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ENFLASYON, İŞSİZLİK VE BÜYÜME İLİŞKİSİ: EAGLES ÜLKELERİ ÖRNEĞİ

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THE RELATIONSHIP BETWEEN INFLATION, UNEMPLOYMENT AND GROWTH: THE CASE OF EAGLES COUNTRIES

ÖZ *Enflasyon, işsizlik ve büyüme ekonominin temel bileşenleridir. Bu üç makro ekonomik göstergenin istikrarlı ve sürdürülebilir olması ülkeler açısından büyük öneme sahiptir. Çünkü bu değişkenler teorik açıdan birbirlerine sıkı sıkıya bağlıdırlar. Bu nedenle konu hakkında iktisat yazınında birçok çalışma yapılmıştır. Bu çalışmada yükselen ve büyümede öncü ekonomiler (Emerging and Growth-Leading Economies) (EAGLEs) ülke grubunda 1997-2019 yılları arasında yıllık veriler kullanılarak enflasyon, işsizlik ve büyüme ilişkisi Konya (2006) bootstrap nedensellik analizi ile incelenmiştir. Analiz sonuçlarına göre Brezilya, Hindistan ve Filipinler'de büyüme enflasyonun nedeni, Çin, Malezya ve Rusya'da ise enflasyon büyümenin nedeni, Malezya'da hem büyüme işsizliğin nedeni hem de işsizlik büyümenin nedeni, Türkiye ve Rusya'da ise işsizlik büyümenin nedeni olduğu tespit edilmiştir. Son olarak sadece Brezilya'da işsizlik enflasyonun nedeni olduğu elde edilmiştir.*

Anahtar Kelimeler: ***Enflasyon, İşsizlik, Büyüme, EAGLEs Ülkeleri, Panel Nedensellik Analizi***

ABSTRACT *Inflation, unemployment and growth are essential components of the economy. The stability and sustainability of these three macroeconomic indicators is of great importance for countries. For this reason, there are a lot of studies on the subject in economics literature. In this study, the relationship between inflation, unemployment and growth between 1997 and 2019 in the country group Emerging and Growth-Leading Economies (EAGLEs) was analyzed with Konya (2006) bootstrap causality analysis. According to the analysis results, there is one-way causality from growth to inflation in Brazil, India and the Philippines, and from inflation to growth in China, Malaysia and Russia. bi-directional causality between unemployment and growth in Malaysia, while in Turkey and Russia have been found to be unidirectional causal relationship to the growth of unemployment. Finally, a one-way causality relationship between unemployment to inflation has been found only in Brazil.*

Keywords: ***Inflation, Unemployment, Growth, EAGLEs Countries, Panel Causality Analysis***

INTRODUCTION

The reasons for the differences in income and economic growth between countries that started with the industrial revolution are among the main discussion topics of the growth literature. Economic growth is mainly influenced by traditional production factors. With the effect of globalization, the factor scarcity of countries has disappeared, but income differences betweencountries have not been eliminated. This has shown that traditional factors cannot fully explain growth and that the influence of other factors should also be taken into account. In this context, unemployment and inflation, which are indicators of internal balance, are among the main indicators that come to the fore, under the assumption that other factors are constant.

Generally, with the economic growth, it is expected that there will be an increase in the amount of labor participating in the production process, in other words, the number of employed people will increase. However, it may occur in a situation where economic growth does not provide an increase in employment or even causes an increase in unemployment rates (growth without employment). Therefore, the direction and size of the relationship between growth and unemployment become important in terms of economic stability.

The relationship between inflation and growth, which can be defined as an increase in the general level of prices. II. It started to attract attention after World War II. During this period, it was asserted that inflation and growth were in the same direction, and policies in this direction were implemented. However, the phenomenon of stagflation (inflation with unemployment), which emerged especially after the energy crises in the mid-1970s, showed that the relationship between the two variables could be negative. In addition to situations where there is no relationship between inflation and economic growth, up to a certain threshold value, the relationship between two variablesis positive; There have also been studies that have reached findings that show that the threshold is negative if the threshold is exceeded.

With inflation and unemployment emerging in the short run, economic growth, which is more effective in the long run, can contribute to the stability of factors such as income distribution, technological development, and cost reductions. For this reason, whether there is a relationship between unemployment, inflation, and growth, the direction and size of the relationship, if any, are important in determiningthe macroeconomic policies regarding the output/labor ratio for the purpose of internal balance, the cost of unemployment, supply-demand inflation forecast, etc.

Economic developments, problems, and instabilities have made the relationship between inflation, unemployment, and economic growth an attractive research topic for manyeconomists and caused many applied studies on the subject. It is observed that the hypothesis that there is a relationship between inflation, unemployment, and economic growth is supported to varying degrees in applied studies, but there is no clear consensus on the direction and size of the relationship.

In this context, the study aims to examine the relationship between inflation, unemployment, and economic growth between 1997-2019 and the causality between the Emerging and Growth-Leading Countries (EAGLEs) country group. Although many bilateral empirical studies in the literature examine the relationship between economic growth, unemployment, and inflation, there are not many studies that examine the growth, unemployment rate, and inflation rate together due to the difference in this study,

such as country group, location, and method of analysis. Therefore, this aspect of the study is thought to be important in terms of contribution to the literature.

LITERATURE REVIEW

Studies on Developed Countries

In this part of the study, applied studies on the relationship between unemployment, inflation, and economic growth are examined. In the applied studies examined, it was observed that, in general, bilateral estimates were made as unemployment-inflation, unemployment-economic growth, and inflation-economic growth.

This study developed and applied studies in developing countries and examined in three main categories as studies in Turkey are discussed under the bottom panel and two titles as time-series data-based studies.

Table 1:Main Studies on Developed Countries

	Authors	Countries	TP	Result
Time Series Based Studies	Phillps(1958)	England	1948 1960	There is a negative relationship between prices (costs) and unemployment.
	Okun(1962)	USA	1947 1960	Unemployment decreases as the GDP deficit decreases
	Gruen(1999)	Australasia	1950 1990	Economic growth reduces unemployment.
	Vredin-Warne(2000)	Sweden,USA, England	1959 1998	There is a negative short-term relationship between unemployment and inflation.
	Setterfield (2003)	USA	1990 2000	Unemployment will rise if inflation does not fall below the 2.9% threshold.
	Limvd (2009)	Australasia	1960 2008	Instability in the unemployment rate has inflationary consequences.
	Kitov(2013)	Japan	1980 2012	When the inflation rate falls, unemployment decreases.
	Melguizo(2015)	Spain	1985 2011	It has been concluded that the effect of the GDP ratio on unemployment varies between provinces
	Dunsch(2017)	Germany	1992 2014	The Law of the Arrow applies.
Panel Data-Based Studies	Thirwall-Barton(1971)	17 Developed Countries	1958 1971	They concluded that if the inflation threshold is below 8%, inflation has a positive effect on growth in developed countries.
	Grier-Tullock (1989)	113 developed and developing countries	1950 1981	If the inflation rate is negative, low costs affect growth positively.
	Clark(1997)	85 OECD Member Countries	1950 1970	Inflation negatively affects economic growth.
	Andres-Hernando(1997)	OECD 24	1960 1992	Inflation and growth are negatively related in the long run.
	Mauro-Carmeci (2000)	15 OECD Countries	1965 1995	There is a negative relationship between unemployment and growth in the long run.

	Black vd.(2001)	USA	1964 1989	If the inflation rate is low, there is a positive relationship between inflation and economic growth.
	Ericsson .et al. (2001)	G7 Countries	1980 1998	There is no long-term relationship between inflation and growth.
	Bhattrai(2004)	6 DC	1970 2002	There is a negative relationship between unemployment and inflation.
	Altay .et al. (2011)	G8 Countries	2000 2009	There is a relationship between inflation and unemployment in the long run.
	E Souzo vd. (2015)	193 developed and developing countries	1980 2015	It has been determined that if the desired inflation target is reached, it has a positive effect on economic growth.
	Tesfaselassie(2017)	5Developed Countries	1949 1996	There is a negative relationship between growth and unemployment in high inflation periods.

Studies on Developing Countries

It is seen that policy proposal aimed at solving economic problems generally come to the fore in studies on developing countries. However, when the applied studies were examined, it was found that the researchers could not reach a common view on both these policies and the relationship between inflation, unemployment, and growth.

Table 2: Main Studies on Developing Countries

	Authors	Countries	Time Period	Result
Time Series Based Studies	Fry (1981)	7 Pacific Countries	1970 1980	There is an inverse causality between inflation and economic growth.
	Ma (1998)	Colombia	1955 1997	Inflation reduces growth.
	Tajra (1999)	Brazil	1965 1994	There is a negative relationship between unemployment and inflation.
	Mallik.andChowdhury (2001)	5 Developing Countries	1957 1997	There is a positive relationship between inflation and economic growth for each country.
	Turner and Benavides (2001)	Meksika	1980-1999	They found that there is a negative relationship between inflation and unemployment.
	Farija and Carrerio (2001)	Brazil	1980 2000	They concluded that inflation adversely affected growth.
	Valadkhani (2003)	Iranıan	1965 2000	It determined the negative relationship between unemployment and inflation.
	Mubarik (2005)	Pakistan	1973 2000	He claimed that if inflation is above 9%, it affects economic growth negatively.
	Ahmed and Mortaza (2005)	Bangledaş	1980 2005	There is a negative relationship between inflation and growth in the long run.
	Akeju and Olemipekum (2014)	Nigeria	1980 2010	They found that there is a relationship between unemployment and growth in the short and long term.

	Makun and Azu (2015)	Fiji	1982 2012	They found out that there is a long-term relationship between unemployment and economic growth.
	Victor etc (2018)	Hungary	1999 2017	They found that there is a long-term relationship between inflation and unemployment.
Panel Data-Based Studies	Tun Wai (1959)	31 Developing Countries	1938 1959	When the inflation rate is below 13%, it positively affects growth.
	Karmendi and Meguite (1985)	47 Developed and Developing Countries	1950 1977	There is a negative relationship between inflation and economic growth.
	Ghosh and Phillps (1988)	145 Countries	1960 1996	They found that there is a negative relationship between inflation and economic growth.
	Fischer (1993)	83 Countries	1961 1988	He concluded that there is no relationship between inflation and growth.
	Gomme (1995)	82 Countries	1949 1989	The relationship between inflation and economic growth is negative.
	Barro (1995)	100 Countries	1960 1990	Increase in inflation rate decreases growth.
	Khan and Senhadji (2011)	140 Developed and Developing Countries	1960 1998	The inflation rate of 11-12% in developing countries and 1-3% in developed countries has a positive effect on growth.
	Caparole and Skare (2011)	119 Countries	1970 2010	There is a one-way cointegration relationship between economic growth and unemployment.
	Selenteg (2012)	SADC Countries	1980 2008	They concluded that inflation triggered growth negatively in the long run.
	Baharumshah (2016)	94 Developed and Developing Countries	1990 2014	There is a negative relationship between inflation and growth.
	Rouksar et. al. (2017)	6 Developed and Developing Countries	1999 2016	There is a negative relationship between inflation and growth and unemployment and economic growth.
	Manel (2019)	OECD Countries	1990 2013	Inflation has been found to have a significant negative effect on growth.

Table 3: Main Studies on Turkey

	Authors	Countries	TP	Result
Time Series Based Studies	Aşırım(1995)	Turkey	1976 2006	Inflation negatively affects growth.
	Karaca(2003)	Turkey	1987 2002	There is one-way causality from inflation to growth.
	Şentürk and Yaşar(2004)	Turkey	2005 2012	There is a two-sided causality between inflation and growth.
	Berber and Artan(2004)	Turkey	1987 2003	Inflation negatively affects growth.
	Terzi(2004)	Turkey	1924 2002	Inflation negatively affects growth.
	Uysal and Erdoğan(2004)	Turkey	1980 2002	The relationship between inflation and growth varies according to the data period.
	Göktaş(2005)	Turkey	1975 2004	The causality relationship is only from unemployment to growth.

	Terzi and Oltulular(2006)	Turkey	1976 2006	There is a negative relationship between inflation and growth.
	Yüceol(2006)	Turkey	1950 2004	No long-term relationship was found between economic growth and unemployment.
	Yapraklı(2007)	Turkey	1987 2007	There is one-way causality from inflation to growth.
	Taban(2008)	Turkey	1970 2007	There is a negative relationship between inflation and growth.
	Aykırı(2008)	Turkey	1975 2006	Growth reduces inflation.
	Saraç(2009)	Turkey	1988 2007	The relationship between inflation rate and growth varies according to the base (CPI, WPI) under consideration.
	Kılınç(2013)	Turkey	2003 2011	Growth and increase in employment reduce inflation.
	Ortatepe(2013)	Turkey	1960 2012	There is a negative relationship between inflation and economic growth.
	Çondur and Bölükbaş(2014)	Turkey	2001 2010	Growth and inflation affect unemployment.
	Köse(2016)	Turkey	2003 2014	It has been determined that inflation and unemployment have a mutually negative relationship.
	Ayvaz and Yüksel/2017	Turkey	1990 2017	Inflation negatively affects growth.
	Uğurlu(2018)	Turkey	1960 2015	Turkey has detected it is not effective in reducing the increasing rate of growth in unemployment.
	Kahraman and Uslu(2018)	Turkey	1996 2016	In the long run, unemployment affects inflation negatively.
-Panel Data-Based Studies	Grier and Tullock(1989)	Turkey and 112 Countries	1951 1980	Inflation negatively affects the growth
	Dornbusch-Fischer(1993)	55 Dev.(ing)	1970 1992	Low inflation positively affects growth.
	Burdekinvd(2000)	94 Developed and Developing Countries (Turkey)	1967 1992	If the inflation rate is above the 3% threshold, it will negatively affect the growth
	Gilman-Nakov(2004)	Turkey and 28 OECD Countries	1961 1997	Inflation affects growth negatively.
	D.Brito and Brianne(2009)	46 Developing (Turkey)	1980 2006	Inflation does not affect economic growth.
	Capore and Skare(2010)	Turkey and 118 Countries	1970 2010	There is a cointegration relationship between employment, inflation, and output growth.
	İlker Dilber etc (2015)	Turkey and 28 AB	2001 2011	There is a long-term relationship between economic growth and unemployment.
	Aydın/2017	Regions Turkey	2005 2013	If the inflation rate is below 7.98% and growth increases, unemployment decreases.
	Turgut etc Çoban(2018)	Turkey's 12 Regions	2004 2014	Unemployment and growth are negatively related.

Note: TP show that time period.

DATA

In this study, annual data between 1997 and 2019 were used for 14 countries whose data we can access from the country group Emerging and growth-leading countries (EAGLEs). The unemployment data are taken from the ILO estimator (International labor organization) published by the World Bank on the world development index. Inflation and GDP (Gross Domestic Product) were obtained from the international financial institutions (IFS). The GDP series, which is taken to represent the growth, has been made real with the help of a deflator and its natural logarithm has been taken by converting it into US dollars to maintain the integrity.

Table 4: Descriptive Statistics

	Mean	Max.	Min.	Std. Dev.	Skewness	Kurtosis
GDP	11.672	13.062	10.713	0.523	0.378	2.372
CPI	9.497	85.746	-1.710	11.777	4.162	24.097
UNEM	5.761	13.520	0.398	3.390	0.663	2.323

METHODOLOGY

Konya's (2006) causality analysis was used in the study. To do this test, we first need to look at the cross-sectional dependencies of the countries in the panel, because a shock that occurs in one country as a result of globalization and the integration between countries may affect other countries. Secondly, we need to look at the slope homogeneities based on the assumption that countries have a heterogeneous structure due to their differences in development stages (Menyah et al. 2014: 389). It is the Lagrange multiplier (LM) test developed by Breuschand Pagan (1980) to measure cross-sectional dependency. If we estimate the LM test according to the panel in equation 1

$$y_{it} = \delta_i + \theta_i \beta_{it} + \varepsilon_{it} \; for \; i = 1,2,\dots,N \; and \; t = 1,2,\dots,T \qquad (1)$$

T and N show the time and unit size in the panel, respectively. In this test, the null hypothesis is that there are no dependencies between the sections, and the unit hypothesis is tested against the unit hypothesis that there are at least two dependencies between sections. The Breuschand Pagan (1980) test was formulated as follows for a long time against a small number of units (Yılancı and Özgür, 2019: 24799).

$$LM = \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} T_{ij} \hat{\rho}_{ij}^2 \sim \frac{X^2 \mathrm{N}(\mathrm{N}-1)}{2} \qquad (2)$$

$\hat{\rho}_{ij}$, shows the estimation of the correlation coefficients obtained from the residues of equation 1. If the unit size (N) is greater than the time dimension, it would be more accurate to use the following test developed by Pesaran (2004) instead of the LM test statistic.

$$CD_{LM} = \sqrt{\frac{1}{N(N-1)} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \left(T_{ij} \hat{p}_{ij} - 1\right)} \sim N(0,1) \qquad (3)$$

CD_{LM}r.test was used in cases where N is greater than L, later Pesaran (2004) developed a new test for cases where N and T are large.

$$CD = \sqrt{\left(\frac{2T}{(N(N-1)}\right)\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{p}_{ij}\right)} \sim N(0,1) \quad (4)$$

Later, Paseranand Yamagata (2008) developed the following test that gives better results in large panels.

$$LM_{adj} = \sqrt{\left(\frac{2}{N(N-1)}\right)}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{p}_{ij}\frac{(T-k)\hat{p}_{ij}^2-\mu_{Tij}}{\sqrt{v_{Tij}^2}} \sim N(0,1) \quad (5)$$

It shows the expected value of the variance and$\hat{p}_{ij}$'s the k, number of regressors

Panel causality test

Konya 2006 causality analysis is based on the seemingly unrelated regression (SUR) method proposed by Zellner (1962) and critical values are obtained with the bootstrap process. Due to these features, unit root and cointegration analyzes are not required before the causality test. The test provides causality results for each country separately. Therefore, the primary condition for the test is that the cross-sectional dependency and the panel have a heterogeneous structure (Konya, 2006: 981). The testing process based on the SUR system is as follows

$$GDP_{1,t} = a_{1,1} + \sum_{l=1}^{r_1}\beta_{1,1,l}GDP_{1,t-1} + \sum_{l=1}^{r_1}\theta_{1,1,l}CPI_{1,t-1} + \varepsilon_{1,1,t}$$

.

. (6)

.

$$GDP_{N,t} = a_{1,N} + \sum_{l=1}^{r_1}\beta_{1,N,l}GDP_{N,t-1} + \sum_{l=1}^{r_1}\theta_{1,N,l}CPI_{N,t-1} + \varepsilon_{1,N,t}$$

and

$$CPI_{1,t} = a_{1,1} + \sum_{l=1}^{r_2}\beta_{1,1,l}CPI_{1,t-1} + \sum_{l=1}^{r_2}\theta_{1,1,l}GDP_{1,t-1} + \varepsilon_{1,1,t}$$

.

. (7)

.

$$CPI_{N,t} = a_{1,N} + \sum_{l=1}^{r_2} \beta_{1,N,l} CPI_{N,t-1} + \sum_{l=1}^{r_2} \theta_{1,N,l} GDP_{N,t-1} + \varepsilon_{1,N,t}$$

$$GDP_{1,t} = a_{1,1} + \sum_{l=1}^{r_3} \beta_{1,1,l} GDP_{1,t-1} + \sum_{l=1}^{r_3} \theta_{1,1,l} UNEM_{1,t-1} + \varepsilon_{1,1,t}$$

.

. (8)

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$$GDP_{N,t} = a_{1,N} + \sum_{l=1}^{r_3} \beta_{1,N,l} GDP_{N,t-1} + \sum_{l=1}^{r_3} \theta_{1,N,l} UNEM_{N,t-1} + \varepsilon_{1,N,t}$$

and

$$UNEM_{1,t} = a_{1,1} + \sum_{l=1}^{r_4} \beta_{1,1,l} UNEM_{1,t-1} + \sum_{l=1}^{r_4} \theta_{1,1,l} GDP_{1,t-1} + \varepsilon_{1,1,t}$$

.

. (9)

.

$$UNEM_{N,t} = a_{1,N} + \sum_{l=1}^{r_4} \beta_{1,N,l} UNEM_{N,t-1} + \sum_{l=1}^{r_4} \theta_{1,N,l} GDP_{N,t-1} + \varepsilon_{1,N,t}$$

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$$CPI_{1,t} = a_{1,1} + \sum_{l=1}^{r_5} \beta_{1,1,l} CPI_{1,t-1} + \sum_{l=1}^{r_5} \theta_{1,1,l} UNEM_{1,t-1} + \varepsilon_{1,1,t}$$

.

. (10)

.

$$CPI_{N,t} = a_{1,N} + \sum_{l=1}^{r_5} \beta_{1,N,l} CPI_{N,t-1} + \sum_{l=1}^{r_5} \theta_{1,N,l} UNEM_{N,t-1} + \varepsilon_{1,N,t}$$

and

$$UNEM_{1,t} = a_{1,1} + \sum_{l=1}^{r_6} \beta_{1,1,l} UNEM_{1,t-1} + \sum_{l=1}^{r_6} \theta_{1,1,l} CPI_{1,t-1} + \varepsilon_{1,1,t}$$

.

. (11)

.

$$UNEM_{N,t} = a_{1,N} + \sum_{l=1}^{r_6} \beta_{1,N,l} UNEM_{N,t-1} + \sum_{l=1}^{r_6} \theta_{1,N,l} CPI_{N,t-1} + \varepsilon_{1,N,t}$$

$l.$ shows the optimal lag length $N, i = 1, \dots, N,$ number of countries in the panel $t, t = 1, \dots, T$ shows times. $\theta_{1,1,l}$ GDP and CPI The significance is tested using the Wald test in the measurement of the causality between. The same is true for other equations. While lag lengths are not allowed to vary from country to country, for each pair of equations, for example, equation 6 and equation 7 ($r_1$ve r_2) The information criterion that minimizes the Akaike criterion was chosen for (Konya, 2006: 983).

EMPIRICAL TEST RESULTS

Table 5: Cross-Section Dependence Test

Varb. / Test	GDP	CPI	UNEM
	t-stat	t-stat	t-stat
LM	181.432[a] (0.000)	200.796[a] (0.000)	118.892[b] (0.026)
CD_{LM}	6.703[a] (0.000)	8.139[a] (0.000)	2.067[b] (0.019)
CD	-1.624[c] (0.052)	-0.327[a] (0.372)	-1.893[b] (0.029)
LM_{adj}	72.071[a](0.000)	22.042[a] (0.000)	48.135[a] (0.000)

Note: a, b, c show significance at 1%, 5%, 10% level, respectively.

For all models analyzed according to Table 5, both the cross-sectional dependency tests are significant. In other words, there is a cross-sectional dependency between units. For this reason, it will be appropriate to use tests that take into account cross-section dependence in our analysis.

Table 6: Bootstrap panel causality test results

	GDP⟶CPI				CPI⟶GDP			
Countries	**Wald**	**Critical Value**			**Wald**	**Critical Value**		
	t-stat	**%1**	**%5**	**%10**	**t-stat**	**%1**	**%5**	**%10**
Bangladesh	1.3	120.	66.3	46.8	41.6	154.9	103.9	85.4
Brazil	8.8[c]	20.9	11.3	7.8	0.1	5.2	3.3	2.39
China	34.1	73.1	50.0	40.9	9.5[b]	13.3	6.2	4.27
Egypt	2.4	68.5	39.9	28.8	4.9	33.3	21.3	16.7
India	33.4[b]	33.7	19.6	14.8	2.5	16.2	11.3	9.27
Iran	1.8	57.5	31.6	22.3	11.2	62.5	43.2	35.5
Malaysia	10.2	47.9	26.7	18.8	30.2[c]	51.4	35.7	29.8
Mexico	6.4	69.6	38.7	28.7	20.6	52.9	37.6	30.9
Nigeria	0.2	22.4	11.9	8.6	0.5	9.6	5.1	3.4
Pakistan	3.1	22.4	11.0	7.1	6.5	16.2	11.1	8.7
Philippines	14.9[b]	22.7	11.7	7.9	1.7	15.9	10.1	7.8
Russia	0.1	22.8	12.3	8.8	57.8[a]	52.8	36.5	30.7
Turkey	2.4	45.3	28.9	22.8	3.1	16.6	10.9	8.9
Vietnam	13.6	57.6	35.9	28.2	0.5	15.2	10.2	8.1

Note: a, b, and c show statistical significance at 1%, 5%, and 10% levels, respectively. Critical values were obtained with 10,000 bootstrap cycles. It was determined as 1 according to the Akaike criteria.

According to Table 6, from GDP to Inflation, there are unidirectional causality relationships in Brazil, India, and the Philippines, and from Inflation to GDP in China, Malaysia and Russia. For other countries, no causality relationship has been found for GDP and Inflation. It is thought that the results obtained on the basis of countries are due to the following reasons; in Brazil in the period in question was the weak monetary and fiscal policies implemented. In addition, the fixed exchange rate policy implemented led to devaluation and the decrease in foreign capital inflows, bringing with it the 2002 economic crisis (Kutlar ve Gündoğan, 2012:280; Ponzoni and Zilli, 2015:77). For India, the reason for inflation from the growth that occurred; low per capita income and an ever-increasing population are thought to be the cause of the causality from growth to inflation (Uysal, 2019: 247). The reason for the causality from growth to inflation in the Philippines in this period is the exchange rate movements of the country, the government's tax expenditures, expansionary money supply and oil prices (Zayed et al., 2019: 7). In China, it has reached very high growth figures with the liberalization and globalization policies it has put into practice. The Chinese Central Bank wants to slow down the economic growth a little in the period of 2006-2007 in order to make the growth momentum sustainable. During this period, it increased the official interest rates 8 times. In addition, the Chinese government uses bank loan quotas as a monetary policy tool to cut not only interest rates, but also liquidity. The stable inflation in China can be listed as the reason for the growth (Li and Lui, 2012: 1; Öztürk, 2011: 134). In the Malaysian economy, the causality relationship from inflation to growth is stated as the reason for the fluctuations in oil prices (Öksüzler and İpek, 2011:21.; Norr et all., 2007: 339). In times of increasing unemployment in Russia, the country's economy shrinks. In periods when the number of unemployed people in the country is very high, expenditures decrease. This situation negatively affects consumption and the decrease in consumption suppresses the demand, which leads to low inflation. Firms that do not make enough sales will also negatively affect their profits and the

companies in question will become unable to make new production and investments, it is stated that this leads to a decline in growth (Yüksel, 2016:56).

Table 7: Bootstrap panel causality test results

	GDP↛UNEM				UNEM↛GDP			
Countries	**Wald**	**Critical Value**			**Wald**	**Critical Value**		
	t-stat	**%1**	**%5**	**%10**	**t-stat**	**%1**	**%5**	**%10**
Bangladesh	0.3	32.1	18.2	13.0	3.1	37.2	20.8	15.2
Brazil	9.6	104.6	65.2	50.9	0.7	88.7	51.8	39.1
China	1.3	14.3	8.5	6.2	21.4	44.1	27.7	21.8
Egypt	2.0	34.3	17.6	11.9	38.0	57.9	32.9	23.9
India	7.1	41.6	27.9	22.3	0.1	48.5	24.6	16.9
Iran	0.2	25.6	12.7	8.6	3.9	39.8	21.4	14.9
Malaysia	10.9[b]	17.4	9.5	6.4	21.8[b]	38.9	17.9	11.4
Mexico	0.7	13.3	6.8	4.6	4.9	39.9	25.0	19.4
Nigeria	0.2	24.0	13.9	10.2	2.2	33.8	17.0	10.8
Pakistan	3.2	47.3	25.1	18.1	3.5	48.4	27.9	21.7
Philippines	5.7	39.1	23.5	17.9	2.4	49.3	26.3	18.3
Russia	0.2	23.8	14.3	10.6	72.9[b]	76.4	48.4	37.8
Turkey	40.1	94.9	60.9	48.4	25.6[c]	58.9	30.0	19.9
Vietnam	7.0	28.5	14.7	10.1	3.5	35.9	16.9	10.9

Note: a, b, and c show statistical significance at 1%, 5%, and 10% levels, respectively. Critical values were obtained with 10,000 bootstrap cycles. It was determined as 1 according to the Akaike criteria.

When we look at Table 7, it is seen that there is a bidirectional causality relationship between GDP and Unemployment in Malaysia. Also it is seen that towards unemployment to gdp unidirectional causality in Turkey and Russia. For the results obtained for the countries in this table, We got that there is a causality from GDP to unemployment in Malaysia. The reason for this can be stated as the significant increase in unemployment rates in some period intervals and the subsequent global crisis affecting the domestic manufacturing sector in Malaysia negatively and the country experiencing a serious low domestic and foreign demand shock at certain stages of these period intervals (Noor and Nor, 2007: 340). Especially in this period he spent in the range of 2001 along with the economic transformation of Turkey's economy, new production methods, consumption patterns and has required the employment structure. The shift of the production structure from the agricultural sector to the service sector caused the employment structure to shift from manual power to brain power. Firms aiming to produce as required by the new economic structure have started to seek individuals specialized in these fields. The dissolved population from the agricultural sector failed to achieve the specialization required by urban economies, which contributed to the creation of unemployment. These negative situations that occur in unemployment are listed as negative effects on economic growth (Umut, 2012: 112). Russia has undergone significant economic transformations since the early 1990s. In the relevant period, the country became open to the outside by transitioning to a free market economy. On the other hand, the transition to a liberal economy adversely affected the Russian economy and the country started to experience growth problems after inflation and unemployment problems. In addition, in the said period, the gdp of unemployment also led to shrinkage (Yüksel, 2016: 44).

Table 8: Bootstrap panel causality test results

	CPI↛UNEM				UNEM↛CPI			
Countries	**Wald**	**Critical Value**			**Wald**	**Critical Value**		
	t-stat	**%1**	**%5**	**%10**	**t-stat**	**%1**	**%5**	**%10**
Bangladesh	5.6	23.1	14.6	11.1	0.2	22.9	11.3	7.2
Brazil	2.5	8.3	5.7	4.5	11.8[a]	10.4	5.2	3.4
China	0.1	6.3	3.6	2.7	5.6	33.9	19.4	14.4
Egypt	1.3	25.4	16.3	12.6	1.7	46.0	23.9	16.3
India	0.9	7.7	5.1	4.0	0.7	30.7	15.3	10.4
Iran	0.8	13.0	6.7	4.5	9.8	125.1	68.7	48.3
Malaysia	1.1	6.5	3.6	2.4	6.3	58.8	31.9	22.8
Mexico	0.6	8.41	4.5	3.2	0.1	18.1	9.6	6.6
Nigeria	10.1	41.9	27.8	23.5	6.3	73.2	43.6	33.2
Pakistan	28.1	50.6	35.9	30.1	11.8	168.2	94.6	71.5
Philippines	11.2	25.9	19.1	16.3	6.4	21.7	10.5	7.1
Russia	4.6	28.6	19.4	15.8	0.5	11.7	6.2	4.1
Turkey	4.6	22.7	13.8	10.6	0.5	23.8	11.6	7.8
Vietnam	0.9	14.3	7.2	4.7	33.1	117.9	61.1	42.6

Note: a, b, and c show statistical significance at 1%, 5%, and 10% levels, respectively. Critical values were obtained with 10,000 bootstrap cycles. It is determined as 1 according to the Akaike criteria.

According to Table 8, it is seen that there is a one-way causality relationship from Unemployment to Inflation only in Brazil. No causal relationship between Inflation and Unemployment has been found in other countries. It is thought that the results obtained on the basis of countries are due to the following reasons It is thought that the results obtained on the basis of countries are due to the following reasons, In Brazil, the causality relationship from unemployment to inflation was reflected in the fact that the foreign exchange shocks experienced in the 2001-2002 period caused inflation by increasing domestic prices, and in this case, it was reflected in the labor force figures (Bevilaqua and Azevedo, 2005: 1).

RESULT

As developments in inflation, unemployment, and growth rate are closely related to daily life, they are closely followed by almost all economic units. Especially in the short term, the most attention is paid and the consequences are seriouslyUnemployment and inflation are the leading economic problems. Economic growth, on the other hand, is an economic indicator whose effect occurs in the long term and its reflection on society is more related to the justice of income distribution. The combination of unemployment and inflation rates is also expressed as economic discontent. Therefore, the economic discontent index will tend to decrease in the country in question.

Economic discontent, which is extremely important especially for developed and developing countries, is also of great importance for income distribution and sustainable economic growth. In this context, in this study, the relationship between inflation, unemployment, and growth in the Emerging and Growth-Leading Economies (EAGLEs) country group was examined with bootstrap panel causality analysis in Konya (2006). According to the analysis results; It has been found that there is a unidirectional causality

relationship between the variables in Brazil, India, and the Philippines from growth to inflation, and in China, Malaysia, and Russia from inflation to growth. In other countries, on the other hand, no causal relationship from inflation to growth or from growth to inflation has been obtained.

According to the results of the causality relationship from growth to unemployment; It is seen that there is a bidirectional relationship in Malaysia. The right to unemployment and growth in Turkey and was obtained as a one-way relationship in Russia. On the other hand, from unemployment to inflation, it has been determined that there is a one-way relationship only in Brazil. In other countries, no causality relationship from unemployment to inflation has been obtained. The results of our study support the results that he found in parallel with Carisol and Gaston (2019), Chang and Zi (2012), Pranadavd (2013), Kazan and Rayhamul (2015), Kanehan and Chandan (2011), and Mananperi (2014).To prevent these negative scenarios in these countries, it is generally recommended that countries implement tight monetary and fiscal policies to prevent inflation. Although these policies implemented in the short term reduce the total demand in the economy and increase unemployment, in the following processes, production capacity increases with the provision of price stability and more production prevents the general level of prices from going up. To increase production, reducing production costs, expanding the volume of goods and services produced, providing new employment opportunities and especially. In some countries, it may be suggested that the industry sector, which is an important source of income, be subsidized by the state. In future studies on this subject, the underlying causes of inflation, unemployment, and growth problems in these countries can be studied in more detail.

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