THE EFFECT OF POLICY INTEREST RATE ON COUNTRIES' INFLATION RATES AND ECONOMIC GROWTH: RESEARCH ON G-8 COUNTRIES

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ABSTRACT

Aim of this study is to investigate the effects of countries' policy interest rates on inflation rates. The period of the study is 2000-2023 and the data were examined annually. The sample of the study consists of G-8 countries, which are considered the most developed countries in the world. The independent variable of the study is the policy interest rate, and the dependent variables are the inflation rate and economic growth rates of the countries. As a method, due to the cross-sectional dependency problem between the series, Westerlund (2010) cointegration test, AMG and CCE coefficient estimators are created from the second generation panel data techniques. As a result of the analysis, it is seen that the policy interest rate has an inverse effect for the G-8 countries, that is, as the policy interest rate increases, the inflation rate of the countries decreases. In Model, where economic growth is the dependent variable, it is seen that there is an inverse relationship between the policy interest rate and the economic growth rate, that is, as the policy interest rate increases, it has a negative effect on economic growth. This result is consistent with some studies in the literature and inverse with some studies. The reason for this can be stated as the increase in policy interest rates in countries, which increases the cost of foreign resources, while in businesses that operate mainly with foreign resources, a contraction in the markets may occur due to the increase in the cost of foreign resources.

Keywords: Policy Interest Rate, Inflation Rate, Economic Growth, G-8 Countries, Panel Data Analysis

Introduction

Central banks, which manage the monetary policies of countries, set interest rates and play a leading role in combating inflation, use various policy tools to encourage economic growth.

The policy rate, which is the interest rate on loans provided by the Central Bank to other financial institutions, is one of these tools. When the Central Bank aims to reduce credit use, it increases the policy rate. The main purpose of this strategy is to encourage individuals and businesses to invest by limiting credit demand. As a result of this process, a downward effect on the inflation rate can be observed. Although the policy rate is not a concept directly related to borrowing, it can indirectly affect the cost of borrowing. Therefore, the Central Bank may increase or decrease the policy rate in order to provide economic control.

Interest rates reflect expectations about future economic growth and represent the rate at which countries are willing to exchange their current currency for the amount they are prepared to pay in the future. This rate is directly tied to a country's expectations of economic growth. In other words, interest rates may require countries to use hedging strategies (such as insurance or hedging) and to take adverse positions, depending on their risk-taking propensity (Harvey, 1991). Estrella and Hardouvelis (1991) have documented in detail the important relationship between interest rate differentials and future output growth.

Countries believe that the solution to economic problems depends on achieving economic growth. For this, inflation must remain low in the long term. While countries targeting economic growth believe that there is a positive correlation between inflation and growth, the opposing view believes that inflation is harmful to economic growth. In other words, the first view supports the structuralist view, while the opposing view supports the monetarist view. While it has recently been claimed that low inflation rates are positively related to economic growth, some studies have concluded that high inflation rates have a negative effect on economic growth. The basis of these two opposing views is that the relationship between inflation and economic growth, as suggested by Fischer (1993), is not linear (Akgül and Özdemir, 2018).

The recent monetary policy behavior of Russia, which is our sample, and the rule-based actions of its central bank are reviewed. It is tested whether the Russian central bank responds consistently and predictably to changes in inflation, output gap and exchange rate, and it is concluded that the Russian Central Bank uses monetary aggregates as its main policy instrument (Esanov, 2005).

Inflation targeting has become central to the monetary policy framework of many industrialized countries and developing economies. There have been studies examining the experience of inflation targeting, which Canada implemented in 1991, and how this framework responds to demand, price and productivity shocks. In addition, Canada's economic performance in the 1990s has been explained by the role of factors other than monetary policy, and it has been emphasized that good monetary policy is not sufficient for economic success (Freedman, 2007). Inflation in France has remained lower than in the eurozone, thanks to lower energy price increases and government fiscal measures. Although energy prices have significantly reduced GDP in 2022 and 2023, government fiscal policies have cushioned this shock (Mathieu and Gaston, 2022).

The aim of the study is to investigate the effect of the policy interest rate of the G-8 countries on the growth rate and inflation rate of the countries. The period of the study is 2000-2023 and the data is examined annually. The variables and their relationships with each other will be briefly discussed.

Literature

In world economies, uncertainty in the relationship between inflation and economic growth has increased and factors such as systemic crises, nonlinear and structural shocks have made time series analysis more important. A study conducted by Asafo-Adjei et al. (2023) on G8 countries examined the relationship between GDP, CPI, economic policy uncertainty (EPU) and geopolitical risk and investigated the synchronization between economic variables in these countries. The results show that uncertainties pose a significant challenge in achieving sustainable economic growth and reducing the effects of inflation and deflation.

In the study conducted by Özdemir (2010), two different results were reached in the study examining inflation, output growth and the relationship between them for the UK. It is possible to argue that one of the main determinants of economic growth is uncertainty about the inflation rate. The first finding for this period is that uncertainty about output growth is a positive determinant of inflation and output growth rate. The second is that there is no connection between inflation, output growth and their volatility. Another study conducted with the same purpose, Bataa et al. (2019), found that interest rates have reacted strongly to inflation and growth in the last decade and the relationship between the variables has increased. In a study conducted for Japan, one of the G-8 countries, Sami and Abdelhak (2024) concluded that the increase in economic uncertainty and the complexity of inflation management significantly affect policy stability.

Akhtar (2022) examined the relationship between interest rate, inflation and economic growth variables in the sample of Germany and France between 1991-2021. As a result of the study, it was seen that inflation significantly affects economic growth when it is sustainable. In addition, while the interest rate does not affect Germany's economic growth, the effect of inflation is low. France's interest rate is very low and affects economic growth, but the effect of inflation is low.

In his study, Yüksel (2016) tested the relationship between inflation and the economic cycle in Russia with various analyses. The relationship between these two variables was also associated with unemployment. It was concluded that the unemployment rate has a causal relationship with inflation and economic growth. In another study conducted by İspir and Atılgan (2022), the validity of the Phillips curve, which explains the negative relationship between inflation and unemployment rates, was examined for the G-8 countries, the eight most developed countries of the world economy, in the period 1993-2020 with panel causality analysis and it was concluded that the Phillips curve was valid in these countries. In this case, it can be said that governments should develop various policies to minimize the unemployment rate. Nihal et al. (2023) examined the relationship between economic growth and innovation in G-8 countries. As a result of the Johansen cointegration test, it was found that there was a positive and significant relationship between economic growth and innovation. In this study, the effect of the policy interest rate on the growth and inflation rates of the G-8 countries was examined and a literature review was conducted on the policies implemented by the G-8 countries and the results they achieved.

Data And Methodology

In this part of the study, the analysis results of the variables are given. The aim of the study is to investigate the effect of the Policy Interest Rate of G-8 Countries on the growth rate and inflation rate of the countries. The period of the study is 2000-2023 and the data is examined annually. The variables used in the study are as follows:

Table 1. Variables Used in the Study

	Short Name	**Variable**	**Source**
Dependent Variables	GRW	Growth Rate	World Bank, Tradingview
	INF	Inflation Rate	
Independent Variable	PIR	Policy Interest Rate	

Since two different dependent variables are used in the study, two different models are formed. Due to the cross-sectional dependency problem between the variables, the Westerlund Cointegration test and the AMG Coefficient Estimator were used as methods. First of all, the statistical values of the variables are given in Table 2:

Table 2. Frequency Values

	Observation	Mean	Std. Deviation	Min.	Max.
GRW	192	0.0206586	0.0368596	-0.1068717	0.1363582
INF	192	0.0312304	0.0493435	-0.0232	0.377
PIR	192	0.0234274	0.0268078	0	0.129

When the percentage values of the variables are examined, the inflation rate being at most 37.7% and the policy interest rate being at most 12.9% show that the sample countries are among the strongest economies.

Table 3. Cross-Section Dependency Test

	Pesaran's test value	Prob
Model-1 (Growth)	15.728	0.0000
Model-2 (Inflation)	8.517	0.0000

It is seen that there is a cross-sectional dependency problem between the series in both models. Therefore, second generation tests will be used in the analysis.

First, Westerlund cointegration test was used to investigate the existence of a cointegration relationship between the variables in the models. And the results of the analysis are as follows:

Table 4. Westerlund Cointegration Test Results

	Model-1 (Growth)		**Model-2 (Inflation)**	
	Value	**P-Value**	**Value**	**P-Value**

Gt	-5.359	0.000	-3.200	0.002
Ga	-15.097	0.100	-10.654	0.714
Pt	-14.794	0.000	-11.840	0.000
Pa	-15.128	0.002	-16.517	0.000

As seen in Table 4, there is a cointegrated relationship between the variables in the long term in both models. The results obtained from the study produce isodirectional results with some studies in the literature (Dinh, 2020; Odhiambo, 2009). The homogeneity of the series will be investigated before the coefficient estimator results to be applied to determine the direction and coefficient of the relationship between the variables.

Table 5. Homogeneity Test Results

	Model-1 (Growth)		**Model-2 (Inflation)**	
	Delta	**P-Value**	**Delta**	**P-Value**
Δ	-0.303	0.762	0.913	0.361
Δ_{adj}	-0.323	0.746	0.976	0.329

The fact that the probability values in the delta test result are greater than 5% indicates that both models cause a homogeneous distribution. For this purpose, the coefficient estimators to be applied will be interpreted on a panel basis, not on a country basis.

Table 6. AMG Coefficient Estimator Test Results

	Model-1 (Growth)		**Model-2 (Inflation)**	
	Coef.	**P-Value**	**Coef.**	**P-Value**
Politic	-1.221005	0.031 **	-0.5665432	0.174
	Wald: 4,65 (0.0310)		Wald: 1.84 (0.1744)	

According to the AMG Coefficient estimator results, while the dependent variable Growth variable is significant in Model-I panel, the dependent variable Inflation variable is insignificant in Model-II panel. In other words, it is seen that policy interest rates have a negative effect on the growth rates of countries. A 1 point increase in policy interest rates reduces the growth rates of countries by 1.22%.

In the other model, it is seen that policy interest rates have a negative effect on inflation. In other words, as policy interest rates increase, it has an effect on decreasing inflation. However, as this model turns out to be insignificant, it is stated that the model is invalid.

Conclusion

The aim of this study is to investigate the effect of G-8 Countries' Policy Interest Rates on the growth rate and inflation rate of countries. The period of the study is 2000-2023 and the data is handled annually. Westerlund cointegration test and AMG Coefficient Estimator were used as methods.

As a result of the analysis, it is seen that the policy interest rate has an inverse effect on the growth rate of countries in Model-I where the Growth variable is the dependent variable. A 1 point increase in the policy interest rates of G-8 Countries reduces the growth rates of countries by 1.22%. This situation can be explained by the fact that the increase in policy interest rates increases the cost of foreign resources and funding costs in countries and has a negative effect on the productivity of enterprises. Model-II where the Inflation variable is the dependent variable is insignificant on a panel basis.

Based on this result, it is seen that in addition to the positive aspects of ensuring price stability by increasing the interest rates of countries to combat inflation, it also has negative reflections on real markets. For this reason, it is of great importance that policy makers in countries provide incentives to reduce funding costs in real markets, but that the use of this incentive in production is controlled. The study can be improved by adding different dependent variables to the model and applying it to different countries.

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