The Analysis of the Validity of the Phillips Curve in Turkey via the Fourier Cointegration and Causality Tests

Türkiye'de Phillips Eğrisi'nin Geçerliliğinin Fourier Eşbütünleşme ve Fourier Nedensellik Testleri ile Analizi

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Öz

Bir ülke ekonomisinin en önemli başarı ölçütleri arasında enflasyon ve işsizlik göstergeleri yer almaktadır. Nitekim enflasyon ve işsizlik oranlarının artması ülkelerin refah düzeylerini azalttığı için politika yapıcılar hem enflasyonun hem de işsizliğin düşük düzeylerde kalmasını amaçlamakta ve bu doğrultuda para ve maliye politikalarını yapmaktadırlar. Makroekonomi literatüründe enflasyon ile işsizlik arasındaki ilişkiyi ortaya koyan Phillips Eğrisi'ne göre, enflasyon arttığı zaman işsizlik azalırken enflasyon azalırken ise işsizlik artmakta yani enflasyon ile işsizlik arasında ters yönlü bir ilişki bulunmaktadır. Bu bağlamda ekonomide Phillips eğrisinin geçerli olması durumunda uygulanacak politikalar ile hem enflasyona hem de işsizliğe aynı anda çözüm bulmak mümkün olmamaktadır.

Bu çalışmanın amacı, Türkiye'de 2006:01 – 2020: 11 dönemi için en önemli ekonomik sorunlar arasında yer alan enflasyon ile işsizlik arasındaki ilişkiyi araştırarak Phillips eğrisinin geçerli olup olmadığını ortaya koymaktır. Bu amaç doğrultusunda ilk olarak Fourier ADF ve Fourier KPSS analizleri yapılarak ele alınan değişkenlerin düzeyde durağan olmadıkları ve birinci farklarında durağan oldukları sonucuna ulaşılmıştır. Daha sonra yapılan Fourier eşbütünleşme analizi ile değişkenler arasında uzun dönemli ilişkinin olmadığı belirlenmiştir. Son olarak Single Fourier-Frequency Toda & Yamamoto nedensellik analizi yapılarak değişkenler arasındaki kısa dönemli ilişkinin olup olmadığı ortaya konulmaya çalışılmıştır. Yapılan nedensellik analizi sonuçlara göre, hem enflasyondan işsizliğe hem de işsizlikten enflasyona doğru nedensellik ilişkisi olmadığı görülmüş olup enflasyondaki değişimlerin işsizlik üzerinde ve işsizlikteki değişimlerin ise enflasyon üzerinde kısa dönemde etkili olmadığı ortaya konulmuştur. Bu bağlamda enflasyon ile işsizlik arasında ters yönlü ilişki olduğunu ileri süren Phillips eğrisinin Türkiye için ele alınan dönem ve yapılan analizler çerçevesinde geçerli olmadığı sonucuna ulaşılmıştır.

Anahtar Kelimeler: Enflasyon, İşsizlik, Phillips Eğrisi, Fourier Durağanlık, Fourier Eşbütünleşme, Fourier Nedensellik.

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Abstract

Inflation and unemployment indicators are among the most significant success criteria of a country's economy. Thus, since the increase in inflation and unemployment rates decreases the welfare levels of countries,

policymakers aim to keep both inflation and unemployment at low levels and establish their monetary and fiscal policies accordingly. According to the Phillips curve, which reveals the correlation between inflation and unemployment in the macroeconomic literature, an increase in inflation leads to a decrease in unemployment, and while inflation decreases, unemployment increases, which indicates an inverse correlation between inflation and unemployment. In this respect, it is not possible to find a solution for both inflation and unemployment simultaneously with the policies to be implemented if the Phillips curve is valid in the economy.

This study aims to reveal whether the Phillips curve is valid or not by investigating the correlation between inflation and unemployment, which were among the most important economic problems within the 2006:01 – 2020:11 period in Turkey. In line with this purpose, the Fourier ADF and Fourier KPSS analyses were carried out first, and it was concluded that the relevant variables were not stationary at the level, and they were stationary in their first differences. With the Fourier cointegration analysis conducted later, no long-run correlations between the variables were determined. Finally, the Single Fourier-Frequency Toda & Yamamoto causality analysis was carried out, and it was attempted to reveal whether there was a short-run correlation between the variables. According to the results of the causality analysis, no causality correlations were observed both from inf to unemp and from unemp to inf, and it was revealed that changes in inflation did not influence unemployment, and changes in unemployment did not influence inflation in the short run. In this context, it was concluded that the Phillips curve, suggesting an inverse correlation between inflation and unemployment, was not valid for Turkey within the framework of the period considered and the analyses performed.

Keywords: Inflation, Unemployment, The Phillips Curve, Fourier Stationarity, Fourier Cointegration, Fourier Causality.

Introduction

Unemployment leads to the loss of production, welfare and income, and as a result, economic effects such as economic contraction while also resulting in social effects including psychological problems, the loss of the social environment, intrafamily disturbance, violence, an increase in crime rates, and suicide (Altay et al., 2011:19). Inflation, on the other hand, causes inequity in income distribution by making the rich richer and the poor poorer. Meanwhile, inflation also has negative effects on investments, savings, public expenditures, public revenues, consumption expenditures, and foreign trade. In this context, every country aims to achieve domestic stability, which is among the most important problems of the countries' economies, by keeping their inflation and unemployment rates at low levels.

Hence, numerous studies have been carried out to reveal whether there is a correlation between inflation and unemployment in terms of the countries' stability. The most significant of these studies is the Phillips curve, which indicates an inverse correlation between inflation and unemployment. If the Phillips curve is valid in an economy, it will not be possible to decrease inflation and unemployment at the same time with policies. Thus, it is necessary to determine well whether the Phillips curve, which reveals the correlation between inflation and unemployment, is valid in the economy to decide on the right economic policies. The Fourier approach is a method that has recently started to be employed in studies. In this context, it was attempted to contribute to the literature by using the Fourier approach in this study.

In this study, the development process of the Phillips curve analysis, which demonstrates the correlation between inflation and unemployment, was first addressed. Then, the studies conducted on the validity of the Phillips curve in Turkey were briefly summarized. Finally, an econometric analysis was performed to show whether the Phillips curve was valid in Turkey for the period of 2006:01 – 2020:11.

The Development Process of the Phillips Curve Analysis

The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom (1861-1957) entitled was conducted by Alban Williams Housego Phillips in 1958. In this study, which attracted the attention of many economists, the presence of an inverse and non-linear balanced correlation between unemployment and money wage rates was suggested, and it was asserted that the money wage increase rate increased as the unemployment rate decreased, and the money wage increase rate decreased as the unemployment rate increased. Moreover, Phillips claimed that employers would have to increase wages to be able to keep the current workers and employ new workers as a result of the increase in demand (Phillips, 1958). Afterward, in 1960, Phillips' analysis was turned into a curve revealing the correlation between inflation and unemployment by Robert Solow and Paul Samuelson and built on a theoretical ground (Akiş, 2020: 406). With the Phillips curve, it is expressed that the policies to be implemented to achieve price stability by decreasing inflation will increase unemployment, while the policies to be implemented to decrease unemployment will increase inflation. In this context, there is a trade-off between inflation and unemployment according to the Phillips curve.

Whether the Phillips curve was valid or not was also investigated by the Monetarist, New Classical and New Keynesian schools that appeared later, and various contributions were made in different dimensions. Accordingly, the Monetarist economists M. Friedman and E. S. Phelps included the

expectations in the Phillips curve and developed the Phillips curve with the addition of adaptive expectations, and defined the inflation expectation as the weighted average of the past period's dynamic inflation rates. According to the Monetarist economists, economic decision-making units form their future inflation expectations considering the past inflation rates. Indeed, the shape of the Phillips curve differs in the short and long run depending on the difference in the real and expected inflation rates. The Monetarists, who brought the 'short and long run' distinction to the Phillips curve, claim that there is a negative correlation between inflation and unemployment in the short run, and therefore the Phillips curve is valid while suggesting no permanent correlations between inflation and unemployment in the long run. In this context, the Monetarists argue that there is a Phillips curve parallel to the perpendicular axis in the long run, in other words, there is a natural unemployment rate independent of the inflation rate; therefore, the Phillips curve is invalid. According to the Monetarists, the policies to be implemented to decrease unemployment will work in the short run, but not in the long run, and these policies will accelerate inflation. In this case, according to the Monetarists, politicians will not prefer between inflation and unemployment but between the natural unemployment rate and higher and lower inflation rates (Erdil Şahin, 2019: 65).

The assumption of adaptive expectations used to claim that individuals could be deceived continuously and systematically in their expectations. However, the New Classical economist Robert E. Lucas asserts that economic decision-making units learn from their previous mistakes and will not make systematic mistakes continuously by accepting the assumption of rational expectations developed by the New Classical economist J. Muth. In this context, Lucas included the assumption of rational expectations in the Phillips curve approach suggested by the Monetarists (Akkuş, 2012: 124-125).

A different perspective was brought to the Phillips curve with the inclusion of the NAIRU and hysteria hypothesis concepts in the Phillips curve by the New Keynesian economists. According to these economists, if the NAIRU, which refers to the non-accelerating inflation rate of unemployment, is lower than the current unemployment rate, inflation tends to decrease. If the NAIRU is higher than the current unemployment rate, then the inflation rate tends to increase (Tobin, 1980:24-25; Gül et al., 2014).

Literature Review

One of the most important discussions in the macroeconomic literature is whether the Phillips curve, which reveals the correlation between inflation and unemployment, is valid or not because the validity of the Phillips curve has been discussed for years and is still discussed. Whether the Phillips curve analysis is valid or not will guide policymakers in decision-making.

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Indeed, many applied studies have been conducted on this subject in the literature at both national and international levels. In this section of the study, the studies on Turkey are summarized first, and then international studies on other countries are reviewed.

Since the methods used in the studies on Turkey and the study periods addressed were different from each other, it was concluded that the Phillips curve was valid in some of these studies and invalid in others. Hence, it can be asserted that there is no empirical consensus on whether the Phillips curve is valid or not in Turkey. Accordingly, the Phillips curve was found valid for Turkey by Arabacı and Eryiğit (2012) using the threshold regression model for the 1991-2010 period, by Ali and Altıntaş (2015) using the linear regression analysis for the 2000-2014 period, by Göçer (2016) using econometric methods with structural breaks for the 2005-2015 period, by Öztürk and Emek (2016) using cointegration analysis for the 1997-2006 period, by Alper (2017) using the ARDL limit test for the 1987-2016 period, by Maden et al. (2018) using the Engle-Granger cointegration method and error correction model for the 1980-2016 period, by Dereli (2019) using the ARDL limit test for the 1988-2017 period, by Erdil Şahin (2019) using the Johansen cointegration test and vector error correction model for the 2005-2018 period, by Akiş (2020) using the Johansen cointegration analysis and vector error correction model for the 2005-2020 period, and by Özer (2020) using the Fourier approach for the 2006-2017 period. On the other hand, the Phillips curve was found invalid for Turkey by Kuştepeli (2005) using regression analysis for the 1980-2003 period, by Önder (2006) using the multiple structural break model and Markov-switching model for the 1987-2004 period, by Çatık et al. (2008) using the ARDL model for the 1996-2007 period, by Mangır and Erdoğan (2012) using regression analysis and Granger causality analysis for the 1990-2011 period, by Tabar and Çetin (2016) using cointegration analyses for the 2003-2016 period, by Özçelik and Uslu (2017) using the Johansen cointegration analysis, VAR analysis, and Granger causality analysis for the 2007-2014 period, by Petek and Aysu (2017) using cointegration analysis, VAR analysis, and Granger causality analysis for the 1980-2015 period, by Karacan (2018) using Granger causality analysis, cointegration test, and error correction model for the 2005-2018 period, and by Yılmaz et al. (2019) using the Markov-switching model, Johansen cointegration analysis, Engle-Granger causality analysis, and error correction model for the 2010-2017 period.

Upon reviewing the international literature on the validity of the Phillips curve, it is observed that numerous studies have been conducted in different countries and different periods. The Phillips curve was found valid by Tajra (1999) using OLS analysis for Brazil for the 1994 – 1999 period, by Kichian (2001) using the time-varying method for Canada for the 1972-1999 period,

by Turner and Benavides (2001) using the OLS method for Mexico for the 1980-1999 period, by Bhattarai (2004) using panel data analysis for OECD countries for the 1998-2002 period, by De Veirman (2007) using the Kalman filtering method for Japan for the 1998-2002 period, by Furuoka (2007) using the error correction model for Malaysia for the 1973-2004 period, by Gaiotti (2010) using panel data analysis for Italy for the 1988-2005 period, by Eita and Ashipala (2010) using the Engle-Granger cointegration analysis for Namibia for the 1971-2007 period, by Singh et al. (2010) using the Kalman filtering method for India for the 1997-2009 period, by Dritsaki and Dritsaki (2012) using the cointegration test, vector error correction model, and impulse response functions for Greece for the 1980-2010 period, by Haider and Dutta (2012) using the OLS method for Bangladesh for the 1987-2009 period, by Daly and Hobjin (2014) using the simulation method for the USA for the 1986-2012 period, by Samanhyia (2014) using the OLS method for Ghana for the 1970-2012 period, by Adebowale (2015) using the vector error correction model and Granger causality analysis for Nigeria for the 1977-2013 period, by Kasseh (2018) using the OLS method for Gambia for the 1991-2015 period, by Mangnejo et al. (2020) using Granger causality analysis for Pakistan for the 1991-2015 period, and by Sköld and Tesfay (2020) using regression analysis for Sweden for the 1996-2019 period. On the other hand, the Phillips curve was found invalid by Nwala (2003) using the OLS method for the USA for the 1993-2000 period, by Ogbokor (2005) using the OLS method for Namibia for the 1991-2005 period, by Russell and Banerje (2008) using the GMM method for the USA for the 1952-2004 period, by Ormerod et al. (2009) using the fuzzy clustering technique for the USA, the UK, and Germany for the 1871-2009 period, by Herman (2010) using the correlation approach for Romania for the 1990-2009 period, by Elliot (2015) using the OLS method for Ghana for the 1970-2013 period, and by Orji et al. (2015) using the OLS method, augmented Engle-Granger cointegration test, and error correction model for Nigeria for the 1970-2011 period.

Econometric Analysis

This section of the study includes the data and variables, implementation method, unit root tests of the series, Fourier cointegration analysis, and Single Fourier-Frequency Toda & Yamamoto causality analysis.

Data and Variables

In this study, an econometric analysis was conducted with the monthly time series data for the period of 2006-2020 to investigate the correlation between inflation and unemployment in Turkey. The transition of the Central Bank to open economy inflation targeting in Turkey in 2006 influenced the determination of the analysis period in this study. The variables addressed in the study are summarized in Table 1.

Table 1: Data Set

Variables	Description of the Variable	Source
inf	Inflation rate (% change according to the same month of the previous year)	TURKSTAT
unemp	Seasonal and calendar-adjusted unemployment rate (%)	TURKSTAT

The letter "d" used at the beginning of the variable symbols in the econometric analysis section of the study means that the difference has been taken for the relevant variable.

Method

In this study, the Fourier estimation method, which has started to be used in the economy literature recently, was used in the analyses. Whether the variables in the study contained unit roots was investigated by the Fourier ADF (Fourier Augmented Dickey-Fuller) and Fourier KPSS (Fourier Kwiatkowski-Phillips-Schmidt-Shin) unit root tests. The long-run correlation between the variables addressed later was revealed with the Fourier cointegration analysis. Finally, the Single Fourier-Frequency Toda & Yamamoto causality analysis was carried out to determine the short-run correlation between the variables. To conduct the aforementioned analyses, the GAUSS 19.1 econometric analysis software was used.

The Fourier ADF and Fourier KPSS Unit Root Tests

 The addressed data need to be stationary to accurately demonstrate whether a cointegration correlation exists between the variables, to obtain significant correlations between the variables, and to eliminate the spurious regression correlation. In line with this, the stationarity levels of the data were first investigated with the Fourier ADF and Fourier KPSS stationarity tests in the study, which addressed a constant model.

Table 2: Fourier ADF Unit Root Test Statistics

	Variables			
	inf	**d(inf)**	**unemp**	**d(unemp)**
Fourier ADF Test Statistics	-2.415	-5.530***	-2.386	-5.355 ***
Unit Root Status	Available	Not available	Available	Not available
Critical Values Belonging to the "inf and unemp" Variables	**1%**	**5%**	**10%**	
	-4.370	-3.780	**-**3.470	
Critical Values Belonging to the "dinf and dunemp" Variables	-3.740	-3.060	-2.720	

In the addressed constant model, the lag values for the variables were determined considering the Akaike Information Criterion (AIC), and the maximum lag length was selected as 12. Varm=2 was taken as the long-run consistent variance estimator. *** express significance at the levels of 1%, respectively.

In Table 2, the results of the Fourier ADF unit root test are presented. According to this test, the inf and unemp variables contain unit roots for the level values, whereas they are stationary in their first differences.

Table 3: Statistics for the Fourier KPSS Stationarity Test

Variable	KPSS Test Statistics	Critical Values			Stationarity State
		10%	**5%**	**1%**	
inf	0.230**	0.132	0.172	0.270	Non- stationary
d(inf)	0.053***	0.339	0.448	0.718	**Stationary**
unemp	1.072	0.339	0.448	0.718	Non- stationary
d(unemp)	0.079***	0.339	0.448	0.718	**Stationary**

In the addressed constant model, the lag values for the variables were determined considering the Akaike Information Criterion (AIC), and the maximum lag length was selected as 12. Varm=2 was taken as the long-run consistent variance estimator. ** and *** express significance at the levels of 5% and 1%, respectively.

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In Table 3, the results of the Fourier KPSS stationarity test are presented for the variables addressed. The results of the test show that the inf and unemp variables are stationary in their first differences, in other words, at I(1).

Accordingly, both the Fourier ADF and the Fourier KPSS stationarity tests indicate that inflation and unemployment data are stationary at I(1). Since the addressed data were stationary in the first degree, whether a long-run correlation existed between these variables was investigated via the Fourier cointegration analysis.

In Figure 1 below, the Fourier graphs are given for the inf and unemp variables. In these graphs, the Fourier estimations are accurate since long-run fluctuations were obtained regarding the data. Furthermore, the results achieved for frequency 1 were better; therefore, frequency 1 was considered in the Fourier graphs.
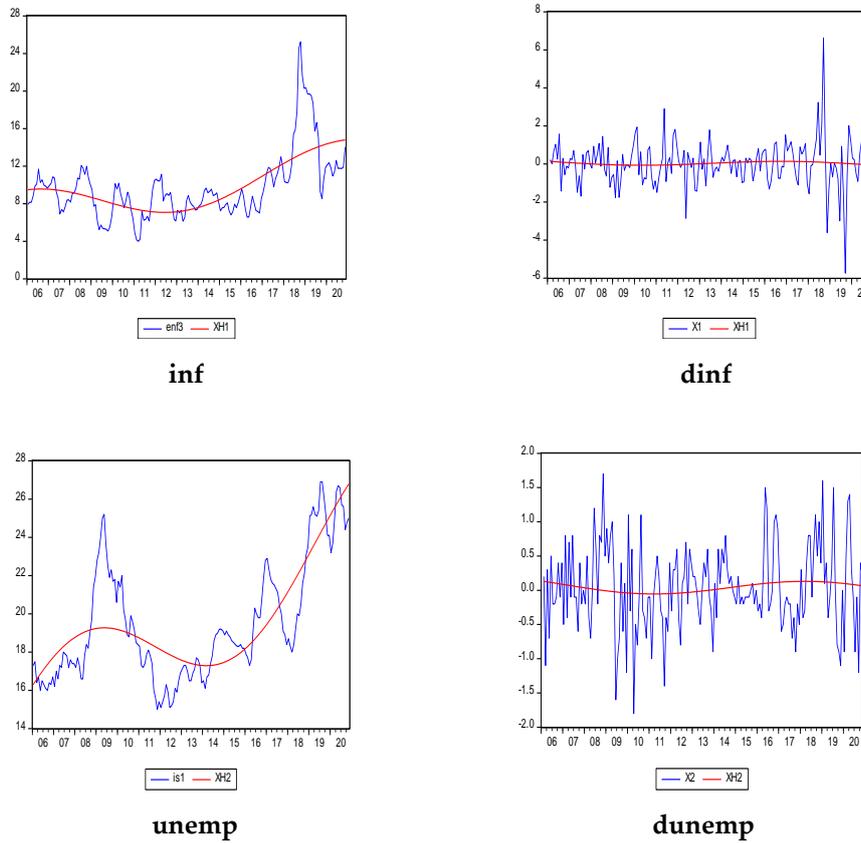

inf

dinf

unemp

dunemp

Figure 1. Variables and Fourier Functions

The Fourier Cointegration Analysis

Since both inf and unemp variables are I(1), it should be investigated whether there is a cointegration correlation between these variables. To this end, the Fourier cointegration analysis, which was developed by Tsong et al. (2016) and provided the cointegration correlation for the level shift model, was applied. In the analyses, inf was taken as the dependent variable first, and the presence of a cointegration correlation between the inf and unemp variables was investigated.

Table 4: Results Obtained for the Fourier Cointegration Test When inf was Taken as the Dependent Variable

	Frequency	Statistics Obtained for the Fourier Cointegration Test	F-Statistics	Cointegration Status
CIols	1	0.136**	30.093	No cointegration.
CIdols	1	0.142**	20.260	No cointegration.
Critical Values				
1%		**5%**		**10%**
0.198		0.124		0.095

Lag values for the variables were selected according to the Akaike Information Criterion (AIC), and the maximum lag length was determined as 12. Varm=2 was taken as the long-run consistent variance estimator. ** indicates a significance level of 5%.

Table 4 presents the results of the cointegration test. Hypothesis Ho was rejected for both CIols and CIdols test results. Therefore, no cointegration correlation exists between the inf and unemp variables according to the results obtained. This result shows that no long-run correlation existed between inflation and unemployment, and a sudden change in unemployment did not affect inflation in the long run in Turkey for the period of 2006:01 - 2020:11.

Later, unemp was taken as the dependent variable, and the presence of a cointegration correlation between unemp and inf was investigated.

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Table 5: Results Obtained for the Fourier Cointegration Test When unemp was Taken as the Dependent Variable

	Frequency	Statistics Obtained for the Fourier Cointegration Test	F-Statistics	Cointegration Status
CIols	1	0.584***	13.814	No cointegration.
CIdols	1	0.339***	8.067	No cointegration.
Critical Values				
1%		**5%**		**10%**
0.198		0.124		0.095

Lag values for the variables were selected according to the Akaike Information Criterion (AIC), and the maximum lag length was determined as 12. Varm=2 was taken as the long-run consistent variance estimator. *** indicates a significance level of 1%.

Table 5 presents the results of the cointegration test. Hypothesis Ho was rejected for both CIols and CIdols test results. Therefore, no cointegration correlation exists between the unemp and inf variables according to the results obtained. This result demonstrates that no long-run correlation existed between unemployment and inflation, and a sudden change in inflation did not affect unemployment in the long run in Turkey for the period of 2006:01 - 2020:11.

Single Fourier-Frequency Toda & Yamamoto Causality Test Results

To investigate whether there was a causality correlation between the inf and unemp variables in the study, the Single Fourier-Frequency Toda & Yamamoto causality analysis was carried out, and the test results are presented in Table 6.

Table 6: Results for the Single Fourier-Frequency Toda & Yamamoto Causality Test

	Wald's Statistical Value	Asym. P - Value	Lag	Frekans
inf → unemp	7.212	0.125	4.000	1.000
unemp → inf	7.194	0.126	4.000	1.000

Interpretations were made by considering the asymptotic p-values since the number of observations was higher than 50.

The results in Table 6 show that there is no causality correlation both from inf to unemp and from unemp to inf. In this respect, changes in inflation do not have any effect on unemployment, and changes in unemployment do not have any effect on inflation in the short run.

Conclusion and Discussion

Inflation and unemployment issues, which lead to many negative effects in both economic and social terms, are of particular concern to all the developed and developing countries because positive or negative changes in these indicators influence a country's economy. Thus, low inflation and unemployment rates are among the most important criteria of a country's economic success. However, it may not always be possible to decrease inflation and unemployment rates at the same time. In this context, high inflation and unemployment rates are significant economic problems that many countries need to solve. To solve these problems, policymakers implement different policies. However, the contractionary policies implemented to decrease the inflation rate may cause an increase in the unemployment rate or expansionary policies implemented to decrease unemployment may increase inflation if the Phillips curve, which suggests an inverse correlation between inflation and unemployment, is valid in an economy. Accordingly, both inflation and unemployment rates cannot be decreased together with the policies implemented in an economy where the Phillips curve is valid. However, if the Phillips curve is not valid, the policies to be implemented to decrease the inflation rate will not increase the unemployment rate, and the policies to be implemented to decrease the unemployment rate will not increase inflation. Therefore, in an economy in which the Phillips curve is not valid, policies that will both ensure price stability and decrease the unemployment rate can be implemented simultaneously. It is necessary to accurately determine the causes of the emerging inflation and unemployment so that the success rate of these policies can increase.

To investigate the long-run correlation between inflation and unemployment using the monthly time series data in Turkey for the period of 2006:01 - 2020:11, the Fourier cointegration analysis was conducted in consideration of

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the structural breaks. Within this scope, first, the Fourier ADF and the Fourier KPSS analyses were carried out, and it was concluded that the variables were not stationary at the level, and they were stationary in their first differences. With the Fourier cointegration analysis conducted later, it was revealed that no long-run correlations existed between the variables. Finally, the Single Fourier-Frequency Toda & Yamamoto causality analysis was conducted, and it was attempted to reveal whether a short-run correlation existed between the variables. According to the results of the causality analysis, no causality correlations were observed both from inf to unemp and from unemp to inf. In this respect, changes in inflation do not have any effect on unemployment, and changes in unemployment do not have any effect on inflation in the short run.

Some of the studies conducted to reveal whether the Phillips curve was valid in Turkey reached the conclusion that the Phillips curve was valid, whereas others concluded that the Phillips curve was invalid. The reason for obtaining different results in these studies is that the methods employed in the analyses and the study periods addressed differed from each other. As a result, this study has also concluded that the Phillips curve is invalid for Turkey in line with the period addressed and analyses conducted. This conclusion is similar to the conclusions reached in the studies carried out by Kuştepeli (2005), Önder (2006), Çatık et al. (2008), Mangır and Erdoğan (2012), Tabar and Çetin (2016), Özçelik and Uslu (2017), Petek and Aysu (2017), Karacan (2018), and Yılmaz et al. (2019).

In this study, the absence of a correlation between inflation and unemployment means that no increase occurs in unemployment when a policy is conducted to achieve price stability or the policies to be made to decrease the unemployment rate will not cause an increase in inflation. Policymakers are recommended to make the policies by considering the absence of a correlation between inflation and unemployment. Thus, policies to be implemented for preventing inflation and unemployment will contribute to ensuring economic stability. In this regard, structural reforms should be given importance to decrease inflation and unemployment rates.

References

Adebowale, K. B. (2015). "The Relationship Between Inflation and Unemployment in Nigeria". Master of Science in Economics, Eastern Mediterranean University, Gazimağusa, North Cyprus:1- 60.

Akiş, E. (2020). "The Relationship Between Inflation and Unemployment in Turkey (2005 – 2020)". Van Yüzüncü Yıl University the Journal of Social Sciences Institute, (49), 403-420.

Akkuş, G. E. (2012). "Phillips Curve: Inflation-Unemployment Trade – off: A Theoretical Examination". Istanbul Journal of Economics, 62 (2), 99-151.

Ali, B. and Altıntaş, T. (2015). "Time Series Analysis: A Case Study on Forecasting Turkey's Inflation and Unemployment". Journal of Anadolu Bil Vocational School of Higher Education, 39, 67-75.

Alper, F. Ö. (2017). "Relationship Between Inflation and Unemployment: The ARDL Bound Testing Approach for Turkey". Journal of International Trade and Economic Researches, 1 (2), 71-80.

Altay, B., Tuğcu, C. T. and Topçu, M. (2011). "The Causality Between Unemployment Rate and Inflatıon Rate: The G8 Countries Case Study". Afyon Kocatepe University Journal of Economics and Administrative Sciences, 8 (2), 1-26.

Arabacı, Ö. and Eryiğit, K. Y. (2012). "A Thresold Regression Estimation of Phillips Curve: Turkey Case". Eskişehir Osmangazi University Journal of Economics and Administrative Sciences, 7, 29-47.

Bhattarai, K. (2004). "Unemployment-Inflation Trade-offs in OECD Countries: Lessons from Panel Data and Theories of Unemployment", (12) (PDF) Unemployment-inflation Trade-offs in OECD Countries: Lessons from Panel data and Theories of Unemployment (researchgate.net).

Çatık A. N., Martin, C. and Önder, A. Ö. (2008). "Relative Price Variability and the Phillips Curve: Evidence from Turkey". Working Papers 0807.

Daly, M. C. and Hobijn, B. (2014). "Downward Nominal Wage Rigidities Bend the Phillips Curve". Federal Reserve Bank of San Francisco Working Paper Series, 1-47.

Dereli, D. D. (2019). "The Relationship Between Inflation and Unemployment in Turkey: An ARDL Bounds Testing Approach". Kırklareli University Journal of the Faculty of Economics and Administrative Sciences, 8 (2), 246-257.

De Veirman, E. (2007). "Which Nonlinearity in the Phillips Curve? The Absence of Accelerating Deflation in Japan", https://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Discussion%20papers/2007/dp07-14.pdf.

Dritsaki, C. and Dritsaki, M. (2012). "Inflation, Unemployment and the NAIRU in Greece". Procedia Economics and Finance, 1, 118-127.

Eita, J. H. and Ashipala, J. M. (2010). "The Determinants of Unemployment in Namibia". International Journal of Business and Management, 5(10), 92 – 104.

Elliot, B. (2015). "The Relationship Between Inflation and Unemployment in Ghana: Analysis of the Philips Curve". African Journal of Economic Review, 3(2), 117-124.

"İnsan ve Toplum Bilimleri Araştırmaları Dergisi"
"Journal of the Human and Social Sciences Researches"
[itobiad / 2147-1185]

Cilt/Volume: 10,
Sayı/Issue: 4,
2021

[3187]

Erdil Şahin, B. (2019). "Analysis of The Relationship Between Inflation and Unemployment in Turkey Via Vector Error Correctıon Model". Journal of Financial Solution, 29 (152), 63-75.

Furuoka, F. (2007). "Does the Phillips Curve Really Exist? New Empirical Evidence from Malaysia for the Period 1975-2004". Economic Bulletin, 5 (16), 1-14.

Gaiotti, E. (2010). "Has Globalization Changed the Phillips Curve? Firm-Level Evidence on the Effect of Activity on Prices", https://www.ijcb.org/journal/ijcb10q1a3.pdf.

Göçer, İ. (2016). "Phillips Curve Theory is Valid in Turkey? An Econometric Analysis with Structurel Break". Journal of Aydın Faculty of Economics, 1 (1), 50-62.

Gül, E., Kamacı, A. and Konya, S. (2014). "The Causal Relationship Between Inflation and Unemployment: A Panel Cointegration and Causality Analysis". In International Conference on Eurasian Economies (Vol. 1).

Haider, M. Z. and Dutta, C. B. (2012). "Inflation–Unemployment Trade-off: Evidence from Bangladesh Economy". Asia-Pacific Journal of Management Research and Innovation, 8(3), 227-237.

Herman, E. (2010). "Inflation and Unemployment in the Romanian Economy", http://www.economics-ejournal.org/economics/discussionpapers/2009-43.

Karacan, R. (2018). "Phillips Curve Approach to Causality Between Inflation and Unemployment in Turkey". Social Mentality and Researcher Thinkers Journal, 4 (10), 242-249.

Kasseh, P. A. (2018). "The Relation Between Inflation and Unemployment in the Gambia: Analysis of the Philips Curve". Journal of Global Economics, 6(02), 6-12.

Kichian, M. (2001). "On the Nature and the Stability of the Canadian Phillips Curve". Bank of Canada Working Paper. (2001 – 4).

Kuştepeli, Y. (2005). "A Comprehensive Short-run Analysis of a (Possible) Turkish Phillips Curve". Applied Economics, 37, 581-591.

Maden, S. I., Baykul, A. and Akgün, E. (2018). "Analysis of Relationship Between Inflation and Unemployment by Time Series After 1980 in Turkey". The Journal of Kesit Academy, 13, 53-63.

Mangır, F. and Erdoğan, S. (2012). "The Relationship Between Inflation and Unemployment in Turkey (1990-2011)". Finance, Politics and Economic Reviews, 49, 77-98.

Mangnejo, G. M., Mahar, S. W. and Ahmed, B. (2020). "Inflation and Unemployment in Pakistan: An Empirical Analysis". Pakistan Social Sciences Review, 4(2), 306-318.

Nwala K. (2003). "Is There Still an Unemployment and Inflation Trade-off". International Advances in Economic Research, 2003.

Ogbokor, A. C. (2005). "The Applicability of the Short-run Phillips Curve to Namibia". Journal of Social Sciences, 1 (4): 243-245.

Orji, A., Anthony-Orji, O. I. and Okafor, J. C. (2015). "Inflation and Unemployment Nexus In Nigeria: Another Test of The Phillip's Curve", Asian Economic and Financial Review, 5(5), 766-778.

Ormerod, P., Rosewell, B. and Phelps P. (2009). "Inflation/Unemployment Regimes and the Instability of the Phillips Curve". Economics, Discussion Paper,No.43, https://www.researchgate.net/publication/46457959_InflationUnemployment _Regimes_and_the_Instability_of_the_Phillips_Curve/link/0e60be81f0c493af a4b15544/download.

Önder, A. Ö. (2006). "The Stability of the Turkish Phillips Curve and Alternative Regime Shifting Models". Ege University Working Papers in Economics 2006, Working Paper No: 06/02.

Özçelik, Ö. and Uslu, N. (2017). "Analysis of Relationship Among Economic Growth, Unemployment and Inflation by VAR Model: The Case of Turkey (2007 - 2014)". Ekev Journal of Academy, 69, 31-51.

Özer, M. O. (2020). "Analysis of the Long-Term Relationship Between Inflation and Unemployment Rates in Turkey: Fourier Approach to Phillips Curve". Pamukkale University Journal of Social Sciences Institute, 39, 179-192.

Öztürk, S. and Emek, M. L. (2016). "Phillips Curve Analysis for Turkey by April and October Datas Belong the Years Between 1997-2006". Balkan Journal of Social Sciences, 5, 64-74.

Petek, A. and Aysu, Y. (2017). "Philips Curve: Turkey Case (1980-2015)". Journal of Current Researches on Business and Economics, 7, 53-64.

Phillips, A.W. (1958). "The Relation Between Unemployment and The Rate of Change of Money Wage Rates in the United Kingdom: 1861-1957". Economica, 25, 283-299.

Russell, B. and Banerjee, A. (2008). "The Long-Run Phillips Curve and NonStationary Inflation". Journal of Macroeconomics, 30, 1792-1815.

Samanhyia, S. (2014). "The Expectations - Augmented Philips Curve Evidence from Ghana". International Journal of Economics. Commerce and Management, II(11), 1-21.

"İnsan ve Toplum Bilimleri Araştırmaları Dergisi"
"Journal of the Human and Social Sciences Researches"
[itobiad / 2147-1185]

Cilt/Volume: 10,
Sayı/Issue: 4,
2021

[3189]

Singh, B. K., Kanakaraj, A. and Sridevi, T. O. (2010). "Revisiting the Empirical Existence of the Phillips Curve for India". MPRA Munich Personal RePEc Archive, MPRA Paper No. 31793.

Sköld, E. and Tesfay, K. (2020). "The Relationship Between Inflation and Unemployment in Sweden, https://www.diva-portal.org/smash/get/diva2:1438547/FULLTEXT01.pdf.

Tabar, Ç. and Çetin, I. K. (2016). "Phillips Curve Analysis in the Case of Turkey". Journal of Life Economics, 3 (4): 79-100.

Tajra, H.F. (1999). "The Phillips Curve in Brazilian Economy after Real Plan". The George Washington University, The Minerva Program, 8-45, http://www.gwu.edu/~ibi/minerva/Fall1999/Tajra.Haroldo.pdf.

Tobin, J. (1980). "Stabilization Policy Ten Years After". Brookings Papers on Economic Activity, No: 1, 19-71.

Turner, P. and Benavides, G. (2001). "The Demand for Money and Inflation in Mexico 1980-1999: Implications for Stability and Real Seigniorage Revenues". Applied Economics Letters, 8, 775-778.

Yılmaz, F., Şeker, O. and Pektaş, E. (2019). "Testing the Validity of the Phillips Curve for Turkey with Vector Autoregressive and Markov Switching Models on the Basis of Inflation and Unemployment". International Conference on Eurasian Economies 2019.