.0001	0.0074	-0.0200	0.9850	
	GEXP	0.6762	0.0378	17.9000	0.0000	
	C	5.1328	0.3058	16.7800	0.0000	

Table 6. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
7.75%	*CPI*	0.0104	0.0050	2.1000	0.0470	R-squared:
	D_2*(CPI-7.75)*	-0.0148	0.0070	-2.1100	0.0460	0.9940
	INFDI	0.0500	0.0536	0.9300	0.3610	RSS:
	VIX	-0.0009	0.0019	-0.4800	0.6340	0.0635
	RIR	-0.0002	0.0074	-0.0300	0.9750	
	GEXP	0.6768	0.0378	17.9100	0.0000	
	C	5.1332	0.3056	16.8000	0.0000	
8%	*CPI*	0.0103	0.0049	2.1000	0.0470	R-squared:
	D_2*(CPI-8)*	-0.0149	0.0070	-2.1200	0.0450	0.9940
	INFDI	0.0490	0.0536	0.9100	0.3710	RSS:
	VIX	-0.0009	0.0019	-0.4700	0.6440	0.0638
	RIR	-0.0003	0.0074	-0.0400	0.9650	
	GEXP	0.6775	0.0378	17.9200	0.0000	
	C	5.1339	0.3054	16.8100	0.0000	

Table 7. Two-stage Least Squares Estimation of Inflation Threshold Model from k = 1 to k = 16

k	Variable	Coefficient	Std. Error	z	Prob.	
1%	*CPI*	0.0835	0.0418	2.0000	0.0460	R-squared:
	D_2*(CPI-1)*	-0.0850	0.0429	-1.9800	0.0480	0.9932
	INFDI	0.0810	0.0528	1.5400	0.1250	RSS:
	VIX	0.0027	0.0028	0.9400	0.3460	0.07492
	RIR	0.0053	0.0083	0.6300	0.5270	
	GEXP	0.6549	0.0365	17.9200	0.0000	
	C	5.0102	0.3172	15.8000	0.0000	
2%	*CPI*	0.0426	0.0181	2.3500	0.0190	R-squared:
	D_2*(CPI-2)*	-0.0445	0.0190	-2.3400	0.0190	0.9954
	INFDI	0.0803	0.0446	1.8000	0.0710	RSS:
	VIX	0.0016	0.0021	0.7600	0.4480	0.0518
	RIR	0.0030	0.0066	0.4500	0.6550	
	GEXP	0.6530	0.0311	21.0300	0.0000	
	C	5.0745	0.2620	19.3700	0.0000	

Table 7. Continued

k	Variable	Coefficient	Std. Error	z	Prob.	
	CPI	0.0279	0.0120	2.3200	0.0200	R-squared:
	D_2*(CPI-3)*	-0.0303	0.0129	-2.3400	0.0190	0.9950
	INFDI	0.0780	0.0444	1.7600	0.0790	RSS:
3%	*VIX*	0.0004	0.0019	0.1900	0.8470	0.0542
	RIR	0.0023	0.0065	0.3600	0.7220	
	GEXP	0.6590	0.0310	21.2500	0.0000	
	C	5.0420	0.2696	18.7000	0.0000	
	CPI	0.0234	0.0105	2.2200	0.0260	R-squared:
	D_2*(CPI-4)*	-0.0266	0.0118	-2.2600	0.0240	0.9947
	INFDI	0.0659	0.0458	1.4400	0.1500	RSS:
4%	*VIX*	0.0000	0.0019	0.0000	1.0000	0.0581
	RIR	0.0030	0.0069	0.4400	0.6610	
	GEXP	0.6699	0.0327	20.4800	0.0000	
	C	5.0137	0.2855	17.5600	0.0000	
	CPI	0.0203	0.0096	2.1200	0.0340	R-squared:
	D_2*(CPI-5)*	-0.0241	0.0111	-2.1800	0.0290	0.9943
	INFDI	0.0520	0.0483	1.0800	0.2810	RSS:
5%	*VIX*	-0.0003	0.0019	-0.1600	0.8720	0.0628
	RIR	0.0028	0.0071	0.3900	0.6970	
	GEXP	0.6788	0.0351	19.3100	0.0000	
	C	5.0386	0.2927	17.2200	0.0000	
	CPI	0.0191	0.0094	2.0300	0.0420	R-squared:
	D_2*(CPI-6)*	-0.0236	0.0112	-2.1000	0.0360	0.9938
	INFDI	0.0415	0.0514	0.8100	0.4200	RSS:
6%	*VIX*	-0.0004	0.0020	-0.1800	0.8550	0.0678
	RIR	0.0034	0.0076	0.4500	0.6490	
	GEXP	0.6883	0.0383	17.9500	0.0000	
	C	5.0056	0.3119	16.0500	0.0000	
	CPI	0.0198	0.0100	1.9800	0.0480	R-squared:
	D_2*(CPI-7)*	-0.0254	0.0124	-2.0600	0.0400	0.9935
	INFDI	0.0315	0.0542	0.5800	0.5610	RSS:
7%	*VIX*	0.0001	0.0021	0.0400	0.9720	0.0709
	RIR	0.0037	0.0078	0.4800	0.6330	
	GEXP	0.6976	0.0416	16.7700	0.0000	
	C	4.9590	0.3315	14.9600	0.0000	

Table 7. Continued

k	Variable	Coefficient	Std. Error	z	Prob.	
8%	*CPI*	0.0206	0.0107	1.9200	0.0550	R-squared:
	D_2*(CPI-8)*	-0.0277	0.0138	-2.0100	0.0440	0.9932
	INFDI	0.0191	0.0584	0.3300	0.7440	RSS:
	VIX	0.0005	0.0023	0.2300	0.8190	0.0741
	RIR	0.0038	0.0080	0.4700	0.6380	
	GEXP	0.7078	0.0459	15.4100	0.0000	
	C	4.9269	0.3503	14.0600	0.0000	
9%	*CPI*	0.0212	0.0114	1.8700	0.0620	R-squared:
	D_2*(CPI-9)*	-0.0304	0.0155	-1.9600	0.0500	0.9928
	INFDI	0.0100	0.0625	0.1600	0.8730	RSS:
	VIX	0.0009	0.0025	0.3600	0.7180	0.0784
	RIR	0.0041	0.0084	0.4900	0.6220	
	GEXP	0.7158	0.0500	14.3100	0.0000	
	C	4.8915	0.3717	13.1600	0.0000	
10%	*CPI*	0.0219	0.0121	1.8100	0.0710	R-squared:
	D_2*(CPI-10)*	-0.0335	0.0177	-1.8900	0.0590	0.9923
	INFDI	0.0019	0.0670	0.0300	0.9780	RSS:
	VIX	0.0013	0.0027	0.4700	0.6370	0.0842
	RIR	0.0047	0.0088	0.5300	0.5940	
	GEXP	0.7236	0.0545	13.2700	0.0000	
	C	4.8495	0.3985	12.1700	0.0000	
11%	*CPI*	0.0229	0.0133	1.7200	0.0850	R-squared:
	D_2*(CPI-11)*	-0.0373	0.0208	-1.7900	0.0730	0.9915
	INFDI	-0.0095	0.0743	-0.1300	0.8980	RSS:
	VIX	0.0018	0.0030	0.5900	0.5560	0.0935
	RIR	0.0055	0.0096	0.5700	0.5660	
	GEXP	0.7344	0.0617	11.9100	0.0000	
	C	4.7922	0.4402	10.8900	0.0000	
12%	*CPI*	0.0243	0.0151	1.6000	0.1090	R-squared:
	D_2*(CPI-12)*	-0.0420	0.0253	-1.6600	0.0970	0.9901
	INFDI	-0.0259	0.0864	-0.3000	0.7640	RSS:
	VIX	0.0025	0.0036	0.7000	0.4830	0.1088
	RIR	0.0066	0.0107	0.6100	0.5390	
	GEXP	0.7498	0.0735	10.2000	0.0000	
	C	4.7119	0.5081	9.2700	0.0000	

Table 7. Continued

k	Variable	Coefficient	Std. Error	z	Prob.	
	CPI	0.0264	0.0182	1.4500	0.1480	R-squared:
	D_2*(CPI-13)*	-0.0478	0.0322	-1.4900	0.1370	0.9876
	INFDI	-0.0501	0.1080	-0.4600	0.6430	RSS:
13%	*VIX*	0.0036	0.0046	0.7800	0.4330	0.1354
	RIR	0.0081	0.0126	0.6400	0.5190	
	GEXP	0.7723	0.0942	8.1900	0.0000	
	C	4.5958	0.6246	7.3600	0.0000	
	CPI	0.0295	0.0237	1.2500	0.2130	R-squared:
	D_2*(CPI-14)*	-0.0553	0.0435	-1.2700	0.2030	0.9831
	INFDI	-0.0870	0.1490	-0.5800	0.5590	RSS:
14%	*VIX*	0.0052	0.0064	0.8100	0.4180	0.1850
	RIR	0.0104	0.0159	0.6500	0.5140	
	GEXP	0.8066	0.1334	6.0500	0.0000	
	C	4.4218	0.8390	5.2700	0.0000	
	CPI	0.0325	0.0300	1.0800	0.2780	R-squared:
	D_2*(CPI-15)*	-0.0634	0.0573	-1.1100	0.2680	0.9776
	INFDI	-0.1254	0.2015	-0.6200	0.5340	RSS:
15%	*VIX*	0.0069	0.0088	0.7800	0.4330	0.2445
	RIR	0.0120	0.0194	0.6200	0.5360	
	GEXP	0.8409	0.1822	4.6200	0.0000	
	C	4.2657	1.0877	3.9200	0.0000	
	CPI	0.0336	0.0331	1.0100	0.3110	R-squared:
	D_2*(CPI-16)*	-0.0706	0.0675	-1.0500	0.2960	0.9748
	INFDI	-0.1466	0.2352	-0.6200	0.5330	RSS:
16%	*VIX*	0.0078	0.0103	0.7600	0.4480	0.2757
	RIR	0.0112	0.0202	0.5500	0.5800	
	GEXP	0.8569	0.2106	4.0700	0.0000	
	C	4.2334	1.1949	3.5400	0.0000	

Instrument list: CPI(-3) FDI(-3)

Table 8. Two-stage Least Squares Estimation of Inflation Threshold Model from k = 1 to k = 8 (Using a Denser Increment of 0.25 Percentage Points)

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
0.25%	*CPI*	0.1442	0.0836	1.7200	0.0850	R-squared:
	D_2*(CPI-0.25)*	-0.1457	0.0851	-1.7100	0.0870	0.9909
	INFDI	0.0856	0.0618	1.3800	0.1660	RSS:
	VIX	0.0024	0.0031	0.7700	0.4430	0.0998
	RIR	0.0040	0.0092	0.4400	0.6620	
	GEXP	0.6506	0.0428	15.2100	0.0000	
	C	5.0826	0.3490	14.5700	0.0000	
0.5%	*CPI*	0.1181	0.0663	1.7800	0.0750	R-squared:
	D_2*(CPI-0.5)*	-0.1196	0.0676	-1.7700	0.0770	0.9914
	INFDI	0.0839	0.0596	1.4100	0.1590	RSS:
	VIX	0.0025	0.0031	0.8200	0.4120	0.0937
	RIR	0.0044	0.0090	0.4900	0.6270	
	GEXP	0.6524	0.0412	15.8200	0.0000	
	C	5.0474	0.3450	14.6300	0.0000	
0.75%	*CPI*	0.0998	0.0537	1.8600	0.0630	R-squared:
	D_2*(CPI-0.75)*	-0.1012	0.0549	-1.8400	0.0650	0.9921
	INFDI	0.0825	0.0570	1.4500	0.1480	RSS:
	VIX	0.0026	0.0030	0.8800	0.3810	0.0865
	RIR	0.0051	0.0089	0.5700	0.5680	
	GEXP	0.6541	0.0394	16.6000	0.0000	
	C	5.0174	0.3382	14.8400	0.0000	
1%	*CPI*	0.0835	0.0418	2.0000	0.0460	R-squared:
	D_2*(CPI-1)*	-0.0850	0.0429	-1.9800	0.0480	0.9932
	INFDI	0.0810	0.0528	1.5400	0.1250	RSS:
	VIX	0.0027	0.0028	0.9400	0.3460	0.0749
	RIR	0.0053	0.0083	0.6300	0.5270	
	GEXP	0.6549	0.0365	17.9200	0.0000	
	C	5.0102	0.3172	15.8000	0.0000	
1.25%	*CPI*	0.0700	0.0328	2.1300	0.0330	R-squared:
	D_2*(CPI-1.25)*	-0.0716	0.0338	-2.1200	0.0340	0.9940
	INFDI	0.0804	0.0493	1.6300	0.1030	RSS:
	VIX	0.0026	0.0026	0.9800	0.3260	0.0658
	RIR	0.0048	0.0077	0.6300	0.5310	
	GEXP	0.6544	0.0342	19.1200	0.0000	
	C	5.0239	0.2955	17.0000	0.0000	

Table 8. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0584	0.0259	2.2600	0.0240	R-squared:
	D_2*(CPI-1.5)*	-0.0600	0.0268	-2.2400	0.0250	0.9946
	INFDI	0.0800	0.0465	1.7200	0.0850	RSS:
1.5%	*VIX*	0.0024	0.0025	0.9800	0.3260	0.0588
	RIR	0.0039	0.0071	0.5600	0.5780	
	GEXP	0.6533	0.0324	20.1900	0.0000	
	C	5.0505	0.2755	18.3300	0.0000	
	CPI	0.0488	0.0210	2.3300	0.0200	R-squared:
	D_2*(CPI-1.75)*	-0.0504	0.0218	-2.3100	0.0210	0.9949
	INFDI	0.0782	0.0449	1.7400	0.0820	RSS:
1.75%	*VIX*	0.0020	0.0023	0.9000	0.3690	0.0553
	RIR	0.0033	0.0068	0.4900	0.6220	
	GEXP	0.6544	0.0313	20.8900	0.0000	
	C	5.0652	0.2656	19.0700	0.0000	
	CPI	0.0426	0.0181	2.3500	0.0190	R-squared:
	D_2*(CPI-2)*	-0.0445	0.0190	-2.3400	0.0190	0.9954
	INFDI	0.0803	0.0446	1.8000	0.0710	RSS:
2%	*VIX*	0.0016	0.0021	0.7600	0.4480	0.0518
	RIR	0.0030	0.0066	0.4500	0.6550	
	GEXP	0.6530	0.0311	21.0300	0.0000	
	C	5.0745	0.2620	19.3700	0.0000	
	CPI	0.0372	0.0159	2.3500	0.0190	R-squared:
	D_2*(CPI-2.25)*	-0.0393	0.0168	-2.3400	0.0190	0.9952
	INFDI	0.0788	0.0444	1.7700	0.0760	RSS:
2.25%	*VIX*	0.0012	0.0020	0.5900	0.5570	0.0533
	RIR	0.0027	0.0066	0.4100	0.6840	
	GEXP	0.6551	0.0310	21.1600	0.0000	
	C	5.0721	0.2626	19.3200	0.0000	
	CPI	0.0330	0.0141	2.3400	0.0190	R-squared:
	D_2*(CPI-2.5)*	-0.0351	0.0150	-2.3400	0.0190	0.9951
	INFDI	0.0769	0.0443	1.7400	0.0830	RSS:
2.5%	*VIX*	0.0009	0.0019	0.4400	0.6620	0.0537
	RIR	0.0025	0.0065	0.3800	0.7030	
	GEXP	0.6573	0.0309	21.2400	0.0000	
	C	5.0674	0.2641	19.1900	0.0000	

Table 8. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0301	0.0129	2.3300	0.0200	R-squared:
	D_2*(CPI-2.75)*	-0.0323	0.0138	-2.3400	0.0190	0.9951
	INFDI	0.0765	0.0444	1.7300	0.0840	RSS:
2.75%	*VIX*	0.0006	0.0019	0.3200	0.7530	0.0539
	RIR	0.0023	0.0065	0.3500	0.7230	
	GEXP	0.6587	0.0310	21.2400	0.0000	
	C	5.0581	0.2666	18.9700	0.0000	
	CPI	0.0279	0.0120	2.3200	0.0200	R-squared:
	D_2*(CPI-3)*	-0.0303	0.0129	-2.3400	0.0190	0.9950
	INFDI	0.0780	0.0444	1.7600	0.0790	RSS:
3%	*VIX*	0.0004	0.0019	0.1900	0.8470	0.0542
	RIR	0.0023	0.0065	0.3600	0.7220	
	GEXP	0.6590	0.0310	21.2500	0.0000	
	C	5.0420	0.2696	18.7000	0.0000	
	CPI	0.0263	0.0114	2.3100	0.0210	R-squared:
	D_2*(CPI-3.25)*	-0.0290	0.0124	-2.3300	0.0200	0.9950
	INFDI	0.0759	0.0445	1.7100	0.0880	RSS:
3.25%	*VIX*	0.0002	0.0018	0.1200	0.9060	0.0547
	RIR	0.0026	0.0066	0.3900	0.6940	
	GEXP	0.6617	0.0312	21.2000	0.0000	
	C	5.0274	0.2738	18.3600	0.0000	
	CPI	0.0252	0.0110	2.2800	0.0230	R-squared:
	D_2*(CPI-3.5)*	-0.0280	0.0121	-2.3100	0.0210	0.9948
	INFDI	0.0739	0.0448	1.6500	0.0990	RSS:
3.5%	*VIX*	0.0001	0.0018	0.0700	0.9420	0.0557
	RIR	0.0028	0.0067	0.4200	0.6720	
	GEXP	0.6642	0.0316	21.0200	0.0000	
	C	5.0119	0.2794	17.9400	0.0000	
	CPI	0.0243	0.0108	2.2500	0.0240	R-squared:
	D_2*(CPI-3.75)*	-0.0273	0.0119	-2.2900	0.0220	0.9786
	INFDI	0.0699	0.0453	1.5400	0.1230	RSS:
3.75%	*VIX*	0.0001	0.0018	0.0500	0.9640	0.0570
	RIR	0.0031	0.0069	0.4500	0.6530	
	GEXP	0.6674	0.0322	20.7400	0.0000	
	C	5.0065	0.2839	17.6300	0.0000	

Table 8. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0234	0.0105	2.2200	0.0260	R-squared:
	D_2*(CPI-4)*	-0.0266	0.0118	-2.2600	0.0240	0.9947
	INFDI	0.0659	0.0458	1.4400	0.1500	RSS:
4%	*VIX*	0.0000	0.0019	0.0000	1.0000	0.0581
	RIR	0.0030	0.0069	0.4400	0.6610	
	GEXP	0.6699	0.0327	20.4800	0.0000	
	C	5.0137	0.2855	17.5600	0.0000	
	CPI	0.0225	0.0102	2.2000	0.0280	R-squared:
	D_2*(CPI-4.25)*	-0.0259	0.0115	-2.2400	0.0250	0.9946
	INFDI	0.0623	0.0463	1.3500	0.1780	RSS:
4.25%	*VIX*	-0.0001	0.0019	-0.0500	0.9590	0.0592
	RIR	0.0029	0.0070	0.4200	0.6770	
	GEXP	0.6720	0.0332	20.2200	0.0000	
	C	5.0239	0.2864	17.5400	0.0000	
	CPI	0.0217	0.0100	2.1700	0.0300	R-squared:
	D_2*(CPI-4.5)*	-0.0252	0.0113	-2.2200	0.0260	0.9945
	INFDI	0.0587	0.0469	1.2500	0.2110	RSS:
4.5%	*VIX*	-0.0002	0.0019	-0.0900	0.9250	0.0604
	RIR	0.0028	0.0070	0.4000	0.6920	
	GEXP	0.6742	0.0338	19.9300	0.0000	
	C	5.0326	0.2877	17.4900	0.0000	
	CPI	0.0209	0.0097	2.1500	0.0320	R-squared:
	D_2*(CPI-4.75)*	-0.0245	0.0111	-2.2000	0.0280	0.9944
	INFDI	0.0550	0.0476	1.1600	0.2480	RSS:
4.75%	*VIX*	-0.0002	0.0019	-0.1300	0.8970	0.0617
	RIR	0.0027	0.0071	0.3800	0.7060	
	GEXP	0.6765	0.0345	19.6200	0.0000	
	C	5.0400	0.2895	17.4100	0.0000	
	CPI	0.0203	0.0096	2.1200	0.0340	R-squared:
	D_2*(CPI-5)*	-0.0241	0.0111	-2.1800	0.0290	0.9943
	INFDI	0.0520	0.0483	1.0800	0.2810	RSS:
5%	*VIX*	-0.0003	0.0019	-0.1600	0.8720	0.0628
	RIR	0.0028	0.0071	0.3900	0.6970	
	GEXP	0.6788	0.0351	19.3100	0.0000	
	C	5.0386	0.2927	17.2200	0.0000	

Table 8. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0199	0.0095	2.1000	0.0360	R-squared:
	D_2*(CPI-5.25)*	-0.0238	0.0110	-2.1600	0.0310	0.9941
	INFDI	0.0492	0.0490	1.0000	0.3150	RSS:
5.25%	*VIX*	-0.0004	0.0019	-0.1900	0.8490	0.0640
	RIR	0.0030	0.0073	0.4100	0.6800	
	GEXP	0.6812	0.0359	18.9900	0.0000	
	C	5.0336	0.2966	16.9700	0.0000	
	CPI	0.0195	0.0094	2.0700	0.0380	R-squared:
	D_2*(CPI-5.5)*	-0.0236	0.0110	-2.1400	0.0320	0.9940
	INFDI	0.0462	0.0498	0.9300	0.3530	RSS:
5.5%	*VIX*	-0.0004	0.0019	-0.2100	0.8320	0.0653
	RIR	0.0032	0.0074	0.4300	0.6640	
	GEXP	0.6837	0.0367	18.6300	0.0000	
	C	5.0278	0.3010	16.7000	0.0000	
	CPI	0.0192	0.0094	2.0500	0.0400	R-squared:
	D_2*(CPI-5.75)*	-0.0235	0.0111	-2.1200	0.0340	0.9939
	INFDI	0.0438	0.0505	0.8700	0.3860	RSS:
5.75%	*VIX*	-0.0004	0.0019	-0.2100	0.8330	0.0665
	RIR	0.0033	0.0075	0.4400	0.6570	
	GEXP	0.6859	0.0375	18.3000	0.0000	
	C	5.0190	0.3058	16.4100	0.0000	
	CPI	0.0191	0.0094	2.0300	0.0420	R-squared:
	D_2*(CPI-6)*	-0.0236	0.0112	-2.1000	0.0360	0.9938
	INFDI	0.0415	0.0514	0.8100	0.4200	RSS:
6%	*VIX*	-0.0004	0.0020	-0.1800	0.8550	0.0678
	RIR	0.0034	0.0076	0.4500	0.6490	
	GEXP	0.6883	0.0383	17.9500	0.0000	
	C	5.0056	0.3119	16.0500	0.0000	
	CPI	0.0194	0.0096	2.0100	0.0440	R-squared:
	D_2*(CPI-6.25)*	-0.0240	0.0115	-2.0800	0.0380	0.9937
	INFDI	0.0389	0.0523	0.7400	0.4570	RSS:
6.25%	*VIX*	-0.0002	0.0020	-0.1100	0.9160	0.0693
	RIR	0.0037	0.0077	0.4800	0.6350	
	GEXP	0.6913	0.0394	17.5500	0.0000	
	C	4.9835	0.3203	15.5600	0.0000	

Table 8. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
	CPI	0.0195	0.0098	2.0000	0.0460	R-squared:
	D_2*(CPI-6.5)*	-0.0244	0.0118	-2.0700	0.0390	0.9936
	INFDI	0.0365	0.0530	0.6900	0.4910	RSS:
6.5%	*VIX*	-0.0001	0.0020	-0.0500	0.9600	0.0701
	RIR	0.0037	0.0078	0.4800	0.6300	
	GEXP	0.6936	0.0402	17.2600	0.0000	
	C	4.9709	0.3256	15.2700	0.0000	
	CPI	0.0197	0.0099	1.9900	0.0470	R-squared:
	D_2*(CPI-6.75)*	-0.0249	0.0121	-2.0600	0.0390	0.9936
	INFDI	0.0341	0.0535	0.6400	0.5240	RSS:
6.75%	*VIX*	0.0000	0.0021	-0.0100	0.9930	0.0704
	RIR	0.0037	0.0078	0.4800	0.6310	
	GEXP	0.6956	0.0408	17.0300	0.0000	
	C	4.9652	0.3283	15.1200	0.0000	
	CPI	0.0198	0.0100	1.9800	0.0480	R-squared:
	D_2*(CPI-7)*	-0.0254	0.0124	-2.0600	0.0400	0.9935
	INFDI	0.0315	0.0542	0.5800	0.5610	RSS:
7%	*VIX*	0.0001	0.0021	0.0400	0.9720	0.0709
	RIR	0.0037	0.0078	0.4800	0.6330	
	GEXP	0.6976	0.0416	16.7700	0.0000	
	C	4.9590	0.3315	14.9600	0.0000	
	CPI	0.0200	0.0102	1.9700	0.0490	R-squared:
	D_2*(CPI-7.25)*	-0.0260	0.0127	-2.0500	0.0410	0.9935
	INFDI	0.0287	0.0550	0.5200	0.6020	RSS:
7.25%	*VIX*	0.0002	0.0021	0.0800	0.9360	0.0714
	RIR	0.0037	0.0079	0.4800	0.6340	
	GEXP	0.6999	0.0425	16.4800	0.0000	
	C	4.9521	0.3353	14.7700	0.0000	
	CPI	0.0202	0.0103	1.9500	0.0510	R-squared:
	D_2*(CPI-7.5)*	-0.0265	0.0130	-2.0400	0.0410	0.9934
	INFDI	0.0258	0.0560	0.4600	0.6460	RSS:
7.5%	*VIX*	0.0003	0.0022	0.1300	0.8980	0.0721
	RIR	0.0038	0.0079	0.4700	0.6360	
	GEXP	0.7023	0.0435	16.1600	0.0000	
	C	4.9445	0.3396	14.5600	0.0000	

Table 8. Continued

k	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
7.75%	*CPI*	0.0204	0.0105	1.9400	0.0520	R-squared:
	D_2*(CPI-7.75)*	-0.0271	0.0134	-2.0300	0.0430	0.9933
	INFDI	0.0225	0.0571	0.3900	0.6930	RSS:
	VIX	0.0004	0.0022	0.1800	0.8590	0.0730
	RIR	0.0038	0.0080	0.4700	0.6370	
	GEXP	0.7050	0.0446	15.8000	0.0000	
	C	4.9361	0.3446	14.3300	0.0000	
8%	*CPI*	0.0206	0.0107	1.9200	0.0550	R-squared:
	D_2*(CPI-8)*	-0.0277	0.0138	-2.0100	0.0440	0.9932
	INFDI	0.0191	0.0584	0.3300	0.7440	RSS:
	VIX	0.0005	0.0023	0.2300	0.8190	0.0741
	RIR	0.0038	0.0080	0.4700	0.6380	
	GEXP	0.7078	0.0459	15.4100	0.0000	
	C	4.9269	0.3503	14.0600	0.0000	
Instrument list: CPI(-3) FDI(-3)						

V. Concluding Remarks

This study examined whether there is a threshold effect of inflation on economic growth during 1987 to 2021 in China. The estimated threshold model indicates a nonlinear relationship between China's economic growth and inflation, with a threshold level of 2% for inflation in China's economic growth. When the inflation rate is below the threshold, inflation has a significant positive impact on economic growth. However, when the inflation rate exceeds the threshold, it has a significant negative effect on economic growth. This can be understood as moderate inflation stimulating economic growth by encouraging consumption, investment, increasing corporate profits, and government revenue. However, when inflation is too high, inflation expectations may be exacerbated, leading to increased production costs, decreased purchasing power, and reduced investments, ultimately hindering economic growth. Additionally, Granger causality tests and variance decomposition analysis based on the VAR model indicate that there is a unidirectional causal relationship between inflation and economic growth. Economic growth is influenced more by its own volatility; the contribution of inflation to economic growth exhibits a trend of initially increasing and subsequently decreasing. However, this study has its limitations. The annual time series data used in the research only covers the period from 1987 to 2021, and the current annual data may not capture economic fluctuations and policy changes on a shorter time scale. Future research could consider using quarterly or monthly data to provide a finer temporal resolution and a more sensitive analysis of economic dynamics. Based on these findings, several policy recommendations can be drawn. First, it is crucial for the government to strike a balance between inflation and economic growth when formulating monetary policy and identify an appropriate inflation level that supports both sustainable economic growth and price stability. Maintaining moderate inflation within the threshold level of 2% is ideal. This requires the implementation of effective monetary policies to manage inflation pressure and expectations. Second, policymakers should closely monitor inflation dynamics and take timely measures to prevent inflation from exceeding the threshold level, as excessive inflation can have adverse effects on economic performance. Finally, efforts should be made to enhance the resilience and adaptability of the economy to mitigate the negative impact of inflation shocks and promote long-term economic stability.

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