Research Article

Is Gibson Paradox Valid for Türkiye? Nonlinear Time Series Application

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Abstract: The Gibson paradox refers to the positive relationship between the price level and the interest rate. It is one of the most debated empirical problems in macroeconomics. The aim of this research is to examine whether the Gibson paradox is applicable to the Turkish economy. In this study, the correlation between the consumer price index and the deposit interest rate was tested using monthly data for the period 2000:01 and 2022:12 using nonlinear unit root test cointegration analysis. Our findings show that the Gibson paradox holds true during the relevant period. It was also concluded that there is a long-term relationship between the price level and the interest rate, with the effect running from the nominal interest rate to the price level. This study supports the hypothesis that the Gibson paradox exists in Türkiye.

Keywords: Gibson Paradox, Nonlinear Unit Root Test, Hepsağ Cointegration Test
Jel Codes: E31, E42, E52

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Gibson Paradoksu Türkiye İçin Geçerli mi? Doğrusal Olmayan Zaman Serisi Uygulaması

Öz: Gibson paradoksu, fiyat seviyesi ile faiz oranı arasındaki pozitif ilişkiye atıfta bulunur. Bu konu, makroekonomideki en çok tartışılan ampirik sorunlardan biridir. Bu araştırmanın amacı, Gibson paradoksunun Türkiye ekonomisi için geçerli olup olmadığını incelemektir. Bu çalışmada, 2000:01 ile 2022:12 dönemi için aylık veriler kullanılarak, tüketici fiyat endeksi ile mevduat faiz oranı arasındaki korelasyon, doğrusal olmayan birim kök ve eşbütünleşme testi kullanılarak test edilmiştir. Çalışmada elde edilen sonuçlar Gibson paradoksunun ilgili dönemde geçerli olduğunu göstermektedir. Ayrıca, fiyat seviyesi ile faiz oranı arasında uzun vadeli bir ilişki olduğu ve etkinin nominal faiz oranından fiyat seviyesine doğru olduğu sonucuna ulaşılmıştır. Bu çalışma, Gibson paradoksunun Türkiye'de geçerli olduğu hipotezini desteklemektedir.

Anahtar Kelimeler: Gibson Paradoksu, Doğrusal Olmayan Birim Kök Testleri, Hepsağ Eşbütünleme Testi
Jel Kodları: E31, E42, E52

1. Introduction

Inflation and interest rates are key economic indicators that reveal the stability of a country's economy. In this context, increases or decreases in inflation and interest rates are particularly monitored. The positive relationship between price levels and nominal interest rates was first determined econometrically by A. H. Gibson in the early 20th century with correlation analysis. The analysis that revealed the Gibson Paradox was a correlation analysis conducted with data from the United Kingdom and the analysis covered a long period. In this analysis, Gibson used price indexes and nominal interest rates. Keynes ensured that this relationship determined by Gibson became the subject of research by economists. What is intended to be stated by the Gibson Paradox is that in the inflationary process, whether the inflation value is at a low level or at a high level, it moves together with interest rates that take a value close to its own value. In other words, the course of variables can be in the same direction, sometimes decreasing or sometimes increasing.

The relationship between nominal interest rates and expected inflation is of critical importance for financial markets. Gibson (1923) analyzed the 150-year relationship between inflation and bond yields in the United Kingdom, identifying a positive correlation between the two and asserting that an expansion of the money supply led to increases in both interest rates and inflation. These findings form the basis of the Gibson Paradox, which posits that interest rates and general price levels move together. In the literature, the Gibson Paradox is examined through two approaches: price-dependent and interest rate-dependent models. In the price-dependent model, the price level is defined as a function of the nominal interest rate, and the money market equilibrium condition is expressed as M=P·L(i,Y) where M is the nominal money supply, P the price level, and L(i,Y) the demand for money dependent on the interest rate i and income Y. To linearize this multiplicative relationship and analyze proportional changes, the logarithms of both sides can be taken (Tanrıöver & Yamak, 2015, p. 188): ln(M)=ln(P)+ln(L(i,Y)). Expressed in terms of the logarithm of the price level, this becomes ln(P)=ln(M)−ln(L(i,Y)). When the nominal money supply is fixed, the sensitivity of money demand to the interest rate determines the sensitivity of ln(P) to interest rates. Since money demand decreases with the interest rate (∂L(i,Y)/∂i<0, the price level rises as interest rates increase. This theoretical framework can be empirically tested using the following regression model: Model-1 $P_t = a_0 + a_1 i_t + \varepsilon_t$, where P_t the price level in period t, i_t the nominal interest rate, a_0 the constant term, a_1 the coefficient representing the effect of the interest rate on the price level, and ε_t the error term. In the interest rate-dependent model, the nominal interest rate is expressed as a function of the price level. In this approach, suggested by Gibson (1923), the interest rate is defined as i=f(M/P,Y). Similarly, this model predicts that nominal interest rates rise with the price level, confirming the positive relationship between price levels and interest rates. Consequently, both approaches theoretically explain the positive correlation underlying the Gibson Paradox (i↑⇒P↑i), which can be empirically tested using Model-2 $i_t = a_0 + a_1 P_t + \varepsilon_t$ (Klein, 1995, p. 159).

Fisher, the first economist to explain the Gibson paradox in the literature with the help of equations, established the basis of the relationship between the nominal interest rate and money's purchasing power indicated by the inflation rate in 1930 (Hatemi-J, 2009, p. 117). The Fisher hypothesis assumes the existence of a fixed real interest rate determined by the public's time preference rate and technological constraints defining the return on real investment and suggests that these do not change and are not affected by the inflation rate (Woodward, 1992, p. 315).

The Gibson Paradox through the Tooke estimation model, the Fisher estimation model and the Wicksell Keynes estimation model is being researched in many countries. The spots that distinguish these models from each other are the methods and variables used to explain the mechanism of paradox emergence. The Tooke model investigates the positive relationship between price indices and nominal interest rates. In this model, interest rate changes directly affect price indexes through costs, establishing a direct relationship between prices and nominal interest rates. Accordingly, there is causality from nominal interest rates to price levels. However, the Tooke model is used less than others in testing the existence of the paradox. In the Fisher model, there is causality from inflation to nominal interest rates. In other words, the phenomenon described as paradox is produced by the inflationary process. The Wicksell-Keynes model examines the positive relationship between inflation rates and nominal interest rates. In other words, the variable that is effective in the process that creates cointegration is interest, and causality from nominal interest rates to inflation must be found. In addition, a spiral mechanism that connects both variables may also be valid. In other words, there may be a bidirectional causality relationship between variables, and variables can affect each other.

Some researchers have developed some methods other than the three methods mentioned above. In this study, the validity of the Gibson paradox was investigated using the Tooke and Wicksell-Keynes models.

2. Literature Review

After A. H. Gibson determined the high positive relationship between the general price level and nominal interest rates using correlation analysis, this situation, which seemed contrary to the classical economic conception, attracted the attention of economists such as Irving Fisher and Keynes. This relationship, which was not handled before and after World War II, came up again in the 1970s when the world entered an inflationary process. Many economists made analyzes using econometric methods of the period in order to both explain the paradox and test the validity of the paradox on a country basis.

Literature review on Gibson paradox is presented in Table 1.

Table 1. Literature Review

Author(s)	Period	Country	Method	Findings
Friedman & Schwartz (1982)	(1870-1975)	United States, United Kingdom	Regression Analysis	A sustained connection between general price level and nominal interest rate has been found.
Lee & Petruzzi (1986)	1800-1981	United States, United Kingdom	Regression Analysis	In countries and periods where the gold standard was in effect, there existed a unidirectional link (nominal interest rate→ general price).
Barsky & Summers (1988)	1970-1984	United Kingdom, United States	Regression Analysis	During the standard period, a one-way relationship could be mentioned (nominal interest rate→ general price).
Mills (1990)	1750-1914	United Kingdom	Regression Analysis	Over the long run, there is a positive correlation between interest rates and the general price level.
Muscatelli & Spinelli (1996)	1815-1995	Italy, England, USA	Regression Estimate Method	The validity of the Gibson paradox has been established for all three countries throughout the specified time.
Dowd & Harrison (2000)	1821-1913	United Kingdom	Regression Analysis	It can be said that the Gibson paradox existed during the periods when the gold standard was in effect.
Atkins & Serletis (2003)	1880-1986	Canada, Italy, Norway, Sweden, United Kingdom and USA	ARDL	No relationship between price levels and nominal interest rates. The same result was determined for inflation rates and nominal interest rates.
Cheng, Kesselring, & Brown (2013)	1873-1924	China	OLS	Supports the accuracy of the Gibson Paradox.
Chadha & Perlman (2014)	1798-1913	USA, UK, Italy, France, Germany and Sweden	VAR Analysis	Interest rates and the general prices level are positively correlated in the long-run.
Ogbonna (2014)	1970-2012	Nigeria	ARDL cointegration and Granger causality test	It supports there is Gibson Paradox in the economy of Nigeria during the specified period.
Dehghani et al. (2015)	1978-2013	Iran	ARDL	It is revealed that interest rates and inflation are positively correlated in the Iranian economy between 1978 and 2013
Muscatelli & Spinelli (1996)	1845-1990 Annual	United Kingdom, USA, Italy	Regression, Frequency Domain Technique	The Gibson Paradox is valid.
Coulombe (1998)	1717-1913 Annual and quarterly	United Kingdom	Regression	The Gibson Paradox is invalid.
Seletis & Zestos (1999)	1957:Q1-1994:Q4 Quarterly	Belgium, Italy, Denmark, France, England, Germany, Ireland, Netherlands	Correlation, Engle-Granger	Gibson Paradox is Valid Bidirectional Causality.
Hannsgen (2004)	1954-2004 Quarterly	USA	Regression, Granger Causality	Gibson Paradox is Valid. Causality from Prices to Interest Rates

Şimşek & Kadılar (2008)	1987Q1-2004Q4 Quarterly	Türkiye	Cointegration Causality	Gibson Paradox is Valid. Bidirectional Causality
Yapraklı & Yurttançıkmaz (2010)	1970-2009 Annual	Türkiye	Johansen Cointegration, Causality	Gibson Paradox is Valid. Causality from prices to interest rates
Koçyiğit et al. (2015)	2003:01-2015:05 Monthly	Turkiye	Causality, Asymmetric Causality, Frequency Domain Causality	A sustained connection between general price level and nominal interest rate has been found.
Tanrıöver & Yamak (2015)	1990:I-2014:II Monthly	Türkiye	Bounds Testing	Gibson Paradox is Valid. It has been accepted that there is a long-term relationship from the general price level to the nominal interest rate

Barsky & Summers (1988) demonstrated that the positive connection between interest rates and the overall price level flows from the interest rate to the overall price level, as proposed by Wicksell and Keynes. However, they explain the existence of the Gibson paradox by considering gold as a financial asset, differently from the Wicksell-Keynes framework. Under the gold standard, the overall price level of gold is set by its relative price. When market expectations regarding price changes are zero, a high correlation is established between the nominal interest rate and the actual interest rate. When there is a change in the real interest rate, the nominal interest rate also adjusts, leading to yield differences between gold and other assets, and consequently altering the relative price of gold. Therefore, changes in interest rates determine the general price level through the return of gold against other financial assets. Hence, the Gibson paradox emerges as a natural consequence of the gold standard system. An important point to note is that the Gibson paradox is not specific to the gold standard but rather is characteristic of the current monetary regime. The Gibson paradox may also be valid under a different monetary regime in which the money supply is determined by the quantity of any given precious metal. The study by Cheng et al. (2013) showed that the Gibson paradox was valid under the silver-cored standard in force in the Chinese economy during the period 1873-1924.

3. Data Set and Method

The Gibson Paradox is defined as a highly positive relationship between the price level and nominal interest rates in the long run. In the positive relationship found by Gibson through correlation analysis, the concept of the price level refers to price indexes and nominal interest rates. The functional and econometric representations of the Gibson Paradox are as follows:

Nominal Interest Rates = f (price level)

Price Level = g (nominal interest rates)

Nominal Interest Rates (i_t) = $a_0 + a_1 \textit{Price Level} + \varepsilon_t$

Price Level (P_t) = $\beta_0 + \beta_1 \textit{ Nominal Interest Rates} + \varepsilon_t$

For the econometric application of the study, Türkiye's inflation rate and interest rate series with monthly frequency for 2000:01-2022:12 were determined, and in this context, both time series were obtained from the IMF data distribution system.

Descriptive information about the variables and data sets used in the study is a shown in Table-2

Table 2. Descriptive Information

Variable	Description	Source
DR	Deposit Rate	IMF
INF	Consumer Price Index All Items Harmonized Percantage Change Provious Year	IMF

For the econometric application of the study, the regression models determined for Türkiye are shown as equation (1) and equation (2):

$$DR_t = a_0 + a_1 INF_t + \varepsilon_t \quad (1)$$

$$INF_t = a_0 + a_1 DR_t + \varepsilon_t \quad (2)$$

The given variable INF in equation 1 and equation 2 represents the inflation rate, and DR represents the deposit interest rate. The coefficient a_0, represents the constant term, the coefficient a_1 represents the slope coefficient. ε is the error term. The null hypothesis (H_0) and the alternative hypothesis (H_1) that are intended to be tested in the study are given below:

H_0: a_1=0 (In Turkiye, the inflation rate does not have a positive effect on the interest rate, meaning the Gibson Paradox does not hold in the Turkish economy.)
H_1: a_1>0 (In Turkiye, the inflation rate has a positive effect on the interest rate, meaning the Gibson Paradox holds in the Turkish economy).
H_0: a_1=0 (In Turkiye, the interest rate does not have a positive effect on the inflation rate, meaning the Gibson Paradox does not hold in the Turkish economy).
H_1: a_1>0 (In Turkiye, the inflation rate has a positive effect on the interest rate, meaning the Gibson Paradox is valid in the Turkish economy.)

In this part of the research, ADF, one of the traditional unit root tests, and Harvey and Mills unit root test, one of the non-linear unit root tests, were used.

The hypotheses of the ADF unit root test are given below (Dickey and Fuller, 1981, p.1057-1072):

H_0: The series has a unit root.
H_1: The series does not have a unit root.

Since avoid a likely spurious relationship between the variables, the stationarity of the series was first examined with the Extended Dickey-Fuller (ADF) unit root test for both level and first differences and the test results are given in Table 3.

Table 3. ADF Unit Root Test

ADF			ADF Difference		
INF	Constant	With Constant and Trend	ΔINF	Constant	With Constant and Trend
t-Statistic	-1.6077	-2.7623	t-Statistic	-5.3428***	-5.7279***
	ADF		ADF Difference		
DR	Constant	With Constant and Trend	ΔDR	Constant	With Constant and Trend
t-Statistic	-2.0265	-2.1039	t-Statistic	-4.5769***	-4.7942***
Critical values are shown in percentages.					
For the left columns: 1% = -3.4546, -3.9926; 5% = -2.8721, -3.4266; 10% = -2.5724, -3.1365.					
For the right columns: 1% = -3.4550, -3.9933; 5% = -2.8723, -3.4270; 10% = -2.5725, -3.1367.					

According to Table 3, since the INF value with (-1.60) and the DR variables with (-2.02) are smaller than the critical values in absolute values at 1%, 5% and 10% significance levels, it was concluded that the H_0 hypothesis could not be rejected and the series was not stationary. When the ADF test statistic was examined in terms of first differences, the ADF test statistic value (-5.34) was greater than the critical values of the INF and (-4.57) DR variables at 1%, 5% and 10% significance levels, so the H_0 hypothesis was rejected and the series was concluded to be stationary. In a unit root test conducted for a trending and stationary model with appropriate specifications, it was determined that both interest and inflation variables are statinary of 1 degree, I(1). Gradual modeling of structural breaks is considered to be more suitable for economic reality. In the literature, gradual changes in structural changes are expressed with the concept of smooth transition. For this reason, unit root test results that take into account the smooth transition nonlinearity are included in the study. Harvey Mills unit root test results are given in Table 4.

Table 4. Harvey Mills Unit Root Test Results

Variables	Model S_{2a} (A)		Model $S_{2a(\beta)}$ (B)		Model $S_{2a\beta}$ (C)	
	Calculated Test Statistic	Breaking Date	Calculated Test Statistic	Breaking Date	Calculated Test Statistic	Breaking Date
DR	**-4.2349**		**4.5087**		**-5.1322**	
%1	-5.64	2002:12	-6.05	2004:10	-6.59	2005:04
%5	-5.07		-5.53	2011:01	-6.01	2003:03
%10	-4.79		-5.25		-5.74	
INF	**-3.5643**		**-3.7587**		**-5.6844**	
%1	-5.64	2005:07	-6.05	2005:04	-6.59	2006:03
%5	-5.07	2009:11	-5.53	2011:09	-6.01	2006:06
%10	-4.79		-5.25		-5.74	

Note: Table values are taken from Harvey & Mill (2002).
A: 2 smooth breaks in the constant,
B= 2 smooth breaks in the constant under the deterministic trend,
C= 2 smooth breaks in both the constant and the trend.

According to Table-4, the H_0 hypothesis cannot be rejected. DR and INF variables contain a unit root. After determining that the variables contain a unit root as a result of the Harvey & Mills (2002) unit root test and that the DR and INF variables are stationary variables in the first difference according to the ADF test results from traditional unit root tests, it was concluded that the Hepsağ (2021) cointegration test could be used. In the application of the Hepsağ (2021) cointegration test, detrended. The Hepsağ (2021) Cointegration test results are presented in Table 5 version of the variables was used.

Table 5. Hepsağ (2021) Cointegration Test Results

	Test statistic	%1	%5	%10
$INF_t = a_0 + a_1 DR_t + \varepsilon_t$				
F*nec-raw	13.9067*	6.494	4.536	3.678
F*nec-demeaned	13.2466*	8.112	5.972	5.009
F*nec-detrended	**13.9060***	9.669	7.351	6.303
$DR_t = a_0 + a_1 INF_t + \varepsilon_t$				
F*nec-raw	13.3436	6.494	4.536	3.678
F*nec-demeaned	15.9759	8.112	5.972	5.009
F*nec-detrended	**19.5113***	9.669	7.351	6.303

H_0= There is no cointegrated relationship between variables.
H_1= There is a cointegrated relationship between variables.

Based on the results of Hepsağ's (2022) cointegration analysis, the null hypothesis is rejected when the calculated test statistic exceeds the table value. Upon examining the results in Table 5, it is observed that the test statistic is greater than the table value in all models, indicating the presence of a cointegrated relationship between the variables.

The asymmetric nonlinear cointegration test proposed by Hepsağ (2022) allows for the comparison of symmetric ESTAR cointegration with asymmetric ESTAR cointegration, provided that a cointegration relationship is identified between the variables.To verify the validity of symmetric ESTAR cointegration and asymmetric ESTAR cointegration, the following hypotheses are tested based on the two regression tests mentioned earlier.

H_0: $\theta 2 = 0$
H_1: $\theta 2 \neq 0$

In the case where the F test statistic is greater than the critical values of the standard F distribution, the asymmetric ESTAR cointegration situation is valid. Accordingly, positive and negative shocks occurring in the short term will have asymmetric effects during the process of returning to equilibrium in the long term. In order to apply this test, the coefficient of the cubed expression in the test statistics, $\emptyset 1$, must have a negative value. The long-term models of the cointegrated relationship between the inflation rate and the interest rate are given in Table 6.

Table 6. The Results of long run (AESTAR-ECM) Models

Long Run Estimates		
Dependent Variable:INF_t		
Variables	coefficients	t-statistic
DR_t	1.0120332346	15.4423
Symmetric ESTAR Cointegration vs. Asymmetric ESTAR Cointegretion		
t(269)= 0.148320 or F(1,269)= 0.021999	Level=0.88220	Result: symmetric ESTAR
Dependent variable:ΔINF		
$\widehat{U}_{t-1}^{3}$	**-2.3496e-005**	-5.2621
$\widehat{U}_{t-1}^{4}$	1.1720e-008	0.1483
ΔDR_t	0.0643	2.6504
ΔINF{1}	0.6790	12.9090
ΔDR1{1}	0.0241	0.8680

Based on the F_ANEC test statistic computed for the raw data set in Table 5, the null hypothesis (H_0), which states that no cointegration relationship exists, is rejected. To confirm the existence of a cointegration relationship between the variables, the $\widehat{U}_{t-1}^{3}$(UCUBED) value must be negative. According to Table 6 $\widehat{U}_{t-1}^{3}$ (UCUBED) value is negative. Therefore, it is concluded that a cointegration relationship exists between the interest and inflation rates. Based on this, the F test should be used to determine whether there is symmetric ESTAR cointegration or asymmetric ESTAR cointegration between the variables. According to Table-6, since the level value of the F test is greater than 0.05, there is a symmetric ESTAR cointegration. If there is a symmetric ESTAR cointegration, the shocks that will occur in the short and long term will have the same effect on the long-term equilibrium process. When the estimated long-term coefficient in Table-6 is examined, the coefficient showing the effect of the interest rate on the inflation rate (1.0120) is positive and significant. This means that a 1% increase in the interest rate will increase the inflation rate by 1.0120%.

When the results obtained in the study were compared with the investigated hypothesis:

H_0: a_1=0 (In Türkiye, the interest rate does not positively affect the inflation rate, the Gibson Paradox is not valid in the economy of Türkiye.)

H_1: a_1>0 (In Türkiye, the interest rate positively affects the inflation rate, the Gibson Paradox is valid in the economy of Türkiye).

It was concluded that the H_0 hypothesis was rejected and the Gibson paradox was valid in Türkiye in the period 2000:01-2022:12. The long-term model of the cointegrated relationship between the interest rate and the inflation rate is given in Table 7.

Table 7. The Results of long run and short run (AESTAR-ECM) Models

Long Run Estimates		
Dependent Variable: DR_t		
Variables	coefficients	t-statistic
INF_t	0.4589	15.4423
Symmetric ESTAR Cointegration vs. Asymmetric ESTAR Cointegretion		
t(269)= 2.631131 or F(1,269)= 6.922848	Level= 0.0090	Result: Asymmetric ESTAR
Dependent variable: ΔDR		
$\widehat{U}_{t-1}^{3}$	**-2.6783e-004**	-3.5030
$\widehat{U}_{t-1}^{4}$	2.7956e-006	2.6311
ΔINF_t	0.3145	2.2175
ΔDR{1}	-0.0733	-1.1153
ΔINF1{1}	-0.3250	-2.1135

According to Table 7, since the F test value at the level is above 0.05, a symmetric ESTAR cointegration exists. This indicates that short- and long-term shocks have the same effect on the long-term equilibrium process. The long-term coefficient in Table 7 shows that the effect of inflation on the interest rate (0.4589) is positive and significant, meaning that a 1% increase in inflation raises the interest rate by 0.45%. When Tables 6 and 7 are considered together, it is observed that interest rates have a stronger impact on inflation during the analyzed period. These findings are important for understanding the interest rate–inflation relationship in the Turkish economy. Given that interest rates positively affect inflation and that short- and long-term shocks influence the equilibrium symmetrically, it is suggested that monetary policy instruments should be used carefully, and interest rate adjustments should be strategically planned to control inflation. Moreover, the strong influence of interest rates on inflation implies that the central bank can effectively use interest rate policies to achieve its price stability objectives. Finally, the causality relationship was also examined in the study, and the results of the Granger Causality test are presented in Table 8.

Table 8. The results of Granger Causality Tests

Null hypothesis	F stastistics	Probability	Result
$\Delta INF_t \rightarrow \Delta DR_{2t}$	2.9714	0.025	There is causality
$\Delta DR_t \rightarrow \Delta INF_{2t}$	3.7127	0.052	There is causality

According to Table 8, it was concluded that there is a bidirectional relationship between inflation and interest. A causality relationship was determined from inflation to interest rate at a significance level of 5%. This situation shows that the inflation rate is a strong variable in estimating the interest variable. A causality relationship was determined from interest rate to inflation rate at a significance level of 10%. This situation shows that the interest rate is also an effective variable on inflation. From the perspective of the Gibson Paradox, a positive relationship is observed between nominal interest rates and inflation in Turkey. In other words, although interest rates are generally raised to control inflation, they can move in tandem with inflation in the short term. This finding partially supports the Gibson Paradox's observation of a positive relationship between interest rates and the general price level.

4. Conclusion

In discussions of inflation and interest rates, the Gibson Paradox represents a manifestation of correlation analysis results that deviate from classical outcomes regarding the relationship between inflation and interest rates. In this respect, the Gibson Paradox is based on a positive correlation between inflation and interest rates. However, in classical doctrines, developments in money supply and interest rates have an impact on inflation.

The Keynesian interest theory suggests that interest rates are determined by money-related factors and states that these rates depend on the money supply and money demand. According to the theory, increases in inflation rates force policymakers to raise interest rates.

Although the findings in this study support the hypothesis that the Gibson Paradox exists in Türkiye, it should also be stated that this situation cannot be generalized for all periods and all countries. The fact that the paradox in question has been found to be valid for the period 2000:01-2022:12 in Türkiye makes it an important parameter that the central bank should consider in its monetary policy decision. The effects of the monetary policies to be implemented within this framework on inflation and interest rates and the level of success targeted to be achieved from the policy will also differ. In this respect, when planning monetary policy in Türkiye, trying to reach a conclusion with a one-way perspective from inflation to interest may not always be successful in controlling inflation with the interest instrument.

Considering that interest is a cost element, it can be said that it causes a process that results in cost inflation, especially when it is reflected in consumer prices. In addition, the fact that the causality relationship between inflation and interest rates is bidirectional shows that Türkiye has entered an inflation-interest-inflation spiral, and the resulting effect varies in terms of its coefficient. For this reason, the fact that interest has a higher power to cause inflation suggests that this situation should be taken into consideration in the making of monetary and fiscal policies.

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