DO POLITICAL COMMENTARIES AFFECT THE EXCHANGE RATES IN TURKEY?

by

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Abstract

Central banks of the developed countries such as the Federal Reserve or the European Central Bank do not intervene in the foreign exchange markets even though they conduct liquidity operations. Meanwhile, other central banks such as the Bank of Japan or the Central Bank of the Republic of Turkey (CBRT) intervene in the foreign exchange markets. What is common in most countries is that the central bankers and the politicians give political commentaries in the forms of speeches, interviews and public testimonies to express their views.

In this thesis, the effects of political commentaries related to the foreign exchange rates on the foreign exchange markets are investigated. I consider the period after the CBRT adopted a floating exchange rate regime in my analysis. My findings suggest that there is not enough evidence that the US Dollar-Turkish Lira (USD/TRY) and Euro-Turkish Lira (EUR/TRY) exchange rate levels respond to political commentaries. However, neutral comments released by the US and Turkish authorities increase the volatility in the USD/TRY exchange rate. The Euro zone authorities' political commentaries have no significant effect on the volatility of the EUR/TRY exchange rate whereas the neutral comments of the Turkish authorities increase the volatility in EUR/TRY exchange rate.

Keywords: foreign exchange, volatility, political commentaries

Özet

Amerikan Merkez Bankası (Fed) ve Avrupa Merkez Bankası (ECB) gibi gelişmiş ülke merkez bankaları likidite operasyonları gerçekleştirmelerine rağmen döviz piyasalarına müdahale etmemektedirler. Öte yandan, Japon Merkez Bankası ve Türkiye Cumhuriyet Merkez Bankası (TCMB) döviz piyasalarına müdahale etmektedirler. Ancak, bütün bu ülkelerin ortak özelliği politikacıların kurlarlar ilgili konuşma ve röportajlar vasıtasıyla yaptıkları yorumlardır.

Bu tezde, TCMB dalgalı kura geçtikten sonraki dönemde döviz piyasalarına ilişkin yapılan yorumların kurlar üzerindeki etkileri incelenmektedir. Elde edilen bulgular, Amerikan Doları-Türk Lirası (USD/TRY) ve Euro-Türk Lirası (EUR/TRY) döviz piyasalarının bu yorumlara tepki verdiğine dair yeterli kanıt olmadığına işaret etmektedir. Ancak, Amerikan ve Türk yetkililerinin yön belirtmeyen yorumları USD/TRY piyasasındaki oynaklığı artırmaktadır. Euro bölgesi yetkililerinin yaptığı yorumların EUR/TRY piyasasındaki oynaklığa etkisi olmazken, Türk yetkililerinin yön belirtmeyen yorumları EUR/TRY kurundaki oynaklığı artırmaktadır.

Anahtar Kelimeler: döviz kuru, oynaklık, politik yorumlar

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1 Introduction

Since the 1970s many developed countries adopted the floating exchange rate regime where the value of the national currency with respect to other currencies is determined by market forces. In this regime, the price of the national currency is the equilibrium price where supply and demand of that currency are equal.

However, central banks, politicians and Treasury departments may intervene in the foreign exchange market in order to move the exchange rates in the intended direction. These interventions can be either actual or oral. In actual interventions, authorities directly buy or sell foreign exchange, while in oral interventions, they give speeches about the level or the direction of the exchange rates. Beginning from the mid-1990's, the Federal Reserve (Fed) and the European Central Bank (ECB) almost quit actual interventions and relied on the communication channel to express their policy stance while the Bank of Japan (BoJ) still directly sells or buys foreign exchange.

The Central Bank of Republic of Turkey (CBRT) adopted the floating exchange rate regime in February 2001. Since then, CBRT executed several direct foreign exchange interventions, while central bank governors, the prime minister, ministers of economy and ministers of Treasury give speeches about the level of the rates. In my thesis, I study whether these interventions are successful in moving the rates in intended direction and reducing the volatility in the US Dollar - Turkish Lira (USD/TRY) and Euro - Turkish Lira (EUR/TRY) foreign exchange markets in Turkey.

The remainder of this thesis is organized as follows. The next section represents a review of literature. Section 3 gives details about the data set, methodology and model. Section 4 shows the empirical results of this study. Section 5 concludes the thesis.

2 Literature Review

This section reviews the literature on foreign exchange interventions. Many empirical papers have studied the effectiveness of foreign exchange interventions in Turkey and in other countries.

2.1 Exchange Rate Studies for Turkey

Domaç and Mendoza (2002) studied the effectiveness of CBRT's actual interventions using an EGARCH(1,1) model. The independent variables used are the CBRT's foreign exchange interventions, the sale and purchase auctions conducted by the CBRT, a dummy variable taking value of 1 if there is public report about the foreign exchange policy intentions or if there is a modification in the contractual terms of foreign exchange auctions. Finally, the annualized value of the CBRT's policy rate which was the overnight repo rate for the time period used in this study. Their results show that actual interventions do not affect the volatility and level of the USD/TRY exchange rate. In contrast, sales auctions[1] have a significant effect on level and reduce the volatility.

Recently, Oduncu et al. (2013) studied the effectiveness of Reserve Option Mechanism (ROM)[2] on volatility using a GARCH(1,1) model. To model the daily return and the volatility of the currency basket which is calculated as 0.5*(USD/TRY)+ 0.5*(EUR/TRY), they used the 1st, 4th and the 5th lagged daily returns in the mean equation and a dummy variable taking value of 1 in the days after the introduction of the ROM and 0 for the days before the ROM. They concluded that the ROM is effective in reducing the volatility of the currency basket.

Özlü and Ünalmış (2012) used a GARCH(1,1) model using the surprise in the GDP growth rate, the industrial production, the inflation rate, the current account balance, the trade balance for Turkey and the policy rate surprises of the CBRT

[1]The CBRT sells foreign exchange via sales auctions to the banks and aid them to cover their foreign exchange short positions and to pay their foreign currency-based liabilities.

[2]The ROM gives the Turkish banks right to hold some of their reserve requirements in terms of the US Dollar or gold.

as independent variables and showed that the USD/TRY rate responds to current account balance and policy rate surprises. For instance, if there is an unanticipated 100 basis point increase in the CBRT's policy rate, the Turkish Lira appreciates 0.5 percent against the US Dollar. Similarly, the Turkish Lira appreciates against the US Dollar by 1.1 percent if there is a 1 percent positive surprise (the actual value of the current account balance is greater than the expectation of this indicator) in the current account /GDP ratio of Turkey.

Akıncı et al. (2005) used a probit model to estimate the probability of CBRT's actual intervention and found that CBRT intervenes if exchange rates deviate from 90-day moving average. Caskurlu et al. (2008) showed CBRT interventions reduced the foreign exchange market volatility. Timur Han and Ertuğrul (2012) showed that a SWARCH model is superior to ARCH and GARCH models for the time period 2.7.2001-31.5.2010 in estimating the volatility in the USD/TRY foreign exchange rate.

2.2 Exchange Rate Studies for Other Countries

Beine et al. (2009) studied effects of the coordinated interventions by the Fed and the Bundesbank (after the ECB is formed, the coordinated interventions of the Fed and the ECB are studied). They investigated the level and volatility of the log of USD/EUR exchange rate market for the time period 1989-2003 using a GARCH(1,1). They used binary variables for each central bank taking the value of 1 if one of them intervened in the foreign exchange market. Other binary independent variables are as follows: "confirmation statement" is a dummy taking the value of 1 when the Fed or the Bundesbank made a statement confirming the intervention, a commenting speech dummy (if there was a comment), a "G7" dummy variable controlling for if there was an intervention in two weeks following a G7 or G8 meeting and a variable taking the value of 1 if there was no statement or a statement which declines the coordinated intervention issued. The mean equation results suggest that the US Dollar depreciates if the Fed intervenes or no state-

ment is issued after intervention. The volatility equation results indicate that the volatility in the USD/EUR foreign exchange market increases if the central banks deny the intervention or confirm the intervention whereas commenting speeches and interventions made after G7 meetings decrease the volatility.

Fratzscher (2008) examined the effectiveness of oral and actual interventions on the EUR/USD and US Dollar- Japanese Yen (USD/YEN) exchange rate markets for the period between January 1990 and September 2003. He used an EGARCH(1,1) model where the dependent variable is the change in log of exchange rates. The independent variables used are actual interventions by the Fed and the other central banks (by the ECB (or the Bundesbank before the ECB is formed) and the BoJ) and the comments issued by those who are in charge of exchange rate policy; i.e, the comments issued by the US Treasury Department, the Fed, the ECB Governing Council and the Ministry of Finance in Japan. Additionally, interest rate difference and the day of the week of dummies are used. The findings suggest that oral interventions of the US and the European authorities move the exchange rate in the desired direction. For instance, the strengthening statements issued by the US authorities appreciates the US Dollar with respect to the Euro by 0.12 percent whereas the strengthening comments of European authorities appreciates the Euro with respect to the US Dollar by about 0.2 percent. Similar results hold for YEN/USD foreign exchange market. In this case, the political commentaries of the US and the Japanese authorities have almost the same effect; i.e, comments that support strong domestic currency appreciates the domestic currency by 0.15 percent. Even though the US' purchase of the Euro does not have significant effect on the EUR/USD rates, purchase operation, worth of $ 1-billion , conducted by the ECB (or the Bundesbank before the ECB is formed) depreciates the Euro by 1.5 percent. The actual interventions of the ECB (or the Bundesbank before the ECB is formed) increases the volatility in the EUR/USD market while the Japanese actual interventions reduce the volatility in the YEN/USD market. The US actual interventions do not have significant effect on the EUR/USD market; however, they increase the volatility in the YEN/USD market. The interest rate

spread is found to be insignificant in both the mean equation and the volatility equation.

Berdiev et al. (2012) used a multinominal logit specification to model a governments implementation of an exchange rate regime (float, intermediate, fixed) under the assumption that a government implements a certain type of exchange rate regime to maximize its random utility. The data used in that paper spans the time period between 1974 and 2004 and covers 180 countries. The explanatory variables used are the governments' ideology (right-wing, centrist or left-wing), a democracy variable taking the value of 1 depending on Cheibub et al. (2010), central bank independence variable (Klomp and Haan (2009)), overall globalization index developed by Dreher (2006), the natural logarithm of real GDP (in 2000 prices) based on the World Bank's World Development Indicators, inflation rate (change in consumer price index), interest rate (lending rates), financial development (domestic credit to private sector as a percentage of GDP). They concluded that in developed countries, even when there is no significant evidence that they tend to choose a floating regime, left-wing wing government ideology decreases the probability of choosing a fixed exchange rate regime. More gloabalized countries favor a fixed regime, whereas financially developed countries favor a floating regime. In countries where domestic interest rates are high, flexible exchange rate regime is preferred. However, there is no statistically significant result that either the level of economic development or the inflation rate has effect on the choice of the exchange rate regime.

Ehrmann and Fratzscher (2007) studied how different communication strategies about monetary policy and economic outlook can alter inflation expectations and affect asset prices such as the Treasury bonds with different maturities and foreign exchange rates. Nevertheless, there is no clear sign of which strategy is superior to others. In the Fed and the ECB, a group of members take part in decision-making. The Fed follows an individualistic communications approach while the ECB follows a collective communication approach. Meanwhile, the Bank of England (BoE) follows an individualistic decision-making process and collective communication

approach. They found that the monetary policy comments of the Fed, the ECB and the BoE do not have significant impact on the exchange rate levels Euro-US Dollar and UK Pound-US Dollar rates. Monetary policy comments of the Fed does not change the volatility in exchange rate market. The tightening comments of BoE increase the volatility whereas the tightening comments of ECB reduces the volatility. Also, the exchange markets significantly respond to the Fed's and the BoE's economic outlook statements while there is no significant effect of the ECB's statements. The Fed's statements do not affect the volatility. The ECB's and then BoE's economic outlook statements have opposite effects on the foreign exchange markets. The BoE's statements decrease volatility while the ECB's statements increase the volatility.

Baillie and Osterberg (1997) studied the interventions in US Dollar-Deutsche Mark (USD/DEM) and YEN/USD foreign exchange markets. They showed that the Fed, the BoJ and the Bundesbank's sale and purchase operations are not effective both in terms of the level as well as volatilities in these markets. They also used a probit model, where combined sale and purchase operations are the dependent variables, to estimate the probability of intervention and found that deviation of USD/DEM rate from its targeted level, defined by Funabashi (1989), is the important determinant of purchase and sale operations conducted by the Fed and the Bundesbank. Similarly, deviation of YEN/USD from its targeted level increases the probability of selling operations of the Fed and the BoJ.

Dominguez (1998) also studied the USD/DEM and USD/YEN markets and found that the Fed's, the BoJ's actual interventions and secret interventions (which are operations conducted without notifying the public) increase the volatility of USD/DEM. The USD/YEN market's volatility is positively affected by the Fed's, the BoJ's actual interventions and secret interventions while the Bundesbank's intervention decreases the volatility.

Many papers have also studied the channels through which interventions affect the foreign exchange market. The first channel through which foreign exchange

market is affected is the signaling channel. Fatum and Hutchison (1999) studied if the Fed's foreign exchange intervention operations can be interpreted as a signal for future policy decisions. However, looking at the change in the interest rate expectations, they could not reach a conclusive evidence that these operations give clear signals about future policy. Ehrmann et al. (2012) showed the private sector's expectations of macroeconomic variables converge to central banks' forecasts of macroeconomic variables. Similarly, Taylor and Sarno (2001) state that publicly announced interventions may be responsible for "smart money" to enter the market at the same time. This channel is named as "coordination channel". Finally, Dominguez and Frankel (1993) and Taylor and Sarno (2001) stated that the interventions affect the exchange rate through portfolio balance channel. In this channel, purchase or sale of foreign currency alter the relative value of domestic assets with respect to foreign assets.

3 Data, Methodology, and Model

In order to determine whether oral interventions are effective in manipulating USD/TRY and EUR/TRY exchange rates, I first construct a dataset that consists of such interventions by the relevant policy makers. To collect appropriate data, I first clarify who is in charge of the foreign exchange regime in the USA, the Euro zone, and Turkey. In the USA, it is the Treasury Department and the Fed, in the Euro zone the ECB is in charge of foreign exchange policy. In Turkey, the CBRT is in charge of foreign exchange policy. However, in the USA, the Euro area and Turkey, politicians also give speeches about the level or intended direction of exchange rates. Accordingly, I collected political commentaries released by (a) governors of the Fed, the ECB and the CBRT, Treasury Secretaries in the US, presidents and prime ministers of Turkey, the US, and the Euro zone (b) using the keywords "exchange rate" and related currencies ("Turkish Lira", "Dollar", "Euro") and (c) using the keywords "minister"', "governor", "president", "secretary" to avoid the possible exclusion of the names of the authorities. Statements made by interna-

tional organizations such as the IMF, the World Bank and their managing directors are excluded as in Ehrmann and Fratzscher (2011). I used the FACTIVA database at this stage of my analysis. After obtaining many hits based on the general search command described above, I cleaned up the irrelevant hits and classified these public statements; i.e., speeches, interviews and public testimonies according to their content. There are 3 categories for each country where each comment can fit in. These are appreciation, depreciation and neutral categories. The dummy variables are defined as follows

$$TR_t^A = \begin{cases} 1 & \text{strengthening oral statement by Turkish authorities} \\ 0 & \text{otherwise} \end{cases}$$

$$TR_t^D = \begin{cases} 1 & \text{weakening oral statement by Turkish authorities} \\ 0 & \text{otherwise} \end{cases}$$

$$TR_t^N = \begin{cases} 1 & \text{ambiguous oral statement by Turkish authorities} \\ 0 & \text{otherwise} \end{cases}$$

$$US_t^A = \begin{cases} 1 & \text{strengthening oral statement by the US authorities} \\ 0 & \text{otherwise} \end{cases}$$

$$US_t^D = \begin{cases} 1 & \text{weakening oral statement by the US authorities} \\ 0 & \text{otherwise} \end{cases}$$

$$US_t^N = \begin{cases} 1 & \text{ambiguous oral statement by the US authorities} \\ 0 & \text{otherwise} \end{cases}$$

$$EU_t^A = \begin{cases} 1 & \text{strengthening oral statement by the EU authorities} \\ 0 & \text{otherwise} \end{cases}$$

$$EU_t^D = \begin{cases} 1 & \text{weakening oral statement by the EU authorities} \\ 0 & \text{otherwise} \end{cases}$$

$$EU_t^N = \begin{cases} 1 & \text{ambiguous oral statement by the EU authorities} \\ 0 & \text{otherwise} \end{cases}$$

If a strengthening comment is issued by a country's authorities, the corresponding country's appreciation dummy takes the value of 1 whereas weakening statements set the value of the corresponding country's depreciation dummy to 1. Similarly, when neutral comments, which favor neither strong nor weak domestic currency, are made the corresponding country's neutral dummy takes the value of 1. Table 1 provides examples of political commentaries and their classifications. In this table, I emphasized the key phrases that enabled me to construct the dummy variables.

This classification is subjective. It is relatively easier to classify a comment as strengthening or weakening; however, classifying comments as neutral can be problematic. Even though the Turkish authorities' neutral comments are easier to classify, the US neutral comments are not as easily classified. For instance, many of the US neutral comments state that the US authorities support strong national currency; however, the markets should determine the exchange rates. It is not easy to infer whether the commenting authority desires strong currency from such statements.

Fratzscher (2008) defined oral intervention dummy (IO_t) such that

$$IO_t = \begin{cases} 1 & \text{strengthening oral statement} \\ -1 & \text{weakening oral statement} \\ 0 & \text{ambiguous oral statement} \end{cases}$$

He classified the ambiguous comments as deviations from the prevalent policy mantra. In the US, the policy mantra is the strong US Dollar. The ambiguous comments issued in the US are classified as weakening comments. In Japan, the weak Japanese Yen is favored and the ambiguous statements released in Japan are recorded as strengthening comments. However, a great part of the comments (77 percent of the comments) indicate that the policy mantra in Turkey is ambiguous (see Table 2). That is, neither strong nor weak Turkish Lira is preferred.

I deviate from Fratzscher (2008)'s definition of oral intervention dummy variable since his definition do not show which type of comment have greater impact on the level or the volatility. Therefore, by defining political commentaries in a new way, it becomes clear how foreign exchange markets react to different type of comments.

To investigate the effects of actual and oral interventions, I use an EGARCH(1,1) model for both USD/TRY and EUR/TRY. These models are set up as follows:

$$\begin{aligned} r_t^{USD} &= c + \alpha_1(TRON - USON)_t + \alpha_2 TR_t^A + \alpha_3 TR_t^D + \alpha_4 TR_t^N \\ &\quad + \alpha_5 US_t^A + \alpha_6 US_t^D + \alpha_7 US_t^N + \alpha_8 IA_t + \sum \alpha_d M_t^d + \epsilon_t \end{aligned} \tag{1}$$

$$\begin{aligned} ln(\sigma_t^2) &= d + d_1 \left| \frac{\epsilon_{t-1}}{\sigma_t^2} \right| + d_2 \frac{\epsilon_{t-1}}{\sqrt{\sigma_{t-1}}} + d_3 ln(\sigma_{t-1}^2) + \beta_1(TRON - USON)_t \\ &\quad + \beta_2 TR_t^A + \beta_3 TR_t^D + \beta_4 TR_t^N + \beta_5 US_t^A + \beta_6 US_t^D + \beta_7 US_t^N \\ &\quad + \beta_8 IA_t + \sum \beta_d M_t^d \end{aligned} \tag{2}$$

$$r_t^{EUR} = c + \gamma_1(TRON - EURON)_t + \gamma_2 TR_t^A + \gamma_3 TR_t^D + \gamma_4 TR_t^N + \gamma_5 EUR_t^A + \gamma_6 EUR_t^D + \gamma_7 EUR_t^N + \sum \gamma_d M_t^d + \epsilon_t \quad (3)$$

$$ln(\sigma_t^2) = f + f_1 \left| \frac{\epsilon_{t-1}}{\sigma_t^2} \right| + f_2 \frac{\epsilon_{t-1}}{\sqrt{\sigma_{t-1}}} + f_3 ln(\sigma_{t-1}^2) + \delta_1(TRON - EURON)_t + \delta_2 TR_t^A + \delta_3 TR_t^D + \delta_4 TR_t^N + \delta_5 EU_t^A + \delta_6 EU_t^D + \delta_7 EU_t^N + \sum \delta_d M_t^d \quad (4)$$

where equations (1)-(2) and (3)-(4) are for USD/TRY and EUR/TRY, respectively.

In these equations, r_t^{USD} and r_t^{EUR} represent the daily logarithmic difference of USD/TRY and EUR/TRY exchange rates' in percentages, respectively. The exchange rates are obtained from CBRT's Electronic Data Distribution System beginning from the first day when the floating exchange rate regime was adopted; i.e, 22.2.2001, until 5.8.2012.

TR_t^A, TR_t^D, and TR_t^N are the dummy variables for Turkish authorities' comments for appreciating, depreciating and neutral comments, respectively. The US authorities' appreciating, depreciating and neutral comments are represented by US_t^A,US_t^D, and US_t^N, while EU_t^A,EU_t^D, and EU_t^N are the corresponding dummies of European authorities.

Much of the news may be reported by different media sources in different times. In such cases, the very first reported is recorded. Also, comments made on weekends are recorded on the next Monday.

$(TRON - USON)_t$ is the daily interest rate spread between the Turkish Lira and the US Dollar whereas $(TRON - EURON)_t$ is the interest rate spread between the Turkish Lira and the Euro. The spreads are measured in percentages.

Fratzscher (2008) used 3-month money market rates as interest rates and noted that overnight rates lead to the similar results. In this thesis, I use overnight Libor ask rates of the Turkish Lira, the US Dollar, and the Euro. The Libor rate of the

Turkish Lira is taken from the Turkish Banks Association. The Libor rates of the US Dollar and the Euro are taken from the St. Louis Fed, FRED database.

Even though the Libor rates for the US Dollar and the Euro date back to 2001, the Libor rate for Turkish Lira is available only after August 2002. However, there are 100 comments recorded between February 2001 and August 2002 and if I had used the data after August 2002, I would have omitted these recorded comments. To overcome this problem, I forecast the Libor rate of the Turkish Lira using a univariate linear regression model.

Because overnight (ON) repo rate is highly correlated with the overnight Libor rate, I used Istanbul Stock Exchange (ISE) overnight repo rate as an independent variable.[3] The regression model for my forecasting equation is:

$$TRON_t = \alpha + \beta Repo_t + \epsilon_t. \tag{5}$$

Using the interest rate data between 1.8.2002 and 5.8.2012, I estimated the coefficients α and β (see Table 3). Then, using the estimated coefficients in Table 3, I forecast the overnight Libor rate of the Turkish Lira for the period in which this data is not available.

In the days immediately after the adoption of the floating exchange rate regime, the interest rates in Turkey went up to historical highs since there was a political turmoil in Turkey. Because very high interest rate differences may mask the real effects of other control variables, I exclude the data of the first week of the new regime and study the time period between 1.3.2001 and 5.8.2012.

In the US, the Euro zone, and Turkey official holidays may be on different days. That is, trading days in Turkey and the US (or in Turkey and the Euro zone) may not coincide. On official holidays, Libor rates are not published. To capture the missing interest rate data, last trading day's interest rate is used.

[3]The computed correlation coefficient for the period August 2002-August 2012 is 99.88 percent

IA_t is the amount of actual interventions (in $ billions) conducted by the CBRT on day t. The actual intervention data is taken from the CBRT's web site. The CBRT conducted 26 interventions in the USD/TRY foreign exchange market, 15 purchase interventions and 11 sale interventions, aiming to reduce the volatility in this market. The CBRT did not intervene in the EUR/TRY market.

The Fed and the ECB did not intervene in the foreign exchange market since 2000. Because this thesis studies the period after 2001, the intervention variables of the Fed and the ECB do not appear in the models.

Fratzscher (2008) removed the observations on those days on which the value of a macroeconomic variable is announced. Nevertheless, Özlü and Ünalmış (2012) showed that USD/TRY exchange rates respond to the surprises of macroeconomics variables. That is, the difference between the expectation and the realization of a macroeconomic variable (surprise) may move the exchange rate. As a robustness check and to control if exchange rates respond to macroeconomic surprises, the variable M_t^d, which shows the surprise of macroeconomic variable d published on day t, is added to the model. The list of the macroeconomic variable surprises is given in the Table 4.

The expectations of macroeconomic variables are obtained from REUTERS. I have data on expectations of Turkey's macroeconomic variables' surprises for the period 2004-2011, whereas the US surprise data that I use covers the time period between 1990 and 2009. Since the periods intersect between 2004 and 2009, I reestimate the model defined by (1) and (2) for this period as a robustness check. Because I do not have the data of Euro zone surprises, I only used Turkish surprises for the period 2004-2009 in the model defined by (3)-(4).

In financial series, generally,higher changes are followed by higher changes and lower changes are followed by lower changes. This effect is called "volatility clustering". To capture for volatility clustering d_1 and f_1 variables are added to the volatility equations (2) and (4), respectively.

Also, positive and negative shocks may have different effects on the volatility.

"Leverage terms", d_2 and f_2, are added to the model to capture for such an effect in the USD/TRY and EUR/TRY foreign exchange rates. If this term is negative, the negative shocks increase the conditinal volatility more than positive shocks.

Finally, how fast a shocks' effect decays is measured by "persistence terms", d_3 and f_3 in equations (2) and (4), respectively. This terms should be less than unity to ensure that a shock eventually decays. Also, the higher value of this term implies longer time for a shock to decay.

4 Results

After defining the variables as above, to run the models defined by (1)-(2) and (3)-(4), it is necessary for variables r_t^{USD}, r_t^{EUR}, $(TRON - USON)_t$ and $(TRON - EURON)_t$ to be stationary. To check whether each of these variables is stationary, I conducted Augmented Dickey-Fuller (ADF) test where the null hypothesis is that the variable under consideration has a unit root. If the null hypothesis is rejected, it can be concluded that the variable is stationary.

I conducted the ADF test for each of the four variables. There are three different test equations which are (i) no trend and no intercept, (ii) intercept and (iii) intercept and trend. The maximum lag of the test equations is 27. Optimal lag selection is done automatically using Schwarz Information Criteria.[4]

After conducting ADF test, there is not enough evidence that r_t^{USD}, r_t^{EUR}, $(TRON - USON)_t$ and $(TRON - EURON)_t$ have unit roots. That is, these variables are stationary (see Table 5).

The aim of this study is to show whether actual and political commentaries are "effective". The following hypotheses clarify what "effective" means and will be tested after running the models.

(1) $H_0 : \alpha_2, \gamma_2 < 0$: Does the Turkish Lira appreciate against the US Dollar and the Euro if Turkish authorities make appreciating comments?

[4] I used EViews for the econometric analysis.

If foreign exchange markets respond in the expected direction, the USD/TRY and EUR/TRY rates should decrease (meaning appreciation of the Turkish Lira) and hence the log difference of USD/TRY and EUR/TRY should be negative.

(2) $H_0 : \alpha_3, \gamma_3 > 0$: Does the Turkish Lira depreciate against the US Dollar and the Euro if Turkish authorities make depreciating comments?

Depreciating Turkish comments should increase the rate of USD/TRY and EUR/TRY. Therefore, the log difference of daily exchange rates should be positive.

(3) $H_0 : \alpha_4, \gamma_4, \alpha_7, \gamma_7 = 0$: Are USD/TRY and EUR/TRY markets unresponsive to the comments that indicate neither level nor direction?

I expect the coefficients of neutral comments to be insignificant since the authority's intended direction is not indicated.

(4) $H_0 : \alpha_5, \gamma_5 > 0$: Does the Turkish Lira depreciate against the US Dollar (the Euro) if the US (European) authorities make appreciating comments about the US Dollar (the Euro)?

Appreciating comments issued by the US (the European) authorities is expected to increase the USD/TRY (EUR/TRY) rates. Therefore, I expect the coefficients of these variables to be positive.

(5) $H_0 : \alpha_6, \gamma_6 < 0$: Does Turkish Lira appreciates against the US Dollar (the Euro) if the US (European) authorities make depreciating comments about the US Dollar (the Euro)?

I expect these coefficients to be negative since such statements should decrease the USD/TRY (EUR/TRY) exchange rates.

(6) $H_0 : \alpha_8 < 0$: Can CBRT change the USD/TRY rate by conducting actual intervention even they claim that the aim of intervention is not to change the level of the exchange rates?

The "portfolio balance channel" states that a change in the relative supply of domestic and foreign assets change the relative value of the domestic currency with

respect to foreign currency. The CBRT's actual interventions change the relative supply of foreign assets. If the CBRT purchases US Dollars, Lira is expected to depreciate, i.e, USD/TRY rate should increase. On the contrary, if the CBRT sells US Dollars, the rate should decrease. Therefore, I expect the coefficient of actual intervention to be negative.

(7) $H_0 : \beta_2, \beta_3, \beta_5, \beta_6, \delta_2, \delta_3, \delta_5, \delta_6 < 0$: Can Turkish, US or European authorities decrease the volatility in the USD/TRY or EUR/TRY?

(8) $H_0 : \beta_4, \beta_7, \delta_4, \delta_7 \gtrless 0$: If the authorities state that the foreign exchange markets should set the rate, does the volatility change?

(9) $H_0 : \beta_8 < 0$: Can CBRT interventions reduce the volatility in the USD/TRY market?

Since the CBRT states they intervene to reduce the volatility, I expect the intervention coefficient to be negative.

(10) $H_0 : \alpha_1, \gamma_1 \gtrless 0$: Do higher interest rate spreads imply stronger currency?

A priori, I do not have a clear expectation about the effect of interest rate spread on the level. Higher interest rate may be result of a political or military instability. In such a case, I expect the level to increase as happened in Turkey in February 2001. However, if higher interest rates stem from a strong economy; i,e, the central bank increases its policy rate to cool down the economy (remove inflationary pressure), I expect the level to decrease.

(11) $H_0 : \beta_1, \delta_1 \gtrless 0$ Do higher interest rate difference imply more or less stable currency?

A priori, I do not have a clear expectation about the effect of interest rate spread on the volatility. Higher interest rate may be the result of a political or military instability. In such a case, I expect the volatility to increase as happened in Turkey in February 2001. However, if higher interest rates stem from a strong economy; i,e, the central bank increases its policy rate to cool down the economy (remove inflationary pressure), I expect the volatility to decrease.

(12) $H_0 : \alpha_d, \beta_d, \gamma_d, \delta_d \gtrless 0$ Is the level or the volatility affected by the macroeconomic surprises?

A priori, I do not have an expectation if the level or anvolatility is affected by the macroeconomic surprises.

After defining the hypothesis, the USD/TRY model, defined by equations (1)-(2), is estimated by assuming that the error terms have a normal distribution. The results are given in Table 6.

The signs of the comments of the Turkish authorities are different from my expectations. Both the appreciating and depreciating comments are seem to to appreciate the Turkish Lira against the US Dollar. However, the estimates are not statistically significant.

The neutral comments released by the Turkish or the US authorities were expected to have no effect on the level of the exchange rates. The results show that these comments are insignificant, verifying my expectations.

The appreciating and depreciating comments of the US authorities were expected to have positive and negative signs, respectively. The results show that they have opposite sings. However, these variables are insignificant as well.

I had conjectured that interventions of the CBRT alters the relative supply of domestic and foreign assets and I had stated that the coefficient of the intervention variable should be negative. The estimated coefficient is negative; however, this variable is insignificant.

The results of the volatility equation (2) show that the neutral comments released by both the Turkish and the US authorities significantly increase the volatility in the USD/TRY market. The neutral comments of Turkish authorities increase the conditional volatility of the USD/TRY exchange rate by 0.24 units whereas the US neutral comments increase the conditional volatility by 0.29 units. The other comment types are found to have no effect on the conditional volatility of the USD/TRY rate.

The CBRT states that they intervene in the foreign exchange market to reduce the volatility. Even though the coefficient of this variable is negative, it is not significant.

Finally, even though the interest rate spread between the Turkish Lira and the US Dollar is found to be insignificant in the mean equation, the interest rate spread has a small impact on the conditional volatility and 1 percent increase in the interest rate spread increases the conditional volatility by 0.008 units.

As a robustness check, the equations (1)-(2) are reestimate after adding macroeconomic surprise series for the period from 2004 to 2009. In this period, no depreciating comments were made by either the US or the Turkish authorities. Therefore, these variables are omitted from the equations for this period. The results are given in Table 7.

The comments are found to be insignificant in the mean equation as in the previous analysis. This time, some macroeconomic surprises are found to be significant. Positive housing earning ($HEARN_t$) surprise data of the US, meaning that the realization of housing earnings is greater than the expectation of this variable, appreciates the US Dollar by more than 2 percent, on average. Similarly, the surprises of other US macroeconomic variables such as leading economic indicators ($LDERS_t$) and personal income ($PERINC_t$) are found to be significant. The positive surprises of the leading economic indicator appreciates the US Dollar by 0.4 percent whereas the positive personal income surprise depreciates the US Dollar by 0.03 percent. Two of the Turkish macroeconomic surprise series affect the USD/TRY exchange rate. The first macroeconomic surprise series is the industrial production (IP_t). The positive surprise of this variable appreciates the Turkish Lira by 0.1 percent. The second macroeconomic surprise series is the current account balance. A positive surprise worth of $ 1 million in current account balance (CA_t) has a tiny effect (0.0004 percent) and appreciates the Turkish Lira. Interestingly, in contrast to Özlü and Ünalmış (2012), the monetary policy surprises of the CBRT do not change the USD/TRY rate.

In the volatility equations, the neutral comments of the Turkish and the US authorities significantly increase the conditional volatility by 0.35 units and 0.21 units, respectively whereas the appreciating comments of the Turkish and the US authorities decrease the conditional volatility by 0.41 and 0.16 units, respectively. The intervention of the CBRT and the interest rate differences are insignificant both in the mean and the volatility equations.

Many macroeconomic surprises are found to have significant effect on the exchange rate volatility of the USD/TRY market. The only Turkish macroeconomic surprise of Turkey is the trade balance (TB_t). A positive trade balance surprise in Turkey reduces the conditional volatility by 0.005 units. The US macroeconomic surprises have different effects on the conditional volatility. Positive surprises in the following macroeconomic variables increase the conditional volatility: business inventory ($BUSINV_t$) by 0.78 units, export ($EXPORT_t$) by about 0.09 units, factory orders ($FACORD_t$) by 0.22 units, nonfarm payrolls ($NAPM_t$) by 0.21 units and unemployment rate ($UNEMP_t$) 2.07 units whereas positive surprises in the following variables reduce the conditional volatility durable goods order ($DGORD_t$) by 0.1 units, import ($IMPORT_t$) by 0.14 units, industrial production ($INDPRD_t$) by about 0.83 units, personal income ($PERINC_t$) by 0.03 units and retail sales ($RETLS_t$) 0.3453 units.

While estimating the coefficients of the model defined by (3)-(4), initially, the error term distribution is assumed to have a normal distribution. However, the maximum likelihood algorithm did not converge. Then, I assumed the error term to have a t-distribution where the degrees of freedom is computed automatically by EViews as 6.6. The results are given in Table 8.

The Euro authorities' comments do not have significant impact on the EUR/TRY exchange rate. Turkish authorities' appreciating and neutral comments are insignificant as well. However, the depreciating comments of the Turkish authorities' found to depreciate the Turkish Lira against the Euro by 0.5 percent.

The interest rate spread between the Turkish Lira and the Euro is insignificant in

the mean equation. However, 1 percent increase in the interest rate spread increases the conditional volatility of the EUR/TRY exchange rate by 0.0015 units.

The Euro zone's authorities' comment do not have a significant effect on the volatility. Also, appreciating Turkish comments are found to be insignificant in the volatility equation. However, the Turkish depreciating comments reduces the conditional volatility by 0.82 units whereas the neutral comments released by the Turkish authorities increase the conditional volatility by 0.15 units.

Finally, the same analysis is conducted for a shorter period of time after including Turkey's macroeconomic surprises. The results (see Table 9) slightly differ from the results of the previous analysis. In this analysis, the depreciating comments of the Turkish authorities depreciate the Turkish Lira against the Euro by about 0.4 percent. Other Turkish and Euro zone comments are insignificant. The interest rate spread is insignificant as well.

Even though the macroeconomic surprises in Turkey do not affect the conditional volatility in the EUR/TRY foreign exchange rate, the EUR/TRY exchange rate level respond significantly to the surprises in the real gross domestic product growth in Turkey and the trade balance in Turkey. If Turkey's real GDP growth rate is 1 percent higher than its expectation, the Turkish Lira appreciates the Turkish Lira by 0.15 percent. The reaction of the EUR/TRY is minuscule and a positive surprise worth of $ 1 million in the trade balance appreciates the Turkish Lira by 0.0002 percent.

As a robustness check, I also considered the following specifications. First, I included the lagged values of the commentaries up to order 2. The results are provided in Table 10 and Table 11. Depreciating comments of the US and the Turkish authorities depreciate the US Dollar and the Turkish Lira after one day, respectively. Interestingly, the appreciating comments of the Turkish authorities depreciate the Turkish Lira against the US Dollar and the Euro after two days.

Neutral comments of the Turkish authorities create extra volatility in the USD/TRY and EUR/TRY, and the neutral US comments increase the conditional volatility in

the USD/TRY whereas the neutral European comments have no significant effect on the EUR/TRY.

I excluded the statements of the central bankers and used only the commentaries of the politicians. The results of the USD/TRY and EUR/TRY exchange rates are given in Table 12 and Table 13, respectively.

There is no statistically significant evidence that USD/TRY exchange rate responds to the commentaries of the politicians. However, neutral comments are found to significantly increase the conditional volatility. In the case of the EUR/TRY, depreciating comments of the Turkish politicians devalue the Turkish Lira against the Euro. The neutral comments increase the conditional volatility in the EUR/TRY.

I also included the lagged values of the interventions conducted by the CBRT (IA_{t-1} and IA_{t-2}); however, there is no significant evidence that the interventions effect both on the mean and the volatility equations (see Table 14).

I checked the potential effects of ROM by constructing a dummy variable ROM_t such that

$$ROM_t = \begin{cases} 1 & \text{after 30.9.2011} \\ 0 & \text{before 30.9.2011} \end{cases}$$

and defined an interaction variable $ROM_t * IA_t$ to represent the interventions conducted after the ROM is introduced. The results are presented in Table 15. The results indicate that there is no statistically significant evidence that the ROM has effect on the mean and the volatility of the USD/TRY exchange rate.

Also, interventions conducted after the ROM is introduced are not found to have significant effect on the mean and the volatility of the USD/TRY exchange rate.

I finally added the 21-day volatility in the ISE 100 index VOL_t. The results are provided in the Table 16 and Table 17. There is strong evidence that the higher volatility in the ISE 100 index depreciates the Turkish Lira against the US Dollar and the Euro and increase the conditional volatility in USD/TRY and EUR/TRY.

5 Conclusion

Central banks of many developed countries almost quit conducting actual interventions in the foreign exchange markets. The last time the Fed and the ECB intervened in the foreign exchange market was in 2000 whereas the BoJ has intervened many times. Even though the Fed and the ECB do not intervene, they make comments to convey their monetary stance. The analysis conducted in this thesis shows that the authorities in the US and the Euro zone prefer strong currencies. The 71 percent of the US comments and 60 percent of the Euro zone comments indicate that their authorities favor strong currencies (see Table 4). Conversely, even though this thesis does not study the Japanese comments, weaker YEN is the policy mantra in Japan and the BoJ intervenes in the foreign exchange markets so as to devalue the Yen. Interestingly, 78 percent of the Turkish comments show that the Turkish authorities do not articulate the direction (increase or decrease in the value of the Turkish Lira) or the level of the exchange rates. They state the exchange rates should be set by the market forces.

Even though their impact is small, Fratzscher (2008) showed that the comments of the US, European, and the Japanese authorities move the exchange rates in the intended direction. However, as he stated, the effectiveness of the comments do not imply that the authorities can reach at their desired long-term exchange rate levels. Also, it should be emphasized that if authorities give consecutive speeches to move the exchange rates, the speeches may become ineffective.

In the case of USD/TRY and EUR/TRY exchange rates, there is no statistically significant evidence that these rates respond to comments of authorities. Just the neutral comments, which state the markets should set the exchange rates, increase the volatility in the USD/TRY and EUR/TRY markets. The results of this thesis do not imply that there is no short-term reaction in the exchange rate levels to political commentaries. At very high frequencies such as intra-day frequency the foreign exchange markets may give quick response to the speeches; however, other daily developments may conceal the effects of the speeches.

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A Commentray Examples and Statistics

Table 1: Examples of Political Commentaries

Type	**Currency**	**News**
Appreciate	Turkish Lira	2012'de TL en çok değerlenen para birimlerinden biri olacak. MB 2012'de TL'nin *değer kazanmasına izin verecek.* (Erdem Başçı, 6.1.2012 Dünya Gazetesi)
Depreciate	Turkish Lira	*Lira maalesef değer kazanmaya devam ediyor.* (Mehmet Şimşek, 7.12.2010 Reuters)
Neutral	Turkish Lira	*Kuru piyasa dengesine bırakmak gerekiyor.* Arz ve talebin kesiştiği noktada, kurun oluşması gerekiyor. (Ali Babacan, 7.9.2010 Anadolu Ajansı)
Appreciate	US Dollar	*It is important for us to make sure that the dollar stays strong*, and the best way to make the dollar strong is to take policy actions that will allow the U.S economy to have a strong recovery. (Ben Bernanke, 14.4.2009 Kyodo News)
Depreciate	US Dollar	*the recent slide of the dollar "a modest realignment."...the U.S. government is unwilling to stop the plunge.* (John Snow, 20.5.2003 San Jose Mercury News)
Neutral	US Dollar	As I think you know, I believe very strongly that a strong dollar is in our nation's interest, and *I'm a big believer in currencies being set in a competitive, open marketplace.* (Henry Paulson, 20.4.2007 Reuters News)
Appreciate	Euro	I still do believe that *the euro has a strong potential to appreciate.* (Wim Duisenberg, 18.12.2001 Market News International)
Depreciate	Euro	France's prime minister Friday cheered the recent decline of the euro on the foreign exchange, noting that *France has been calling for a lower euro for years.* (Francois Fillon, 4.6.2010 Dow Jones Business News)
Neutral	Euro	I'll have to repeat myself. *The euro's exchange rate is not a target for us.* (Wim Duisenberg, 31.5.2001 Reuters News)

Table 2: Political Commentary Statistics

	TRY			USD			EUR		
Period	**App.**	**Dep.**	**Neut.**	**App.**	**Dep.**	**Neut.**	**App.**	**Dep.**	**Neut.**
2001-2003	11	1	36	49	2	18	37	1	14
2004-2006	5	0	52	32	0	18	5	1	4
2007-2009	2	0	14	32	0	9	3	4	3
2010-2012	10	6	15	7	0	2	14	4	9
Percent	0.18	0.05	0.77	0.71	0.01	0.28	0.60	0.10	0.30

B Table for OLS Results

Table 3: Results of the Forecasting Regression

	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
α	0.3449***	0.0201	17.1649	0.0000
β	1.0299***	0.0010	1021.3180	0.0000

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

C List of Macroeconomic Surprises

Table 4: Macroeconomic Indicators

Variable	**Description**	**Unit**	**Country**
AUTO	Auto Sale	million	USA
BUSINV	Business Inventories	percent	USA
CAPA	Capacity Utilization	percent	USA
CCONF	Consumer Confidence	percent	USA
CONST	Construction Spending	percent	USA
CPI	CPI	percent	USA
CREDIT	Consumer Credit	billion	USA
DGORD	Durable Goods Order	percent	USA
ECICW	ECI Civil Workers	percent	USA
EXPORT	Export	billion	USA
FACORD	Factory Orders	percent	USA
GDPADV	Real GDP	percent	USA
HEARN	Hourly Earnings	percent	USA
HSTART	Housing Starts	million	USA
ICLM	Initial Claims	thousand	USA
IMPORT	Imports	billion	USA
INDPRD	Industrial Production	percent	USA
LDERS	Leading Economic Indicators	percent	USA
MFPAY	Manufacturing payrolls	thousand	USA
MICHIGAN	Michigan Consumer Sentiment	index	USA
ISM	ISM	index	USA
NAPM	Nonfarm Payrolls	thousand	USA
NHOMES	New Home Sales	thousand	USA
PCE	Private Consumption Expenditure	percent	USA
PERINC	Personal Income	percent	USA
PHILLYFED	Philadelphia Fed Business Outlook	index	USA
PMI	Chicago PMI	percent	USA
RETLS	Retail Sales	percent	USA
RSXAUT	Retail Sales excluding Autos	percent	USA
UNEMP	Unemployment	percent	USA
CAPA	Current Account Balance	million	Turkey
TB	Trade Balance	million	Turkey
INF	Inflation	percent	Turkey
POL	Policy Rate	percent	Turkey
GDP	Gdp	percent	Turkey
IP	Industrial Production	percent	Turkey

D Table for ADF Test Results

Table 5: ADF Test Results

None

Variable	t-Statistics	p-value
r_t^{USD}	-51.0821***	0.0001
$(TRON - USON)_t$	-4.9516***	0.0000
r_t^{EUR}	-39.5942***	0.0000
$(TRON - EURON)_t$	-5.1624***	0.0000

Intercept

Variable	t-Statistics	p-value
r_t^{USD}	-51.0974***	0.0001
$(TRON - USON)_t$	-4.3517***	0.0004
r_t^{EUR}	-39.6481***	0.0000
$(TRON - EURON)_t$	-4.6344***	0.0001

Intercept and Trend

Variable	t-Statistics	p-value
r_t^{USD}	-51.0983***	0.0000
$(TRON - USON)_t$	-3.2766*	0.0703
r_t^{EUR}	-39.7011***	0.0000
$(TRON - EURON)_t$	-3.655**	0.0256

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

E Tables for EGARCH(1,1) Results

Table 6: USD/TRY for period 2001-2012

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	0.0001	0.0002	0.4828	0.6292
$(TRON - USON)_t$	0.0000	0.0000	-1.0741	0.2828
TR_t^A	-0.0019	0.0014	-1.3450	0.1786
TR_t^D	-0.0009	0.0021	-0.4367	0.6623
TR_t^N	0.0005	0.0007	0.7295	0.4657
US_t^A	-0.0001	0.0007	-0.2091	0.8344
US_t^D	0.0089	0.0200	0.4462	0.6555
US_t^N	0.0011	0.0009	1.2507	0.2111
IA_t	-0.0006	0.0044	-0.1341	0.8933

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
d	-0.6752***	0.0405	-16.6556	0.0000
d_1	0.2287***	0.0164	13.9136	0.0000
d_2	0.0845***	0.0111	7.5935	0.0000
d_3	0.9513***	0.0041	232.0595	0.0000
$(TRON - USON)_t$	0.0008***	0.0002	4.5802	0.0000
TR_t^A	-0.0800	0.0930	-0.8599	0.3899
TR_t^D	-0.2925	0.2409	-1.2139	0.2248
TR_t^N	0.2412***	0.0363	6.6451	0.0000
US_t^A	-0.0398	0.0476	-0.8357	0.4033
US_t^D	0.1741	0.5502	0.3165	0.7516
US_t^N	0.2855***	0.0677	4.2162	0.0000
IA_t	-0.6048	0.3907	-1.5479	0.1216

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 7: USD/TRY for period 2004-2009

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	0.0006	0.0006	0.9691	0.3325
$(TRON - USON)_t$	-0.0001	0.0000	-1.4610	0.1440
TR_t^A	-0.0020	0.0023	-0.8606	0.3895
TR_t^N	-0.0005	0.0009	-0.5279	0.5976
US_t^A	-0.0005	0.0008	-0.6179	0.5366
US_t^N	0.0013	0.0010	1.3280	0.1842
IA_t	-0.0159	0.0579	-0.2742	0.7839
$AUTO_t$	0.0022	0.0028	0.7903	0.4293
$BUSINV_t$	-0.0041	0.0034	-1.1970	0.2313
CA_t	0.0000*	0.0000	1.6649	0.0959
$CAPA_t$	-0.0052	0.0039	-1.3445	0.1788
$CCONF_t$	0.0000	0.0002	-0.2254	0.8216
$CONST_t$	-0.0012	0.0014	-0.8911	0.3729
CPI_t	0.0071	0.0053	1.3296	0.1837
$CREDIT_t$	0.0000	0.0001	0.2956	0.7675
$DGORD_t$	0.0003	0.0003	0.9939	0.3203
$ECICW_t$	-0.0017	0.0112	-0.1502	0.8806
$EXPORT_t$	0.0005	0.0005	1.0357	0.3003
$FACORD_t$	-0.0003	0.0010	-0.2751	0.7832
GDP_t	0.0013	0.0012	1.1274	0.2596
$HEARN_t$	0.0207***	0.0075	2.7647	0.0057
$HSTART_t$	0.0085	0.0072	1.1736	0.2406
$ICLM_t$	0.0000	0.0000	-0.3656	0.7147
$IMPORT_t$	-0.0004	0.0003	-1.6310	0.1029
$INDPRD_t$	-0.0006	0.0048	-0.1156	0.9080
INF_t	-0.0028	0.0026	-1.0776	0.2812
IP_t	-0.0010***	0.0002	-4.1765	0.0000
$LDERS_t$	0.0061**	0.0027	2.2631	0.0236
$MFPAY_t$	0.0000	0.0000	-0.4053	0.6853
$MICHIGAN_t$	0.0001	0.0006	0.1700	0.8650
$NAPM_t$	0.0000	0.0003	0.0651	0.9481
$NFPAY_t$	0.0000	0.0000	0.8805	0.3786
$NHOMES_t$	0.0004	0.0054	0.0783	0.9376
PCE_t	-0.0005	0.0035	-0.1288	0.8975
$PERINC_t$	-0.0003***	0.0001	-2.9585	0.0031
$PHILLYFED_t$	-0.0001	0.0003	-0.4490	0.6535
PMI_t	-0.0010	0.0020	-0.5195	0.6034
POL_t	0.0000	0.0001	0.2493	0.8031
$RETLS_t$	0.0015	0.0012	1.2947	0.1954
$RSXAUT_t$	0.0000	0.0000	0.4544	0.6495
TB_t	0.0000	0.0000	-0.9017	0.3672

continued on next page

Variable	Coefficient	Std. Error	z-Statistic	Prob.
$UNEMP_t$	0.0036	0.0074	0.4837	0.6286
$GDPADV_t$	-0.0003	0.0036	-0.0893	0.9289

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
d	-0.4919***	0.0764	-6.4385	0.0000
d_1	0.1277***	0.0302	4.2310	0.0000
d_2	0.0876***	0.0207	4.2247	0.0000
d_3	0.9622***	0.0066	144.8736	0.0000
$(TRON - USON)_t$	0.0000	0.0013	0.0133	0.9894
TR_t^A	-0.4114**	0.2221	-1.8525	0.0639
TR_t^N	0.3464***	0.0692	5.0064	0.0000
US_t^A	-0.1587**	0.0851	-1.8651	0.0622
US_t^N	0.2140**	0.1018	2.1028	0.0355
IA_t	0.1623	0.7788	0.2084	0.8349
$AUTO_t$	0.2238	0.2489	0.8989	0.3687
$BUSINV_t$	0.7938*	0.4645	1.7090	0.0875
CA_t	0.0005	0.0003	1.4891	0.1365
$CAPA_t$	0.0477	0.3824	0.1247	0.9007
$CCONF_t$	-0.0188	0.0201	-0.9363	0.3491
$CONST_t$	-0.0622	0.1410	-0.4413	0.6590
CPI_t	-0.6124	0.6813	-0.8989	0.3687
$CREDIT_t$	-0.0043	0.0075	-0.5649	0.5721
$DGORD_t$	-0.1029***	0.0374	-2.7532	0.0059
$ECICW_t$	0.1118	1.0238	0.1092	0.9131
$EXPORT_t$	0.0885**	0.0417	2.1214	0.0339
$FACORD_t$	0.2229*	0.1145	1.9478	0.0514
GDP_t	-0.1352	0.1114	-1.2140	0.2248
$HEARN_t$	0.0375	0.7777	0.0482	0.9615
$HSTART_t$	0.4553	1.0020	0.4544	0.6496
$ICLM_t$	0.0016	0.0025	0.6459	0.5183
$IMPORT_t$	-0.1418***	0.0317	-4.4673	0.0000
$INDPRD_t$	-0.8290**	0.3626	-2.2865	0.0222
INF_t	-0.0756	0.2203	-0.3431	0.7315
IP_t	0.0325	0.0348	0.9334	0.3506
$LDERS_t$	0.2738	0.3809	0.7188	0.4722
$MFPAY_t$	-0.0050	0.0048	-1.0412	0.2978
$MICHIGAN_t$	0.0503	0.0624	0.8056	0.4205
$NAPM_t$	0.2117***	0.0455	4.6558	0.0000
$NFPAY_t$	-0.0010	0.0012	-0.8140	0.4156
$NHOMES_t$	0.8249	0.5988	1.3775	0.1683
PCE_t	0.1372	0.2882	0.4761	0.6340
$PERINC_t$	-0.0333***	0.0110	-3.0318	0.0024
$PHILLYFED_t$	-0.0355	0.0234	-1.5156	0.1296

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Variable	Coefficient	Std. Error	z-Statistic	Prob.
PMI_t	-0.0742	0.2084	-0.3559	0.7219
POL_t	0.0105	0.0068	1.5448	0.1224
$RETLS_t$	-0.3453*	0.2013	-1.7150	0.0863
$RSXAUT_t$	0.0004	0.0037	0.0991	0.9210
TB_t	-0.0005**	0.0002	-2.5426	0.0110
$UNEMP_t$	2.0730***	0.7057	2.9374	0.0033
$GDPADV_t$	-0.3685	0.2554	-1.4428	0.1491

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 8: EUR/TRY for period 2001-2012

Mean Equation

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
c	-0.0001	0.0002	-0.3587	0.7198
$(TRON - EURON)_t$	0.0000	0.0000	-0.2497	0.8028
TR_t^A	-0.0001	0.0013	-0.0982	0.9218
TR_t^D	0.0052***	0.0020	2.6579	0.0079
TR_t^N	0.0001	0.0007	0.1037	0.9174
EU_t^A	0.0003	0.0010	0.2663	0.7900
EU_t^D	0.0001	0.0023	0.0356	0.9716
EU_t^N	0.0011	0.0013	0.8864	0.3754

Variance Equation

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
f	-0.7556***	0.0985	-7.6678	0.0000
f_1	0.2505***	0.0281	8.9175	0.0000
f_2	0.0904***	0.0163	5.5302	0.0000
f_3	0.9454***	0.0087	108.4088	0.0000
$(TRON - EURON)_t$	0.0015***	0.0004	3.6996	0.0002
TR_t^A	-0.0152	0.1456	-0.1041	0.9171
TR_t^D	-0.8245***	0.3168	-2.6023	0.0093
TR_t^N	0.1508**	0.0680	2.2164	0.0267
EU_t^A	-0.0664	0.0969	-0.6855	0.4930
EU_t^D	0.0935	0.2876	0.3250	0.7452
EU_t^N	0.1415	0.1424	0.9936	0.3204

$T - DIST.DOF$	6.6754	0.8653	7.7142	0.0000

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.
There are 2880 observations .

Table 9: EUR/TRY for period 2004-2011

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	0.0005	0.0004	1.4046	0.1601
$(TRON - EURON)_t$	-0.0001*	0.0000	-1.7662	0.0774
TR_t^A	0.0000	0.0023	0.0071	0.9943
TR_t^D	0.0052**	0.0021	2.4155	0.0157
TR_t^N	-0.0004	0.0008	-0.5087	0.6109
EU_t^A	0.0007	0.0012	0.5630	0.5734
EU_t^D	-0.0001	0.0025	-0.0545	0.9565
EU_t^N	-0.0001	0.0013	-0.0970	0.9227
CA_t	0.0000*	0.0000	1.8115	0.0701
GDP_t	0.0017**	0.0008	2.1774	0.0295
INF_t	-0.0003	0.0015	-0.2083	0.8350
POL_t	0.0000	0.0001	0.5540	0.5796
TB_t	0.0000**	0.0000	-1.9852	0.0471

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
f	-0.6271***	0.1063	-5.8962	0.0000
f_1	0.2383***	0.0344	6.9230	0.0000
f_2	0.0966***	0.0204	4.7290	0.0000
f_3	0.9561***	0.0092	104.3073	0.0000
$(TRON - EURON)_t$	0.0009	0.0014	0.6704	0.5026
TR_t^A	-0.1038	0.2855	-0.3634	0.7163
TR_t^D	-0.4775	0.3413	-1.3993	0.1617
TR_t^N	0.1394*	0.0786	1.7744	0.0760
EU_t^A	-0.1683	0.1623	-1.0367	0.2999
EU_t^D	0.0933	0.3009	0.3102	0.7564
EU_t^N	-0.1352	0.2255	-0.5997	0.5487
CA_t	0.0000	0.0003	-0.1070	0.9148
GDP_t	0.0770	0.1182	0.6513	0.5149
INF_t	0.0381	0.1816	0.2097	0.8339
POL_t	0.0004	0.0057	0.0760	0.9394
TB_t	-0.0001	0.0002	-0.4539	0.6499

$T - DIST.DOF$	6.1153***	0.9350	6.5401	0.0000

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.
There are 1891 observations.

Table 10: Lagged Values of the Commentaries USD/TRY

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	0.0001	0.0002	0.6176	0.5368
$(TRON - USON)_t$	0.0000	0.0000	-0.6053	0.5450
IA_t	0.0000	0.0000	0.4485	0.6538
TR_t^A	-0.0027	0.0020	-1.3680	0.1713
TR_{t-1}^A	-0.0016	0.0015	-1.0435	0.2967
TR_{t-2}^A	0.0024*	0.0014	1.6599	0.0969
TR_t^D	-0.0007	0.0028	-0.2680	0.7887
TR_{t-1}^D	0.0041*	0.0025	1.6807	0.0928
TR_{t-2}^D	0.0029	0.0022	1.3286	0.1840
TR_t^N	0.0002	0.0008	0.2429	0.8081
TR_{t-1}^N	-0.0007	0.0008	-0.9317	0.3515
TR_{t-2}^N	-0.0006	0.0007	-0.7468	0.4552
US_t^A	0.0000	0.0008	0.0264	0.9789
US_{t-1}^A	0.0001	0.0006	0.2111	0.8328
US_{t-2}^A	-0.0007	0.0007	-1.0675	0.2857
US_t^D	0.0077	0.0080	0.9678	0.3332
US_{t-1}^D	-0.0147***	0.0050	-2.9232	0.0035
US_{t-2}^D	-0.0032	0.0045	-0.7053	0.4806
US_t^N	0.0006	0.0014	0.4572	0.6475
US_{t-1}^N	-0.0016	0.0010	-1.6377	0.1015
US_{t-2}^N	-0.0007	0.0009	-0.8164	0.4143

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
d	-0.6692***	0.0435	-15.3727	0.0000
d_1	0.2361***	0.0173	13.6327	0.0000
d_2	0.0856***	0.0117	7.3437	0.0000
d_3	0.9522***	0.0044	214.2918	0.0000
$(TRON - USON)_t$	0.0008***	0.0002	3.8421	0.0001
IA_t	-0.0007*	0.0004	-1.8925	0.0584
TR_t^A	0.2395	0.2264	1.0580	0.2901
TR_{t-1}^A	-0.1075	0.3158	-0.3405	0.7335
TR_{t-2}^A	-0.3311	0.2204	-1.5025	0.1330
TR_t^D	-0.4236	0.7460	-0.5678	0.5702
TR_{t-1}^D	0.0736	1.0281	0.0716	0.9429
TR_{t-2}^D	0.0215	0.8004	0.0269	0.9785
TR_t^N	0.2822***	0.1026	2.7493	0.0060
TR_{t-1}^N	0.0945	0.1474	0.6412	0.5214
TR_{t-2}^N	-0.1293	0.1063	-1.2163	0.2239
US_t^A	0.0834	0.1206	0.6913	0.4894
US_{t-1}^A	-0.1680	0.1663	-1.0104	0.3123

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Variable	Coefficient	Std. Error	z-Statistic	Prob.
US^A_{t-2}	0.0193	0.1232	0.1562	0.8759
US^D_t	-0.7704	0.9355	-0.8235	0.4102
US^D_{t-1}	0.6238	1.8613	0.3351	0.7375
US^D_{t-2}	-0.0661	1.4433	-0.0458	0.9635
US^N_t	0.6573***	0.1619	4.0599	0.0000
US^N_{t-1}	-0.4894**	0.2323	-2.1064	0.0352
US^N_{t-2}	0.0186	0.1704	0.1093	0.9130

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 11: Lagged Values of the Commentaries EUR/TRY

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	-0.0001	0.0002	-0.5099	0.6101
$(TRON - EURON)_t$	0.0000	0.0000	0.7828	0.4338
TR_t^A	-0.0002	0.0018	-0.1297	0.8968
TR_{t-1}^A	-0.0014	0.0015	-0.9001	0.3680
TR_{t-2}^A	0.0020**	0.0009	2.2712	0.0231
TR_t^D	0.0031	0.0027	1.1719	0.2413
TR_{t-1}^D	0.0004	0.0011	0.4010	0.6884
TR_{t-2}^D	0.0018	0.0019	0.9636	0.3352
TR_t^N	0.0001	0.0008	0.1464	0.8836
TR_{t-1}^N	-0.0002	0.0008	-0.2449	0.8065
TR_{t-2}^N	0.0008	0.0007	1.0942	0.2738
EU_t^A	-0.0006	0.0012	-0.5356	0.5922
EU_{t-1}^A	0.0019*	0.0011	1.7507	0.0800
EU_{t-2}^A	0.0005	0.0011	0.4794	0.6316
EU_t^D	0.0003	0.0040	0.0867	0.9309
EU_{t-1}^D	-0.0010	0.0029	-0.3265	0.7441
EU_{t-2}^D	-0.0009	0.0025	-0.3608	0.7183
EU_t^N	0.0008	0.0013	0.5843	0.5590
EU_{t-1}^N	-0.0003	0.0016	-0.1625	0.8709
EU_{t-2}^N	-0.0002	0.0014	-0.1656	0.8685

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
f	-0.6212***	0.0612	-10.1585	0.0000
f_1	0.2267***	0.0199	11.3629	0.0000
f_2	0.0886***	0.0104	8.5071	0.0000
f_3	0.9569***	0.0053	179.9811	0.0000
$(TRON - EURON)_t$	0.0012***	0.0003	4.4827	0.0000
TR_t^A	0.2843	0.2745	1.0356	0.3004
TR_{t-1}^A	0.4039	0.3709	1.0890	0.2762
TR_{t-2}^A	-1.0052***	0.2710	-3.7090	0.0002
TR_t^D	-0.1749	0.7139	-0.2450	0.8065
TR_{t-1}^D	-1.6990*	0.9610	-1.7679	0.0771
TR_{t-2}^D	1.0994	0.6864	1.6018	0.1092
TR_t^N	0.2712***	0.0843	3.2153	0.0013
TR_{t-1}^N	-0.0345	0.1385	-0.2491	0.8033
TR_{t-2}^N	-0.0323	0.0938	-0.3448	0.7303
EU_t^A	0.1434	0.1995	0.7187	0.4724
EU_{t-1}^A	-0.0966	0.2159	-0.4474	0.6546
EU_{t-2}^A	-0.1063	0.1657	-0.6418	0.5210
EU_t^D	0.1659	0.5300	0.3130	0.7543

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Variable	Coefficient	Std. Error	z-Statistic	Prob.
EU^D_{t-1}	0.1209	1.0261	0.1178	0.9062
EU^D_{t-2}	-0.0996	0.7719	-0.1290	0.8974
EU^N_t	0.2018	0.2127	0.9489	0.3427
EU^N_{t-1}	0.0333	0.2474	0.1347	0.8929
EU^N_{t-2}	-0.0414	0.1961	-0.2112	0.8327

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 12: Effects of Comments of the Politicians on USD/TRY

Mean Equation

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
c	0.0001	0.0002	0.4697	0.6386
$(TRON - USON)_t$	0.0000	0.0000	-0.9856	0.3243
IA_t	0.0000	0.0000	-0.2395	0.8107
TR_t^A	-0.0024	0.0021	-1.1657	0.2437
TR_t^D	-0.0013	0.0024	-0.5395	0.5896
TR_t^N	0.0002	0.0011	0.1584	0.8742
US_t^A	-0.0002	0.0007	-0.2529	0.8004
US_t^D	0.0090	0.0193	0.4679	0.6398
US_t^N	0.0011	0.0009	1.2077	0.2272

Variance Equation

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
d	-0.6054***	0.0380	-15.9164	0.0000
d_1	0.2234***	0.0159	14.0266	0.0000
d_2	0.0813***	0.0108	7.5460	0.0000
d_3	0.9576***	0.0038	251.1469	0.0000
$(TRON - USON)_t$	0.0008***	0.0002	5.0489	0.0000
IA_t	-0.0007*	0.0004	-1.8947	0.0581
TR_t^A	-0.1611	0.1209	-1.3319	0.1829
TR_t^D	-0.1162	0.2345	-0.4954	0.6203
TR_t^N	0.1645**	0.0666	2.4712	0.0135
US_t^A	-0.0243	0.0494	-0.4919	0.6228
US_t^D	0.0571	0.5289	0.1080	0.9140
US_t^N	0.3252***	0.0672	4.8376	0.0000

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 13: Effects of Comments of the Politicians on EUR/TRY

Mean Equation

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
c	0.0000	0.0002	-0.0398	0.9682
$(TRON - EURON)_t$	0.0000	0.0000	0.8803	0.3787
TR_t^A	0.0003	0.0018	0.1550	0.8768
TR_t^D	0.0036*	0.0019	1.9222	0.0546
TR_t^N	0.0010	0.0010	1.0729	0.2833
EU_t^A	-0.0013	0.0011	-1.0981	0.2721
EU_t^D	0.0004	0.0017	0.2129	0.8314
EU_t^N	0.0015	0.0019	0.7732	0.4394

Variance Equation

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
f	-0.6200***	0.0565	-10.9682	0.0000
f_1	0.2265***	0.0179	12.6765	0.0000
f_2	0.0954***	0.0105	9.1109	0.0000
f_3	0.9570***	0.0050	191.4671	0.0000
$(TRON - EURON)_t$	0.0012***	0.0002	5.1490	0.0000
TR_t^A	-0.1549	0.1367	-1.1327	0.2573
TR_t^D	-0.8458***	0.2865	-2.9523	0.0032
TR_t^N	0.2302***	0.0593	3.8846	0.0001
EU_t^A	-0.0228	0.0835	-0.2724	0.7853
EU_t^D	0.1222	0.1982	0.6168	0.5374
EU_t^N	0.5132***	0.1297	3.9571	0.0001

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 14: Lagged Values of Interventions USD/TRY

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	0.0001	0.0002	0.4407	0.6594
$(TRON - USON)_t$	0.0000	0.0000	-1.1096	0.2672
IA_t	0.0000	0.0000	-0.1402	0.8885
IA_{t-1}	0.0000	0.0000	-0.8651	0.3870
IA_{t-2}	0.0000	0.0000	0.6149	0.5386
TR_t^A	-0.0018	0.0014	-1.2541	0.2098
TR_t^D	-0.0009	0.0022	-0.4263	0.6699
TR_t^N	0.0006	0.0008	0.7684	0.4422
US_t^A	-0.0001	0.0007	-0.1563	0.8758
US_t^D	0.0074	0.0214	0.3434	0.7313
US_t^N	0.0009	0.0009	1.0331	0.3015

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
d	-0.6682***	0.0405	-16.5040	0.0000
d_1	0.2270***	0.0165	13.7673	0.0000
d_2	0.0838***	0.0111	7.5662	0.0000
d_3	0.9519***	0.0041	232.8554	0.0000
$(TRON - USON)_t$	0.0007***	0.0002	4.0341	0.0001
IA_t	0.0008	0.0015	0.5487	0.5832
IA_{t-1}	-0.0015	0.0015	-0.9980	0.3183
IA_{t-2}	0.0001	0.0009	0.1504	0.8804
TR_t^A	-0.0784	0.0939	-0.8353	0.4035
TR_t^D	-0.2903	0.2393	-1.2132	0.2251
TR_t^N	0.2483***	0.0368	6.7485	0.0000
US_t^A	-0.0293	0.0483	-0.6062	0.5444
US_t^D	0.0174	0.6573	0.0265	0.9789
US_t^N	0.2961***	0.0687	4.3118	0.0000

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 15: Effectiveness of the ROM on the USD/TRY

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	0.0001	0.0002	0.3187	0.7499
$(TRON - USON)_t$	0.0000	0.0000	-0.9704	0.3318
IA_t	0.0000	0.0000	-1.0049	0.3149
TR_t^A	-0.0021	0.0015	-1.4276	0.1534
TR_t^D	-0.0009	0.0021	-0.4231	0.6722
TR_t^N	0.0006	0.0008	0.7510	0.4527
US_t^A	-0.0001	0.0007	-0.1478	0.8825
US_t^D	0.0090	0.0182	0.4956	0.6201
US_t^N	0.0011	0.0009	1.2545	0.2097
ROM_t	0.0002	0.0004	0.5231	0.6009
$ROM_t * IA_t$	0.0000	0.0000	1.3734	0.1696

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
d	-0.6603***	0.0416	-15.8894	0.0000
d_1	0.2246***	0.0166	13.5657	0.0000
d_2	0.0827***	0.0112	7.3965	0.0000
d_3	0.9522***	0.0042	225.1546	0.0000
$(TRON - USON)_t$	0.0007***	0.0002	4.1388	0.0000
IA_t	-0.0006	0.0004	-1.3492	0.1773
TR_t^A	-0.0336	0.1086	-0.3089	0.7574
TR_t^D	-0.3136	0.2371	-1.3226	0.1860
TR_t^N	0.2324***	0.0368	6.3102	0.0000
US_t^A	-0.0481	0.0479	-1.0039	0.3154
US_t^D	0.0959	0.5577	0.1719	0.8635
US_t^N	0.2793***	0.0675	4.1412	0.0000
ROM_t	-0.0214	0.0169	-1.2703	0.2040
$ROM_t * IA_t$	-0.0004	0.0011	-0.3729	0.7093

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 16: Effects of the ISE 100 Index 21-day Volatility on the USD/TRY

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	-0.0011***	0.0003	-3.4056	0.0007
$(TRON - USON)_t$	0.0000***	0.0000	-3.0348	0.0024
IA_t	0.0000	0.0000	0.2574	0.7969
TR_t^A	-0.0015	0.0016	-0.9484	0.3429
TR_t^D	-0.0014	0.0021	-0.6542	0.5130
TR_t^N	0.0004	0.0007	0.5418	0.5880
US_t^A	0.0001	0.0008	0.1425	0.8867
US_t^D	0.0094	0.0243	0.3886	0.6975
US_t^N	0.0009	0.0010	0.9358	0.3494
Vol_t	0.0001***	0.0000	4.4944	0.0000

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
d	-1.1826***	0.1142	-10.3573	0.0000
d_1	0.2432***	0.0220	11.0604	0.0000
d_2	0.1133***	0.0131	8.6502	0.0000
d_3	0.9093***	0.0100	91.0418	0.0000
$(TRON - USON)_t$	-0.0002	0.0003	-0.8214	0.4114
IA_t	-0.0005	0.0005	-1.1448	0.2523
TR_t^A	0.0517	0.1172	0.4407	0.6594
TR_t^D	-0.2742	0.2997	-0.9151	0.3601
TR_t^N	0.2591***	0.0526	4.9288	0.0000
US_t^A	0.0102	0.0627	0.1629	0.8706
US_t^D	0.4111	0.6189	0.6642	0.5066
US_t^N	0.3530***	0.0809	4.3620	0.0000
VOL_t	0.0034***	0.0005	6.8391	0.0000

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Table 17: Effects of the ISE 100 Index 21-day Volatility on the EUR/TRY

Mean Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
c	-0.0006*	0.0003	-1.8840	0.0596
$(TRON - EURON)_t$	0.0000	0.0000	-0.8479	0.3965
TR_t^A	0.0001	0.0015	0.0953	0.9241
TR_t^D	0.0041**	0.0018	2.3346	0.0196
TR_t^N	0.0003	0.0007	0.4206	0.6741
EU_t^A	-0.0007	0.0010	-0.6919	0.4890
EU_t^D	0.0003	0.0021	0.1558	0.8762
EU_t^N	0.0007	0.0013	0.5335	0.5937
VOL_t	0.0000	0.0000	2.4829	0.0130

Variance Equation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
f	-1.1043***	0.1112	-9.9277	0.0000
f_1	0.2495***	0.0237	10.5125	0.0000
f_2	0.1100***	0.0124	8.8678	0.0000
f_3	0.9175***	0.0094	97.1667	0.0000
$(TRON - EURON)_t$	0.0008**	0.0003	2.4172	0.0156
TR_t^A	-0.0151	0.1138	-0.1325	0.8946
TR_t^D	-0.7562***	0.2872	-2.6330	0.0085
TR_t^N	0.2128***	0.0478	4.4553	0.0000
EU_t^A	-0.0662	0.0853	-0.7762	0.4376
EU_t^D	0.2722	0.2357	1.1548	0.2482
EU_t^N	0.2340**	0.1147	2.0412	0.0412
VOL_t	0.0029***	0.0005	6.1297	0.0000

Notes: ***, **, * indicate the variable is significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

F Figure of Daily Overnight Libor Rate and Overnight Repo Rate

Figure 1: TRY ON Libor Rate and ISE ON Repo Rate