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THE RELATIONSHIP BETWEEN INFLATION AND INFLATION UNCERTAINTY IN TURKEY[1]

In economic literature, the idea that inflation increases inflation uncertainty, starting by Okun (1971) and later resuming as Friedman — Ball Hypothesis, has created new discussions about the degree and the direction of the relationship between both variables. The aim of this study is to investigate the causal relationship between inflation and inflation uncertainty and compare the causal relationship for high and low inflation periods in Turkish Economy. The data used in the study are monthly and cover the period of 1988-2010. The whole period has been divided into two sub-periods as 1988-2004 and 2004-2010 to compare high and low inflation periods. In this study, in order to get data on the inflation uncertainty, the optimal ARIMA model was estimated by using Kalman Filter analysis technique. The relationship between inflation and inflation uncertainty was finally tested by using Granger Causality analysis for two periods.

Keywords: inflation, inflation uncertainty, Turkish Economy, Kalman Filter Analysis, Granger Causality

Introduction

Inflation uncertainty affects decisions of economic units and creates negative impacts on economic activities during current and future periods. Negative effect of inflation uncertainty on economic activities includes a decrease in the production, an increase in unemployment and deterioration in distribution of income. Therefore, it is an important fact to be taken into consideration to calculate inflation cost in macroeconomic policy evaluation. One of the most important effects of inflation uncertainty is that it affects finance and capital markets negatively by increasing long-term interest rates. During high inflation uncertainty periods, many savers prefer short-term investment as they are worried of their savings losing value along with unexpected inflation. Similarly, debtors prefer short-term borrowing since they get worried for real debt values to increase along with unexpected deflation. Another effect of uncertainty is that firms tend to short-term borrowing due to the fact that long-term borrowing will be under risk. In finance markets, on the other hand, the most important determinant of long-term interest rate is investors' expected return rate from their investments. If future inflation rate is uncertain, then nominal return of long-term borrowing will be under risk. In such a case, investors look for a higher return rate. So, long-term interest rates will increase. As a result, high interest rate causes investments to decrease, unemployment to increase, and even inflation to increase more also affect other. Inflation uncertainty can also affect other variables which take role in economic decision-making. Generally, since deferred payments are not indexed to inflation, uncertainty will occur in real value of deferred payments set in inflationary periods. During the high uncertainty periods, decisions of economic individuals might not be optimal because they cannot distinguish price changes in their markets or of goods and services which they are interested in general price changes. Inflation uncertainty with these negative effects causes production to decrease and unemployment to increase by damaging the efficiency of price system itself (Lucas, 1973). When the negative effects of inflation and inflation uncertainty are taken into consideration, it is not surprising that economists take an intensive interest in the subject. In theoretical and empirical literature, the idea that inflation increases inflation uncertainty, starting by Okun (1971) and resuming as Friedman — Ball Hypothesis, has created new discussions about the degree and the direction of the relationship between both variables.

Within this framework, the purpose of this study is to investigate the causal relationship between inflation and inflation uncertainty and compare the causal relationship for high and low inflation periods in Turkish Economy. The data used in the study are monthly and cover the period of 1988-2010. The whole period has been divided into two sub-periods as 1988-2004 and 2004-2010. This study differs from previous studies in two ways. First, the goal of this study is to investigate that whether the relationship between inflation and inflation uncertainty changes in high and low inflation periods. There are several studies which investigate the relationship between two variables in the empirical literature. The idea on the subject has been analyzed for different economies with various variables. Most of the studies used the whole period of a given country, and have not considered high and low inflation processes as separate periods. Also, most of the studies have examined the relationship for the countries that have usually a stable inflation structure in a given period. The results for these countries generally support that inflation creates inflation uncertainty. Here the question is whether the relationship between two variables changes in an economy within both stable and unstable inflation structures. As known, Turkish experience in terms of unstable inflation process is a very good example for this literature.

In addition, the methodology of this study is different from previous studies. In empirical literature, many different measures were used to get uncertainty series. A common measure is to use standard deviations of variables. Most of approaches pay attention to time variation in the uncertainty variables, implicitly, restrictedly and indirectly. However, if there are specification errors such as omitted variables or linear approximation of nonlinear forms, these approaches provide biased, inefficient and inconsistent estimates. Instead, we suggest to use Kalman Filter Technique to get time varying uncertainty series. This technique is not a substitution for the traditional econometric techniques, but it is complementary to them. This technique is chosen as the major analytical tool in this study because of many advantages. Kalman Filter Technique enables to provide time varying as the best and unbiased estimates. The significance of this study is to get inflation uncertainty series by using Kalman Filter Technique.

Recent Literature

In the theoretical literature, Okun (1971) first argued that inflation positively associated with inflation uncertainty. Okun (1971) emphasized that due to money policies becoming unpredictable in countries with high inflation, these economies would have unstable inflation structure. He also interpreted increasing instability of inflation as an indicator of increasing uncertainty. Friedman (1977) also emphasized the fact that high inflation causes higher inflation uncertainty. Ball (1992)[1] formalized Friedman's hypothesis within the framework of asymmetric information game between public and policy makers, and in literature his model found its place as Friedman-Ball hypothesis[2]. According to Ball' model, during periods of high inflation, there is greater uncertainty about monetary policy and the future of inflation. Therefore, higher inflation creates greater inflation. In contract, Cukierman and Meltzer (1986) argued that greater uncertainty of inflation causes higher inflation. In literature, the hypothesis which is known as Cukierman-Meltzer was first analyzed by Cukierman and Meltzer based on Barro-Gordon model[3]. According to Cukierman and Meltzer (1986), policy makers create surprise inflation in order to boost production. Thus, inflation uncertainty causes monetary growth and inflation. On the other hand, Holland (1995)[4] argued that there would be a negative relationship between inflation and inflation uncertainty. Holland (1995) believed that when inflation uncertainty increase along with inflation, the Central Bank which aims independent and long-term price stability, takes action and selects the way of reducing money supply in order to eliminate the negative effects of inflation uncertainty.

In the empirical literature, the relationship between inflation and inflation uncertainty has been statistically examined by many studies for different countries. Yamak (1987), Telatar (2003), Erdoğan ve Bozkurt (2004), Omay (2008), Erkam (2008), Özdemir ve Fisunoğlu (2008), Özer ve Türkyılmaz (2009), Korap ve Saatçioğlu (2009) found that Friedman-Ball Hypothesis exists for Turkish economy. Other studies concluded Cukierman-Meltzer Hypothesis in Turkish economy. Gries and Perry (1988) found that there was positive a relation between inflation and inflation uncertainty for all G7 countries. Fountas and the others (2004) supported Friedman-Ball Hypothesis for Germany, Holland Hypothesis for Netherlands. Conrad and Karanasos (2005) obtained findings for the validity of Cukierman-Meltzer Hypothesis for Japan. Karanasos and Schurer (2008) founded validity of Cukierman-Meltzer Hypothesis for Germany and Netherlands, Holland Hypothesis for Sweden, and Friedman-Ball Hypothesis for Germany, Netherlands and Sweden. The findings of some studies are summarized in Table 1.

Data and Methodology

In this study, the relation between inflation and inflation uncertainty was statistically investigated

[1] For more information: Ball (1992, 371-388).

[2] The presence of vision about a positive relationship between inflation and inflation uncertainty is supported by Flemming (1976), Fischer ve Modigliani (1978). For more information: Flemming (1976) ve Fisher ve Modigliani (1978, s.810-833). In addition, an opinion is put forward by Pourgerami ve Maskus (1987) as alternative argument in response to Friedman-Ball hypothesis. It is that inflation reduces inflation uncertainty. For more information: Pourgerami ve Maskus (1987, 287-290).

[3] For more information: Barro-Gordon (1983, 589-610).

[4] Holland has revealed the first survey about the topic with "Does Higher Inflation Lead to More Uncertainty Inflation?" 1984.

Table 1

Empirical Literature

	Methods	Periods	Countries	Results
Logue, Willet (1976)	It was tested by using inflation's mean and standard deviation	1948–1970 (annual)	41 Countries	When inflation increases, government's unrealistic stabilization programs are declared and then uncertainty increases
Evans, Wachtel (1993)	Markov Model	1955–1991 (quarterly)	USA	Inflation uncertainty causes inflation
Yamak (1996)	Two different methods was used as ARCH types	1949–1992 (annual)	Turkey	Inflation causes inflation uncertainty
Grier, Perry (1998)	GARCH	1948–1993 (monthly)	G7	Friedman-Ball Hypothesis. Also, inflation uncertainty weakly affects inflation
Hwang (2001)	ARFIMA GARCH GARCH-M	1947–1992 (monthly), 1926–1940 (monthly)	USA	Inflation weakly and negatively affects inflation uncertainty and uncertainty effects inflation
Fountas (2001)	GARCH	1885–1998 (annual)	England	Inflation causes inflation uncertainty
Berument and the others (2001)	EGARCH	1986–2000 (monthly)	Turkey	The positive shocks which occurred in inflation uncertainty significantly affect inflation
Telatar (2003)	ARCH	1987–2001 (monthly)	Turkey	Inflation causes inflation uncertainty
Erdoğan, Bozkurt (2004)	ARCH GARCH TARCH	1983–2003 (monthly)	Turkey	Inflation causes inflation uncertainty
Fountas and the others (2004)	EGARCH	1960–1999 (monthly)	Germany, France, Spain, England, Netherlands, Italia	Friedman-Ball Hypothesis for Germany and Holland Hypothesis for Netherlands were founded
Kontonikas (2004)	GARCH-M	1972–2002 (annual)	England	Inflation causes inflation uncertainty
Conrad, Karanasos (2005)	ARFIMA-FIGARCH	1962–2001 (monthly)	USA, Japan, England	Inflation causes inflation uncertainty in all countries. Inflation uncertainty increases inflation in Japan
Özer, Türkyılmaz (2005)	EGARCH	1990–2004 (monthly)	Turkey	Inflation causes inflation uncertainty.
Thornton (2007)	GARCH	Different periods for each countries	12 Countries in emerging markets	In most countries, inflation causes inflation uncertainty.
Erkam (2008)	ARCH GARCH PARCH	1982–2008 (monthly)	Turkey	Inflation causes inflation uncertainty. In addition, inflation uncertainty causes high inflation in short term
Özdemir, Fisunoğlu (2008)	ARFIMA-GARCH	1987–2003 (monthly)	Turkey, Jordan, Philippines	Inflation causes inflation uncertainty. Also, inflation uncertainty weakly causes high inflation.
Omay (2008)	GARCH	1986–2007 — three different periods	Turkey	The Central Bank tried to protect price stability
Karanasos, Schurer (2008)	PARCH	1962–2004 (monthly)	Germany, Netherlands Sweden	Cukierman-Meltzer Hypothesis for Germany and Netherlands, Holland Hypothesis for Sweden, and Friedman-Ball Hypothesis for three countries were founded
Thornton (2008)	GARCH	1810–2005 (annual)	Argentine	Inflation causes inflation uncertainty. There is the relationship between inflation and inflation uncertainty as positive in short term

End Table 1

	Methods	Periods	Countries	Results
Korap, Saatçioğlu (2009)	EGARCH	1987–2008 (monthly)	Turkey	Inflation causes inflation uncertainty
Caporale and the others (2009)	AR-GARCH	1980–2009 (monthly)	Euro Area	Inflation causes inflation uncertainty.
Türkyılmaz, Ozer (2010)	MGARCH	1997–2008 (monthly)	Turkey	There is a causality relationship between inflation, nominal and real uncertainty and growth. Friedman-Ball and Cukierman-Meltzer Hypothesizes are confirmed
Jiranyakul, Opiela (2010)	EGARCH	1970–2007 (annual)	Indonesia, Malaysia, Philippines, Singapore, Thailand	Inflation causes inflation uncertainty. When inflation increases inflation uncertainty, increasing uncertainty causes inflation
Bhar, Mallik (2010)	EGARCH-M	1957–2007 (monthly)	USA	Inflation causes inflation uncertainty. Also, inflation uncertainty causes inflation in the long term

[*] Markov Model: It is stochastic process which has Markov characteristic. ARCH: Autoregressive Conditional Heteroskedastic, GARCH: Generalized ARCH, EGARCH: Exponential GARCH, EGARCH-M: Exponential Generalized Autoregressive Conditional Heteroskedasticity in the Mean, GARCH-M: The Generalized Autoregressive Conditionally Heteroskedastic in the Mean FIGARCH: Univariate Fractional Volatility-Multivariate GARCH, PARCH: Power ARCH, TARCH: Threshold-GARCH.

and compared for high and low inflation periods of Turkey. The data used were monthly and cover two periods as 1988-2004 and 2004–2010. 1988–2004 and 2004–2010 periods were used as low and high inflationary periods, respectively. Inflation rate variable was obtained from Electronic Data Delivery System, the Central Bank of the Republic of Turkey (TCMB_EVDS). It was derived from Consumer Price Index (1987 = 100) data. The variable was seasonally adjusted[1] .

The econometric process used in this study is as follows: First of all, unit root test procedures developed by Dickey and Fuller (1979) (Augmented Dickey-Fuller (ADF)[2] were applied. After then, Box-Jenkins models of the stationary variable were statistically estimated and inflation uncertainty variable was obtained by using Kalman Filter Technique. Finally, the probable relationships between inflation and inflation uncertainty were investigated by using Granger Causality Analysis[3] and the findings were compared and evaluated for the periods of 1988–2004 and 2004–2010.

In the Kalman Filter estimation technique, the first necessary step is to construct the state space form, which consists of measurement and transition equations (Kalman, 1960). Measurement equation is not different of standard OLS regression equation's coefficient which is added time factor. The following equation (1) is measurement equation.

$$Y_t = \alpha_t + \beta_t X_t + \varepsilon_t, E(\varepsilon_t) = 0 \text{ and } V(\varepsilon_t) = V_t \quad (1)$$

The transition equation is the system of equation how changing parameters of measurement equation change depending over time. In this studying, it was assumed that variable parameters of measurement equation has AR(1) structure. According to (1) number equations, there are two transition equations.

$$\alpha_t = t_1\alpha_t - 1 + \mu_{1t}, E(\varepsilon_t) = 0 \text{ and } V(\varepsilon_t) = q_1 \quad (2)$$

$$\beta_t = t_2\beta_{t-1} + \mu 2_t, E(\varepsilon_t) = 0 \text{ and } V(\varepsilon_t) = q_2 \quad (3)$$

To explain Kalman Filter process, it must be expressed (1), (2), (3) equations by matrix form. (4) and (5) equations are matrix form of (1), (2) and (3) equations.

$$y_t = x_t Z_t + \varepsilon_t \quad (4)$$

$$Z_t = \phi\, Z_{t-1} + \mu_t \quad (5)$$

(4) Equation is expression as matrix of (1) measurement equation. While y represents Y, x does X (including the constant term). The software in the form of the transition equation is (5) equation. Z represent the vector of size 2×1 that has elements α and β, ϕ represent main diagonal. t_1, t_2 represent the matrix of size 2×2 which is zero off-main diagonal and μt, describe the vector of size 2×1 that has elements μ_1, μ_2.

In the first step, by using the initial or unconditional estimates of Z and their variance-covari-

[1] For this, we used Moving-Average Methods. For more information: Winters (1960).

[2] For more information: Dickey, D. and Fuller, W. (1979, 427-431).

[3] For more information: Granger, C. W. J. (1969).

ance matrix P, the conditional estimates of Z and their variance-covariance matrix are obtained from the following equations (6) and (7).

$$Z_{t|t-1} = \phi\, Z_{t-1}, \tag{6}$$

$$P_{t|t-1} = \phi\, P_{t-1}\, \phi' + R. \tag{7}$$

In the second step, the conditional y, the one step ahead prediction error H, and its conditional variance F, are estimated by using outputs of the first step and the following equations (8)–(10).

$$y_{t|t-1} = x_t\, Z_{t|t-1}, \tag{8}$$

$$H_t = y_t - y_{t|t-1}, \tag{9}$$

$$F_t = x_t\, P_{t|t-1} xt' + V, \tag{10}$$

In the final step, the unconditional Z and its variance-covariance matrix P are obtained by utilizing the outputs of the previous steps and the following updating equations (11) and (12).

$$P_t = P_{t|t-1} - (P_{t|t-1} x_t'\, F_t^{-1}\, x_t\, P_{t|t-1}), \tag{11}$$

$$Z_t = Z_{t|t-1} + P_{t|t-1} x_t'\, F_t^{-1} H_t, \tag{12}$$

Once the filter completes all three steps and provides unconditional P and Z, then the unconditional estimates enter into step 1, as being inputs and the filter again starts to work to complete all three steps for $t + 1$ and continues until last time period, $t - 1$. Therefore, the Kalman Filter is known to be a recursive estimation technique through time.

Empirical Findings

In this study, firstly the cycles of inflation are investigated by using Hodrick-Prescot Filter[1] method for a whole period (1988–2010). Then, the whole period is divided into two sub-periods as 1988–2004 and 2004–2010. In Figure 1, trend and cycles of inflation are shown. As seen in Figure 1, after 2004, cycles of inflation in Turkey has more stable trend. When we compare the period of 1988–2004, in which inflationary fluctuations are dominant with the period of 2004–2010, it is observed that inflation variable has more stable in the period of 2004–2010. Therefore, we divide the period of 1988–2010 into the periods of 1988–2004 and 2004–2010.

Actually, in 2002, a new economy policy was preferred with "Implicit Inflation Targeting", which focused on future period inflation targets, with "The Programme for Transition to Strong Economy" in Turkey. This policy covers the period of 2002–2004 in Turkey. Changes in Turkish

[1] For more information: Hodrick ve Prescott, (1981, 6).

Table 2

Descriptive Statistics

	The Period of 1988–2004	The Period of 2004–2010
Mean	0.6859	0.0888
Standart Deviation	0.2124	0.0193
Maximum	1.3059	0.1626
Minimum	0.1827	0.0507
Skewness	0.2405	0.6438
Kurtosis	3.8968	5.0140

Table 3

Unit Root Test Results

	The Period of 1988–2004		The Period of 2004–2010
	Inflation	ΔInflation	Inflation
Intercept	–1.9573	8.9882***	–3.3633**
Trend and Intercept	–2.4606	–9.0256***	–3.5995**
None	–0.9948	–8.9961***	–2.0052**

Note: *** %1 level, ** %5 level are test critical values. Δ: first difference of the variable.

macroeconomic policy in this period are mainly based on Implicit Inflation Targeting. This change means that the transition exists from high inflationary period to low inflationary period.

The descriptive statistics of the inflation series for both periods are given in Table 2. As seen in Table 2, for the period of 1988–2004, maximum and minimum values of inflation are 1.31 and 0.18, respectively. The standard deviation of inflation is found as 0.21. For the period of 2004–2010, maximum and minimum values of inflation are 1.16 and 0.05, respectively. The standard deviation of inflation is found as 0.02 for the same period. The period of 2004–2010 has lower standard deviation value than the period of 1988–2010. It shows that the period of 2004–2010 has a more stable structure in terms of inflation. Table 2 also presents skewness and kurtosis statistics[2] of the inflation. Both statistics imply that inflation has the right skewed distribution and long–tailed for the period of 1988–2004.

[2] The skewness is a measure of asymmetry of the distribution of the series around its mean, and the skewness of a symmetric distribution, such as the normal distribution, would be zero. Kurtosis measures the peakedness or flatness of the distribution of the series, and the kurtosis of the normal distribution is 3. If the kurtosis exceeds 3, the distribution would be peaked relative to the normal. So, if the variable's skewness takes a value greater than 0, it has the right skewed distribution, but if the variable's kurtosis takes a value greater than 3, it means that it has the long-tailed.

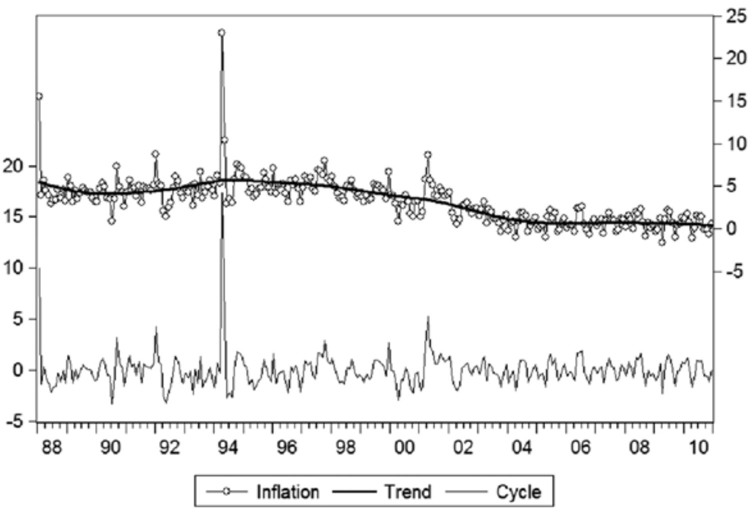

Fig. 1. *Hodrick-Prescott Filter Results*

Table 4

ARIMA Models Results

ARIMA(1,1,3) Model : The Period of 1988–2004				
	Coefficient	**Std.Error**	***t*–Statistic**	**Probability**
C	–0.0027	0.0025	–1.0560	0.2923
AR(1)	0.8722	0.0908	9.5961	0.0000
MA(1)	–0.4785	0.1085	–4.4098	0.0000
MA(2)	–0.1826	0.0812	–2.2491	0.0257
MA(3)	–0.2500	0.0724	–3.4536	0.0007
R2 0.20 **AR Unit Root** .87 **MA Unit Root** .95 –.24 –.24				
ARMA(1,3) Model: The Period of 2004–2010				
C	0.0848	0.0051	16.4880	0.0000
AR(1)	0.6328	0.1226	5.1603	0.0000
MA(1)	0.4174	0.1374	3.0374	0.0032
MA(2)	0.5493	0.1166	4.7102	0.0000
MA(3)	0.3492	0.1269	2.7511	0.0074
R2 0.84 **AR Unit Root** 0.63 **MA Unit Root** 0.07+0.79*i* 0.07–0.79*i* –0.56				

Note: The correlograms of inflation series were computed to define which ARIMA model was best. Various ARIMA models were run with different orders: ARIMA(1,1,1), ARIMA(1,1,2), ARIMA(1,1,3), ARIMA(2,1,1), ARIMA(2,1,2), ARIMA(2,1,3), ARIMA(3,1,1), ARIMA(3,1,2), ARIMA(3,1,3) for both periods.

The results of unit root tests (ADF) for the level and first differences of inflation series are summarized for both periods in Table 3. According to the unit root test results, inflation is stationary in the first difference for the period of 1988–2004. But it ensures the condition of stationary in its level for the period of 2004–2010.

In order to get series of inflation uncertainty for both periods under the Kalman Filter techniques, firstly, the best ARIMA[1] models for inflation series must be determined. ARIMA (1, 1, 3) and ARMA (1, 3) are founded as the best ARIMA models for the periods of 1988–2004 and 2004–2010, respectively. In Table 4, the results of the best ARIMA models are given for both periods. As seen in Table 4, R2 statistics of ARIMA models are 0.20 and 0.84, respectively. In both models, the absolute values of AR and MA roots are lower than unity. These mean that estimated AR processes are stationary and estimated MA processes are invertible. In addition, the estimated coefficients are statistically significant at %10 level for both models.

After Box-Jenkins models are estimated for both periods, the Kalman Filter Techniques is run and inflation uncertainties are derived for both periods. In Figures (2–5), inflation and inflation uncertainty series are separately shown for both periods. Figure 3 reveals that inflation uncertainty takes on its highest value between 1994–1995 years. However, for the second period Figure 5 shows that inflation uncertainty takes on its highest value between 2009–2010 years. When all figures are totally investigated, it can be said that there is a positive relationship between inflation and inflation uncertainty. Particularly, it seems that there exist parallel moves between both variables; inflation increases (decreases) as inflation uncertainty increases (decreases).

As a final step of this study the relationship between inflation and inflation uncertainty is statistically investigated for both periods. For this purpose, Granger Causality[2] test is applied to two variables. Table 5 presents the statistics of Granger causality tests between inflation and inflation uncertainty for both periods. The hypothesis which states that there is no causal relationship from inflation uncertainty to inflation is rejected for both periods. This finding implies that inflation causes inflation uncertainty in terms of Granger causality for Turkey supporting Friedman-Ball hypothesis. In addition, the hypothesis which implies no causality from inflation uncertainty to inflation is rejected only for the period of 1988–2004, supporting Cukierman-Meltzer hypothesis. For the second period which

[1] For more information about ARMA models: Box, G.E.P. and G.M.Jenkins (1976, 575).

[2] For more information of Granger Causality: Granger, C. W. J. (1969, 424-438).

The Period of 1988–2004

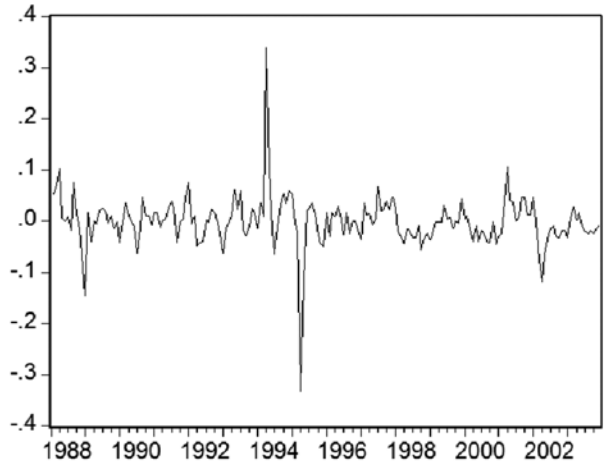

Fig. 2. *Inflation Series*

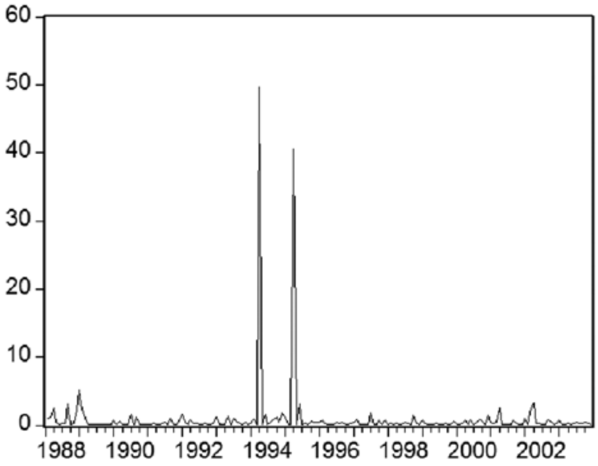

Fig. 3. *Inflation Uncertainty Series*

The Period of 2004–2010

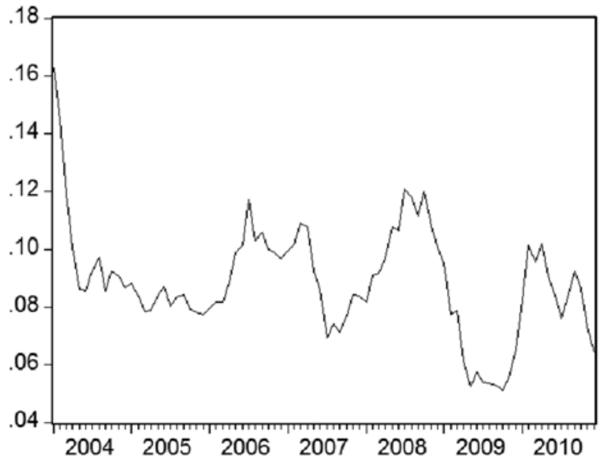

Fig. 4. *Inflation Series*

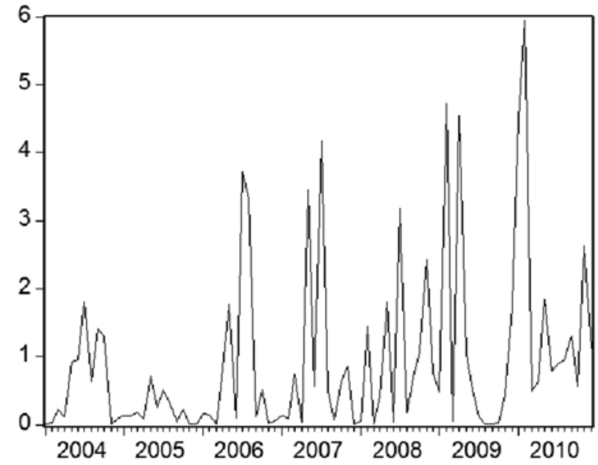

Fig. 5. *Inflation Uncertainty Series*

Table 5

Granger Causality Results

	1988–2004		2004–2010	
Hypothesis	**Inflation uncertainty does not cause inflation**	**Inflation does not cause inflation uncertainty**	**Inflation uncertainty does not cause inflation**	**Inflation does not cause inflation uncertainty**
F-Statistic	3.4267***	2.6732**	1.9584*	0.8681

Note:*** %1 level, ** %5 level, * %10 level are test critical values. According to Akaike information criterion, optimal lags are 13 for both periods.

is lower inflation period, there is no causal relationship from inflation to inflation uncertainty. If all causality results are totally evaluated, it results that in the first period, there is a two side causal relationship but in the second period, there is only one sided causal relationship from inflation uncertainty to inflation.

Overall findings of the empirical analysis indicate that Friedman-Ball hypothesis is valid for high inflation period while Cukierman-Meltzer hypothesis is valid for lower inflation period.

Conclusion

In economic literature, the idea that inflation increases inflation uncertainty, starting by Okun (1971) and later resuming as Friedman — Ball Hypothesis, has created new discussions about the degree and the direction of the relationship between both variables. In this study, the causal relationships between inflation and inflation uncertainty were examined for Turkish Economy, comparing the periods 1988–2004 and 2004–2010. The data used in the study are monthly and covered the periods of 1998–2004 and 2004–2010. Inflation uncertainty series were obtained by using Kalman Filter technique for both periods because they were not directly observable. The causal relationships between inflation and inflation uncertainty were analyzed by using Granger Causality Test. Finally, the causal relationships were compared for the periods of 1988–2004 and 2004–2010. Overall findings of the empirical analysis indicate that Friedman-Ball hypothesis is valid for high inflation period while Cukierman-Meltzer hypothesis is valid for lower inflation period. For the first period, which is high inflation period, there are two-ways causality between inflation and inflation uncertainty. In the second period, which is lower period, there is one-way causality from inflation uncertainty to inflation. The findings of this study can be generalized for the countries which are the same as Turkey in terms of the historical inflation process.

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