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Vulnerability of economic growth to inflation in different business cycles and despite government budget deficits

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Abstract

This article examines the effects of inflation on Iran's economic growth, considering the specific conditions of Iran's economy, namely, different business cycles and the existence of government budget deficits. The main objective of this research is to assess the vulnerability of Iran's economic growth to inflation under various economic conditions. To this end, annual macroeconomic data for Iran from 1991 to 2022 have been used. The research methodology includes the use of threshold regression to determine the critical threshold of inflation, as well as the use of interaction variables to examine the interaction effects of inflation, budget deficits, and business cycles. The Hodrick-Prescott filter is used to extract business cycles, and the model is estimated using the Autoregressive Distributed Lag (ARDL) method. The results show that inflation can have a positive (nonlinear) effect on economic growth during economic recessions. This effect results from stimulating aggregate demand, shifting capital towards real assets, facilitating expansionary fiscal policies, and psychological and expectational effects. However, during economic booms, inflation has a negative effect on economic growth due to a lack of liquidity management, weak production infrastructure, and inefficient fiscal policies. The results also indicate that increases in liquidity and stock price indices have a positive and significant effect on economic growth, while increases in private consumption expenditure have a negative and significant effect. The findings of this research emphasize the importance of liquidity management, strengthening production infrastructure, and reforming fiscal policies during economic booms. Additionally, the results suggest that in recessionary conditions, policymakers should proceed with caution and take advantage of the potential benefits of controlled inflation to stimulate demand and exit the recession. Overall, the results of this research can help economic policymakers in Iran to adopt more appropriate policies for managing inflation and achieving sustainable economic growth by better understanding the effects of inflation on economic growth under different conditions.

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Extended Abstract

Introduction

Growth and inflation are fundamental macroeconomic objectives and key determinants of economic stability, emphasized across all schools of economic thought. Economies with insufficient or stagnant growth often face challenges such as poverty and unemployment, while inflation similarly exerts adverse effects. Achieving price stability and maximizing employment are critical components of economic stability. The sustainability of an economy depends on the structured and stable behavior of macroeconomic variables. Any imbalance in these variables can yield negative consequences. Macroeconomic stability is, therefore, a prerequisite for sustained and continuous economic growth (Ercan, 2002; Yıldırım, 2003), with price stability playing an essential role (Tarı & Kumcu, 2005).

The relationship between inflation and growth remains a highly debated topic. After the Great Depression of 1929, governments adopted a more active role in economic management by implementing policies that boosted aggregate demand, resulting in simultaneous increases in both production and inflation (Aydin et al., 2016). However, during the 1970s, the collapse of the Bretton Woods system, combined with debt crises, led to high inflation and low growth, reinforcing the idea of an inverse relationship between inflation and growth (ibid). Empirical studies have confirmed both positive and negative links between these two variables. A general consensus suggests that low and stable inflation supports economic growth (Mubarik, 2005). A crucial question persists: What qualifies as “low inflation”? The answer largely depends on the nature and structure of each economy. By leveraging econometric techniques, economists have identified nonlinear effects, showing that inflation can positively influence economic growth up to a specific threshold—beyond which its effects become negative (Sweidan, 2004). In Iran, policymakers aim to foster high economic growth while maintaining low inflation rates. Understanding the impact of inflation on Iran’s economic growth is essential for identifying the inflation tolerance threshold and its implications for investment, income distribution, foreign trade, and public trust. Inflation in Iran is driven by several factors, including liquidity injections, international sanctions, exchange rate policies, budget deficits, and inflationary expectations. Studies have shown that inflation can positively influence growth up to a certain limit, beyond which its negative consequences begin to dominate. For instance, Mehrara (2007) finds that Iran’s inflation-growth threshold lies roughly between 9% and 12%. A thorough analysis of this relationship is indispensable for designing effective economic policies aimed at sustainable and equitable growth.

Numerous empirical studies have examined the inflation-growth relationship both in Iran and globally. Khalili et al. (2023), using a

nonlinear autoregressive distributed lag (NARDL) approach, explored the asymmetric effects of inflation on Iran's economic growth. Similarly, Ahmad (2022) found that in Pakistan, low inflation levels promote economic growth, while high inflation harms it. Cili and Alkhaliq (2022) revealed a positive correlation between controlled inflation and growth in Indonesia. Additional studies, including those by Demir (2020), Mohammad Sadeghi et al. (2023), Mehrara (2007), and Rodriguez Caballero et al. (2025), have analyzed this relationship across various regional and international contexts.

This study aligns with previous research in several ways but introduces distinct innovations. Like, Khalili et al. (2023) examined inflation's nonlinear effects on economic growth. Similarly, they employed the NARDL approach, following Ahmad (2022), to examine the dynamic impact of inflation. Furthermore, they incorporatde linear analysis akin to the approach used by Cili and Alkhaliq (2022).

Aim

However, this article offers three key contributions:

- **Threshold effects of inflation.** Using threshold regression, this study identifies the critical inflation threshold for Iran and incorporates a dummy variable into the model. If inflation exceeds the threshold, the variable takes a value of one; otherwise, it remains zero.
- **Incorporation of budget deficits.** The study examines how inflation interacts with Iran's budget deficit. To capture this, an interaction term combining inflation and a dummy variable representing the budget deficit is added to the model.
- **Consideration of business cycles.** Recognizing that inflation's effects vary across economic cycles, the study introduces interaction terms combining inflation with dummy variables for boom and recession periods, identified using the Hodrick-Prescott filter.

Methodology

The study uses annual macroeconomic data from Iran spanning 1991–2023 (1370–1402 in the Iranian calendar). Initially, the inflation threshold is determined via threshold regression. The impacts of inflation above this threshold and the interactions of inflation with budget deficits and business cycles are then analyzed. Business cycles are identified using the Hodrick-Prescott filter, while the autoregressive distributed lag (ARDL) approach is employed to estimate the model. This methodology effectively identifies both long- and short-term relationships between variables and is particularly suitable for datasets with varying degrees of integration. Control variables— such as the exchange rate, stock price index, net capital stock, private consumption expenditure, and government consumption expenditure— are also incorporated into the model.

Discussion

The results of the effect of various variables— including inflation, economic indicators and various economic conditions— on economic growth are evaluated using the autoregressive vector linear regression (ARDL) model at different lags. The R-squared values indicate the explanatory power of the model. The models mostly fit well (R-squared between 0.750 and 0.936). Reliability tests such as Durbin-Watson reject the existence of autocorrelation (values between 1.935 and 2.635). We examine the analysis of the results in six models.

Conclusion

The findings indicate that during periods of economic recession, inflation can have a positive (nonlinear) impact on economic growth. This result contrasts with the traditional view that consistently regards inflation as a disruptive factor. However, this positive effect stems from multiple factors, including the stimulation of aggregate demand, shifting capital toward real assets, facilitating expansionary fiscal policies, and psychological and expectancy-related effects.

In contrast, during periods of economic boom, inflation negatively impacts economic growth due to factors such as poor liquidity management, weak production infrastructure, and inefficient fiscal policies. This finding aligns with the results of Ozyilmaz (2022) regarding European Union member states.

The results also demonstrate that increased liquidity and stock price indices have a positive and significant impact on economic growth, while rising private consumption expenditure exerts a negative and significant effect. The critical inflation threshold is estimated at 25.39%. This implies that inflation may have positive effects on growth up to this level; however, beyond this threshold, negative effects dominate.

Conflict of interest

The author declared no conflicts of interest.

Ethical considerations

The author has completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc. This article was not authored by artificial intelligence.

Data availability

The dataset generated and analyzed during the current study is available from the author on reasonable request.

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