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Chapter

External Factors on Turkish Short-Term Interest Rates and Daily Exchange Rates: Tranquil Periods versus Politically Stressed Times

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Abstract

This chapter studies the impacts of short-term interest rates of United States and emerging markets risk premia as external factors on Turkish short-term interest rates and daily exchange rates during the period of January 2011–December 2018. Following Edwards and Borensztein et al., we construct a vector autoregressive (VAR) model with the domestic short-term interest rates, exchange rate against the US Dollar, the US interest rates and iShares MSCI emerging markets ETF. Hereby, we intend to shed some light on the reaction of Turkish interest rates and exchange rates to the short-term US interest rates and emerging markets instability. As other emerging countries, Turkey is rather economically and politically unstable country. Even a little political development may cause a serious volatility in the market. For that reason, in this study we specifically examine the periods that are known as politically stressed times and tranquil periods separately to see how external factors' behaviors change during shock periods.

Keywords: interest rate contagion, exchange rate, VAR model, financial crisis, emerging markets

1. Introduction

The risk exposures from the US during the 2007–2009 financial crisis spread rapidly to the global financial markets and gradually increased its severity while the great number of banks bankrupted due to increase in interest rates. The major role for the bankruptcies of the banks in European countries was the domino effect of the spread of interest rate risk in the interbank market and liquidity risk (e.g., [1, 2]). Since the liquidity risks correspond to counterparty risk, the idiosyncratic credit problems arising from the US subprime mortgage market spread rapidly to other countries through the channels of changes in interest rate (e.g., [2–5]). Brunnermeier and Pedersen [3] empirically show that increase in interest rates affect the financial institutions that have liquidity problems as those institutions are more open to risk contagion arising from the interest rate rise. "For this reason, banks, which carry interbank credit risk threats, are exposed to liquidity risks and such a systemic risk contagion causes subsequent bankruptcies (see e.g., [6–11])" ([12], p. 243).

Even though the existing literature mainly addresses the issues such as risk contagion across stock markets or foreign exchange markets due to counterparty relationships, macroeconomic risk or financial linkages; how interest rate risk propagates around global financial markets is not fully investigated (e.g., [10, 13–15]). As interest rates can be used domestically to absorb the external shocks and to balance the currency, the propagation of the interest rate risks between financial markets gains much more importance for economically semi- and fully open countries.

How foreign interest rates and the exchange rates affect the domestic interest rates can be shown with the following equation:

$$i_t = i_t^* + E_t e_{t+1} - e_t + \pi_t \quad (1)$$

where i_t is the domestic interest rate with maturity $t + 1$; i_t^* is the foreign interest rates with the same maturity; e_t is the natural logarithm of the spot exchange rate at time t; and π_t is the country risk premium. According to this, every shock to i^* or π can be absorbed by changes in domestic interest rates and changes in the expected rate of depreciation. Therefore, it is possible to say that under floating exchange rate regime, policy makers have freedom to increase or decrease the domestic interest rates to adjust the exchange rate. For example, "a positive shock to i^* or π may cause an immediate devaluation of the exchange rate which overshoots its long-run equilibrium and tends to appreciate (or reduce its rate of depreciation)" ([16], p. 7). In other words, under floating exchange rate regime, flexible exchange rate can absorb external shocks.

According to Edwards [17], the interest rate spread, which can be defined as the difference between lending and riskless rates, is a key transmission channel for interest rate risk propagation (e.g., [5, 18–20]). Borensztein et al. [21] examine the impact of international interest rate shocks and emerging market risk premia on domestic interest rates and exchange rates for both emerging and developed countries. The authors find different results for Latin American and Asian economies and for different exchange rate regimes. According to that in Mexico and Argentina, emerging market risk premia significantly affects the interest rates. On the other hand, the Asian countries show different reactions according to their exchange rate regimes; Singapore which has a floating exchange rate regime seems unaffected by the external shocks while Hong Kong responses significantly to the emerging market risk premia.

There are more recent papers that investigate the impacts of external shocks for various countries. In Ref. [22], Demirel investigates the impulse responses of the Turkish economy to the US interest rate shocks. The study reveals that Turkey is less sensitive to the interest rate shocks while she has lower levels of external debt. Therefore, the author concludes that the foreign interest rate shocks depend on the level of external debt for small-open economies. Allegret et al. [23] examine the relative importance of external shocks in domestic fluctuations for East Asian countries. Using a structural VAR model, the authors show that real oil price and the US GDP shocks have significant impacts on domestic activity. They also reveal that since the mid-1990s, external shocks have rising impacts on domestic variables in those countries. Using a trend-cycle VAR model, Andrle et al. [24] investigate how external factors affect the Poland's domestic variables. According to that, the authors reach the conclusion that about 50% of Poland's output and interest rate variance and about 25% of the variance of inflation can be explained with shocks from Euro zone. Pelipas et al. [25] test the significance of Russia's GDP and oil prices as the external factors on Belarus' economy. Using generalized impulse response functions, the authors show that oil prices have strong and negative impact on the economy while Russia's GDP does not have that strong impact.

This chapter is motivated to some extent by the earlier work of Edwards [26] and Borensztein et al. [21]. Therefore, following those studies, in this study, I aim to construct a vector auto regression (VAR) model to examine the effect of external shocks on Turkish short-term interest rates and the exchange rate. Differently from Edwards [26] and Borensztein et al. [21] and the more recent papers, I investigate how the impact of external shocks change according to tranquil and politically stressed periods as Turkey is a rather politically instable country and this situation causes authorities to interfere with the floating exchange rate regime every now and then.

The chapter is structured as follows. Section 2 presents data we use to analyze the impacts of external shocks on the Turkish short-term interest rates and the exchange rate; and the VAR model under Section 2.2. Section 3 reports the estimation results according to full period, each politically stressed periods and the politically tranquil periods. Finally, the wrap up of the results and conclusions are offered in Section 4.

2. Data and methodology

2.1 Data

The time period, in this study, is determined as January 2011–December 2018. Turkey has been governed by one political party since 2002. Therefore, the period from 2002 to today can be counted as a rather politically stable period for Turkey. However, in our study we do not want to include the first 5 years of the AKP (The Justice and Development Party) governments as this period can be counted as the rebalancing and redevelopment period after the heavy financial crisis of 2001. Furthermore, as during the years between 2007 and 2010, global financial crisis may have a dominant role on the markets instead of local developments, we do not include this period into our study too. Therefore, the period that we decide to examine, 2011–2018, solely shows us the impact of external factors change on the short-term interest rates and the daily exchange rates according to politically stressed times or tranquil periods.

In this study, 3-months interbank rates are used as the short-term interest rates. To be able to assess how group of emerging countries affect Turkish domestic interest rates and the exchange rates, daily iShares MSCI emerging markets ETF is used as the proxy of the emerging market risk premia (difference between return of a risky asset and the risk-free rate). Finally for the exchange rate, daily spot exchange rate against the US Dollar is used. Therefore, our data set includes daily 3-months interbank interest rates for Turkey and the US, daily iShares MSCI emerging markets ETF and daily spot exchange rate against the US Dollar for Turkish Lira.

Data set covers the period January 1, 2011–December 31, 2018 for a total of 2087 daily observations and is downloaded from Bloomberg Terminal. **Figure 1** represents the graphs of each group of data for the examined period.

In **Figure 1**, the first graph presents how USD/TRY exchange rate changes between 2011 and 2019. Second and third graphs present the pattern of short-term interest rates for USA and Turkey between 2011 and 2019. The final graph shows how emerging market risk premium changes during the 2011–2019 period.

To be able to determine the politically stressed times that have significant impacts on the financial markets of Turkey, we identify the financial stress periods. For this purpose, we first identify the anomalies on the daily price changes on Borsa

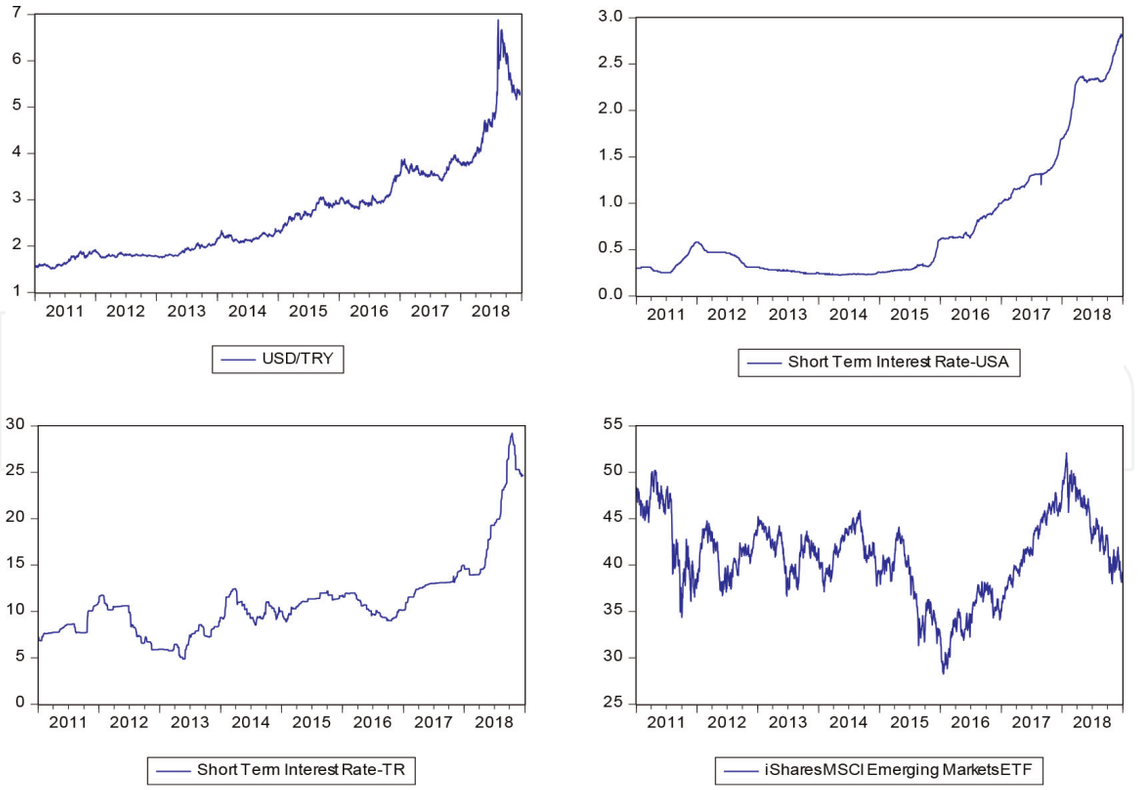

Figure 1.
Exchange rates in Turkey, interest rates in Turkey and the US and emerging markets risk premia (2011–2019).

Istanbul. We define the anomalies as 5% or above drop on the main index of Borsa Istanbul in total in at least 5 days period.

Financial markets experience either a crash or a bear market. The widely used criteria for a crash is 10% drop from the peak prices in 1 or 2 days and a drop of at least 20% off peak prices in a wider time period for the bear market. While identifying the price anomalies in Turkish market, we consider both of those criteria. To be able to decide on the exact drop rate, we examine the sharp drops in Borsa Istanbul for 20 years period. During that period, the average correction rate for the market is calculated as 3.7%. Therefore to able to identify a price movement as an anomaly, we need to determine a rate above this rate. However, as we do not want to keep that rate as high as a rate that is needed to classify the drop as a stock crash, we identify 5% and above rates as price anomalies. Finally, as we determine that Borsa Istanbul shows the strongest reactions to negative events or news in the first 5 days on average, we decide on the 5 days criterion.

After the examination of the daily price changes of Borsa Istanbul from 2011 till 2019, we identify eight different periods that BIST100 lose at least 5% in total in at least 5 days.

Following the identification of the financial stress periods, we identify the domestic political developments that occur on the same periods. These are;

- 10 days period which starts with the early retirement request of commanders of Turkish Army on 29th July 2011,
- 3 weeks period which starts with Gezi Park incidents on 28th May 2013,
- 1 month period which starts with the operation of FETO terror organization to government authorities on 17th December 2013,
- 10 days period which starts on 31st July 2014 prior to presidential election,

- the period which starts with the 7th June 2015 general elections and continues until the announcement of new elections on 25th August 2015,

- 2 weeks period which starts with the shootdown of Russian plane on Turkish border on 24th November 2015,

- 2 weeks period which starts with the military coup attempt on 15th July 2016,

- 3 months period which starts with the announcement of new cabinet on 2nd July 2018 and strengthens with Pastor Branson's house arrest and ends with Brunson's return to USA.

To be able to show the relation between short-term interest rates of USA, short-term interest rates of Turkey and USD/TRY exchange rate, we prepare **Figure 2**. Although the figure does not allow us to statistically prove the correlation between the US interest rates, Turkish interest rates and USD/TRY exchange rate; it is still possible to see that especially in the latter period (after 2017) short-term interest rates of USA, short-term interest rates of Turkey and USD/TRY share significant common pattern.

Figure 2 presents the graphs of the short-term interest rates for both US and Turkey and the USD/TRY exchange rate for the 2011–2019 period.

Differently from **Figure 2**, **Figure 3** brings emerging risk premia and short-term interest rates of Turkey and USD/TRY exchange rate together to show whether Turkish risky assets and emerging markets risk premia share common pattern during the examined period.

Figure 3 presents the graphs of iShares MSCI Emerging Markets ETF, Turkish short-term interest rate and USD/TRY exchange rate for the 2011–2019 period.

2.2 Methodology

In this chapter, to be able to examine the effect of US interest rates and emerging market risk premia on the domestic short-term interest rate of Turkey and exchange rate against the US Dollar, we construct a vector auto regression (VAR) model. More specifically, the model includes the Turkish short-term interest rate, the US short-term interest rate, the natural logarithm of the exchange rate against the US dollar and iShares MSCI emerging markets ETF. We expect to see that during the tranquil periods, the Turkish short-term interest rate and the USD/TRY exchange rate are both positively and significantly affected by the US short-term interest rate and the emerging market risk premia. According to that, we expect to see that short-term Turkish interest rate and the USD/TRY exchange rate increase with the increasing short-term US interest rate and the emerging market risk

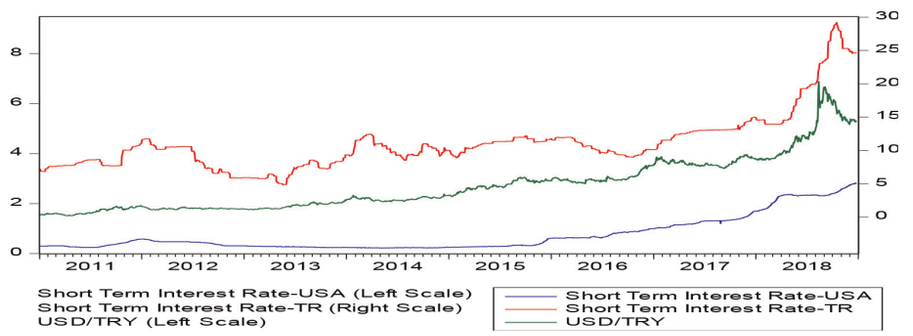

Figure 2.
Short-term interest rate of USA, short-term interest rate of Turkey and USD/TRY exchange rate.

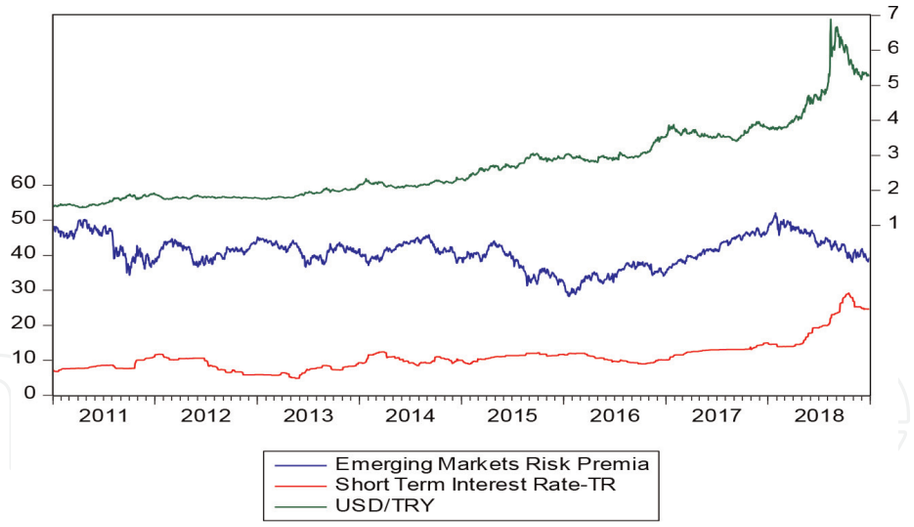

Figure 3.
Emerging markets risk premia, short-term interest rate of Turkey and USD/TRY.

premia. However, during the politically stressed periods it is not possible to estimate the relations between those variables as each political stress may have a different impact according to their dynamics. For instance, while a fully domestic political stress may cause Turkish financial markets to separate from the rest of the world, a political stress that is caused by an international development may cause Turkish markets to more sensitive to the external shocks.

"The vector autoregression (VAR) model is one of the most successful, flexible, and easy to use models for the analysis of multivariate time series" ([27], p. 385). It is a natural extension of the univariate autoregressive model to dynamic multivariate time series.[1]

Let $Y_t = (y_{1t}, y_{2t}, \ldots, y_{nt})'$ denote an $(n \times 1)$ vector of time series variables. The basic *p-lag* vector autoregressive model has the form;

$$Y_t = \mathrm{c} + \Pi_1 Y_{t-1} + \Pi_2 Y_{t-2} + \ldots + + \Pi_p Y_{t-p} + \varepsilon_t,\ t = 1, \ldots, T \tag{2}$$

where Π_i are $(n \times n)$ coefficient matrices and ε_t is an $(n \times 1)$ unobservable zero mean White noise vector process with time invariant covariance matrix Σ. According to this, for example, a bivariate VAR(2) model equation by equation has the form;

$$y_{1t} = c_1 + \pi_{11}^1 Y_{1t-1} + \pi_{12}^1 Y_{2t-1} + \pi_{11}^1 Y_{1t-2} + \pi_{12}^2 Y_{2t-2} + \varepsilon_{1t} \tag{3}$$

$$y_{2t} = c_1 + \pi_{21}^1 Y_{1t-1} + \pi_{22}^1 Y_{2t-1} + \pi_{21}^1 Y_{1t-1} + \pi_{22}^2 Y_{2t-1} + \varepsilon_{2t} \tag{4}$$

where $cov(\varepsilon_{1t}, \varepsilon_{2t}) = \sigma_{12}$. Each equation has the same regressors-lagged values of y_{1t} and y_{2t}. Hence the VAR(p) model is just a seemingly unrelated regression (SUR) model with lagged variables and deterministic terms as common regressors.

In lag operator notation, the VAR(p) is written as;

$$\Pi(L) Y_t = \mathrm{c} + \varepsilon_t \tag{5}$$

where $\Pi(L) = I_n - \Pi_1 L - \ldots - \Pi_p L^p$. The VAR(p) is stable if the roots of

[1] The theoretical presentation of vector autoregressive models that is used in the Methodology part is taken from the book of Zivot and Wang [26].

$$det\left(I_n - \Pi_1 z - \ ... \ - \Pi_p z^p\right) = 0 \tag{6}$$

lie outside the complex unit circle (have modulus greater than one), or, equivalently, if the eigenvalues of the companion matrix have modules less than one. Assuming that the process has been initialized in the infinite past, then a stable VAR (p) process is stationary and ergodic with time invariant means, variances and autocovariances.

If Y_t is covariance stationary, then the unconditional mean is given by;

$$\mu = \left(I_n - \Pi_1 - \ ... \ - \Pi_p\right)^{-1} c \tag{7}$$

The mean-adjusted form of the VAR(p) is then;

$$Y_t - \mu = \Pi_1(Y_{t-1} - \mu) + \Pi_2(Y_{t-2} - \mu) + \ ... \ + \Pi_p\left(Y_{t-p} - \mu\right) + \varepsilon_t \tag{8}$$

The general form of the VAR(p) model with deterministic terms and exogenous variables is given by;

$$Y_t = \Pi_1 Y_{t-1} + \Pi_2 Y_{t-2} + \ ... \ + \Pi_p Y_{t-p} + \phi D_t + G X_t + \varepsilon_t \tag{9}$$

where D_t represents an $(l \times 1)$ matrix of deterministic components, X_t represents an $(m \times 1)$ matrix of exogenous variables, and ϕ and G are parameter matrices.

To be able to estimate the basic VAR(p) model, each equation in the model can be written as;

$$y_i = Z\pi_i + e_i, \ i = 1, \ ..., n \tag{10}$$

where y_i is a $(T \times 1)$ vector of observations on the ith equation, Z is a $(T \times k)$ matrix with tth row given by $Z_t' = \left(1, Y_{t-1}', \ ..., Y_{t-p}'\right), k = np + 1, \pi_i$ is a (k × 1) vector of parameters and e_i is a $(T \times 1)$ error with covariance matrix $\sigma_i^2 I_T$. Since the VAR(p) is in the form of a SUR model where each equation has the same explanatory variables, each equation may be estimated separately by ordinary least squares without losing efficiency relative to generalized least squares.

3. Results

In this study, to be able to show how the impact of external shocks on domestic interest rates and the exchange rates change according to political stress in Turkey, we construct a VAR model. **Figure 4** plots interest rates and exchange rates in Turkey over the period of 2011–2019. The politically stressed periods are highlighted on this figure to show how domestic interest rates and exchange rates react to political developments. Therefore, eight shaded lines on **Figure 4** identify the following major political crises in Turkey;

- 10 days period which starts with the early retirement request of commanders of Turkish Army on 29th July 2011,
- 3 weeks period which starts with Gezi Park incidents on 28th May 2013,
- 1 month period which starts with the operation of FETO terror organization to the government authorities on 17th December 2013,

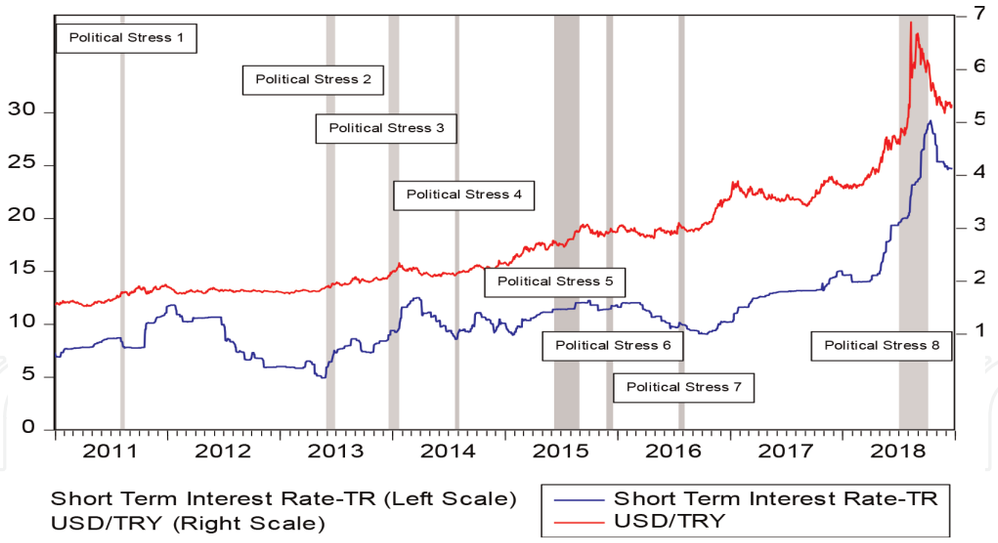

Figure 4.
Short-term interest rates and spot exchange rate in Turkey.

- 10 days period which starts on 31st July 2014 prior to presidential election,
- The period which starts with the 7th June 2015 general elections and continues until the announcement of new elections on 25th August 2015,
- 2 weeks period which starts with the shootdown of Russian plane on Turkish border on 24th November 2015,
- 2 weeks period which starts with the military coup attempt on 15th July 2016,
- 3 months period which starts with the announcement of new cabinet on 2nd July 2018 and strengthens with Pastor Branson's house arrest and ends with Brunson's return to USA.

Figure 4 presents the graphs of Turkish short-term interest rates and the USD/TRY exchange rate for the period of 2011–2019. **Figure 4** also highlights the political stress periods to show how interest rate and exchange rate react to the political stresses.

Figure 4 highlights the political stress periods to show how short-term interest rates and the USD/TRY pair react to the political stresses. As it can be clearly seen from the graph, most of the time political crises coincide with the sharp depreciation of the Turkish Lira against the US Dollar, while interest rates seem to react shortly after the political crises. Political stress #8 which starts with the lawsuit of Pastor Branson seems to have the most remarkable impact on Turkish interest rates which causes a rise from around 17% to above 25%. According to **Figure 4**, Turkish Lira significantly depreciates and short-term interest rates significantly increase in the fourth quarter of 2011, the first quarter of 2017 and the fourth quarter of 2017. However, as we did not identify any political crisis during those periods, we are not in a position to relate these drastic moves with any political stress.

We use VAR analysis to model the behaviour of domestic interest rates and nominal exchange rates. By doing so while our main target is detecting the impact of external shocks on these variables, by identifying the major politically stress periods we also aim to see how political stress makes changes on the impacts of external factors on domestic interest rates and nominal exchange rates. From 1

January 2011 to 31 December 2018, I estimate a VAR model including domestic 3-months interest rates, the logarithm of the nominal exchange rate against the US Dollar, 3-months US interest rates and iShares MSCI Emerging Markets ETF. To be able to eliminate the serial correlation in the residuals, we use a specification with 3 lags. By following ([16], p. 12) "in order to identify the impulse responses, errors were orthogonalised by a Cholesky decomposition".

3.1 The full period (January 1, 2011–December 31, 2018)

VAR test reveals that for the period of 2011–2019, Turkish short-term interest rates and the USD/TRY exchange rate are not significantly affected by the US short-term interest rates in the short run. However, after our preliminary analysis, we increase the lag lengths to see if the US short-term interest rates have significant impact on Turkish interest rates and the exchange rate in longer term. The results reveal that while the exchange rate is not affected by the US short-term interest rates even in longer term; with 10 days lag interval the US short-term interest rates has a significant impact on the Turkish short-term interest rates at 90% confidence level. Therefore, for the examined period, we conclude that while the US short-term interest rates do not affect exchange rates in Turkey, Turkish short-term interest rates show a significant positive response to the shocks from the US after 10 days.

When we examine the impact of emerging markets on Turkish short-term interest rates and exchange rates we see that, emerging market risk premia has a stronger effect compared to the short-term US interest rates. According to that, the shocks coming from the emerging markets significantly affect the Turkish short-term interest rates and USD/TRY in the first 2 days. Unlike the US short-term interest rates, the impact of the emerging markets risk premia on the Turkish short-term interest rates and Turkish exchange rate disappear in the longer term.

To be able to explain the general pattern of the response of Turkish short-term interest rates and the exchange rate to the US short-term interest rates and the emerging market risk premia we perform the impulse response functions.

Figure 5 presents the impulse response functions of short-term interest rates of Turkey and USD/TRY exchange rate to the short-term interest rates of USA and the emerging market risk premia.

Figure 5 shows the impulse response functions of USD/TRY and the Turkish short-term interest rates to one percentage point US interest rate shock and emerging market risk premia shock. First, it is worth noting that the impact of the US interest rate shock to the exchange rate reaches its peak after 1 week while the impact of the US short-term interest rate shock to the Turkish short-term interest rates reaches its peak after 10 days. The interesting point is, while the US interest shocks affect Turkish exchange rate positively during the first 4 days, after the 4th day it starts to have a negative impact. However, the estimated impact on the exchange rate is not significantly different from zero during 10 days period, confirming that the exchange rate in Turkey is not affected by the US interest rates. The impact of the short-term US interest rates become significant on the short-term interest rates of Turkey on the 10th day confirming that short-term interest rates in Turkey are significantly affected by the US rates.

On the other hand, interest rate and the exchange rate react to emerging market risk premia shocks in a different way. According to that, the Turkish currency responds to emerging markets risk premia significantly and drastically on the first few days with increasing trend after the fourth day while Turkish short-term interest rate's response deepens after the fourth day and reaches its peak on the 9th day.

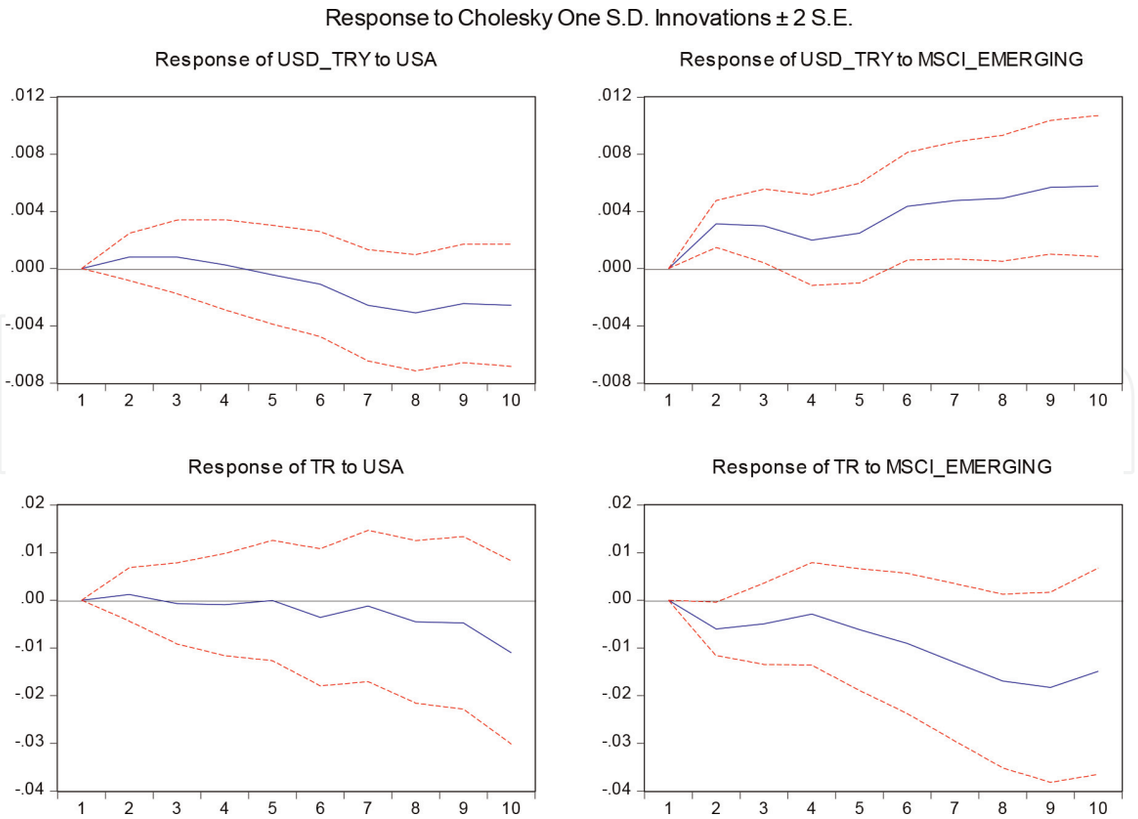

Figure 5.
Impulse response functions: innovations ± 2 standard errors. Impact on interest rates and exchange rates (logs) of percentage point shock to US interest rates and emerging markets risk.

3.2 The political stress #1 (July 29, 2011–August 11, 2011)

During the political stress #1 emerging markets risk premia significantly affects both the USD/TRY pair and the Turkish short-term interest rates. The USD/TRY pair responds significantly on the first day while short-term interest rate responds to the shocks coming from emerging markets on both the first and the second days.

During this politically stressed period, while the US short-term interest rate significantly affects the exchange rate on the second day, it has no significant impact on the short-term interest rates on neither the first nor the second day.

3.3 The political stress #2 (May 28, 2013–June 20, 2013)

Results reveal that during the political stress #2, neither the Turkish short-term interest rates nor the exchange rate in Turkey are significantly affected by both the US short-term interest rates and the emerging market risk premia. Therefore, we can clearly declare that the Gezi Park incidents cause Turkish capital markets to enter an extra sensitive period to domestic developments while external shocks stop affecting the short-term interest rates and the exchange rate. In other words, during this stressed period, the short-term interest rates and the USD/TRY pair respond to domestic shocks/news instead of external factors.

3.4 The political stress #3 (December 17, 2013–January 3, 2014)

During the politically stressed period #3, the Turkish Lira depreciates, Borsa Istanbul crashes and interest rates rise significantly. VAR analysis reveals that the reasons of these drastic moves are totally domestic. According to that, during that

period, neither emerging market risk premia nor the US short-term interest rates significantly affect the short-term interest rates and the exchange rates in Turkey.

3.5 The political stress #4 (July 31, 2014–August 15, 2014)

Prior to 2014 presidential election, Turkish money markets show instability during a 10 days period. During that rather politically stressed period, Borsa Istanbul declines significantly and Turkish Lira depreciates. During this short period, VAR analysis reveals that external shocks do not have any significant impacts on the market. According to that, neither exchange rates nor interest rates respond to any shocks from the US interest rates and the emerging markets.

3.6 The political stress #5 (June 7, 2015–August 25, 2015)

The fifth political stress has the same impact with the previous stresses as during that period the external factors do not have any significant effect on the short-term interest rates and the exchange rates of Turkey. According to that, during that period, sharp depreciation of the Turkish Lira and the rise in the interest rates occur due to domestic developments.

3.7 The political stress #6 (November 24, 2015–November 29, 2015)

The results reveal different conclusion regarding the impacts of the external shocks during the politically stressed times for this specific incident. According that, during the political stress that arises due to shootdown of Russian plane on Turkish border, the Turkish currency is significantly affected by the short-term US interest rates. During that period, Turkish currency significantly responds to the changes on the US short-term interest rates in the first and the second days. During that period, the exchange rate significantly responds to also the emerging risk premia in the second day. However, Turkish short-term interest rates are not significantly affected by any of those external factors during the stress period.

3.8 The political stress #7 (July 15, 2016–July 30, 2016)

After the military coup attempt, the exchange rate in Turkey starts to show significant response to the shocks that are coming from the emerging markets. During that period emerging risk premia has a significant impact on the short-term interest rates too. Differently from the previous political stress, this time the US short-term interest rates do not have any significant impact on the exchange rate. However, this time, the Turkish short-term interest rate significantly responds to the shocks coming from the US interest rates.

3.9 The political stress #8 (July 2, 2018–October 2, 2018)

Probably, in the last decade, Turkey has experienced the deepest financial stress during this politically stress period. Right after Turkey and the USA start to have a serious diplomatic crisis due to trial of Pastor Branson, the Turkish Lira drastically depreciates and Turkish Central Bank has to increase the interest rates dramatically. During that period, our results show that the Turkish Lira and the short-term interest rates are not affected by the external shocks at all. As expected, during that period domestic news play significant role on the value of the Turkish Lira and the short-term interest rates.

3.10 Politically tranquil periods with significant depreciation of Turkish Lira and rise in interest rates

According to **Figure 4**, although we do not identify any political crisis, Turkish Lira depreciates and short-term interest rate rises significantly during the fourth quarter of 2011, the first quarter of 2017 and the fourth quarter of 2017. To be able to understand the reasons of these changes, we run analysis specifically for these periods. The results reveal that the changes on the short-term interest rates and the exchange rate occur as a respond to the shocks from emerging markets in the fourth quarter of 2011 and the fourth quarter of 2017 while the depreciation of the Turkish Lira and the increase in interest rates in the first quarter of 2017 occur as a strong respond to the shocks coming from the US short-term interest rates.

4. Conclusion

This chapter analyses the reaction of short-term interest rate and exchange rate of Turkey to the external shocks and how this reaction changes according to domestic political tension. For this purpose, the reaction of interest rates and exchange rates to the American interest rate volatility and emerging market risk factor is tested for the period of 2011–2019. During that period, we identified eight major politically stressed periods that have significant negative impact on Turkish money markets.

The primary result that we get from the VAR test for the period of 2011–2019 is that Turkish short-term interest rates and the USD/TRY exchange rate are not significantly affected by the US short-term interest rates in the short run. However, Turkish short-term interest rates significantly respond to the US short-term interest rates after 10 days. On the other hand, emerging market risk premia seems to be much more important factor on Turkish short-term interest rates and the exchange rate as during the 2011–2019 period, Turkish short-term interest rates and the exchange rate significantly respond to the shocks coming from emerging markets in the first 2 days.

If we sum up the impacts of each political stress period on the impacts of external factors on the domestic interest rates and the exchange rate, we get a blurred picture as it is difficult to generalize the impacts of political stresses. According to that, while the political stress #1 and the political stress #7 do not change how external factors affect the domestic interest rate and the exchange rate as those keep significantly responding to emerging market risk premia and the short-term US interest, during the political stresses #2, #3, #4, #5, and #8, neither exchange rates nor interest rates respond to any shocks from the US interest rates and the emerging markets. Therefore, we suggest that while the early retirement request of commanders of Turkish Army and military coup attempt did not create strong enough impact to change the pricing structure of Turkish assets and/or perception of the investors; the Gezi Park incidents, the operation of FETO terror organization to the government authorities, 2014 presidential election, 7th June 2015 general elections and afterward, and the announcement of new cabinet after 2018 elections and the Branson incident were strong enough to change the pricing priorities of investors on Turkish risky assets. Following those developments, domestic news seem to have more significant effect on the short-term interest rates and the exchange rate compared to the external factors. Only during the political stress period #6, shooting down of Russian plane, created mixed impact on the external factors as during this period the Turkish currency significantly responded to the US short-term interest rates in shorter period while it kept significantly responding to the emerging market risk premia.

The findings of this paper are quite important to understand how an emerging country can deal or should deal with a possible financial shock/crisis. According to this, the first and maybe the most important outcome of the study was that although an emerging country is in a politically stressed situation, this stress's impact on the money markets change according to the dynamics of the situation. While a fully domestic development may cause financial market to separate from the rest of the world or the countries that is normally strongly integrated with, another negative development that occurs due to foreign diplomatic issues might have an opposite impact. Therefore, policy makers should primarily determine and examine the reasons of a political tension to foresee the possible consequences in the financial markets. For the Turkish case, this study clearly showed that while during the tranquil periods Turkey is significantly integrated with both the US and the emerging markets and any shocks from those markets significantly affect both interest rates and the exchange rates, some political developments, especially army and USA related ones, cause Turkey to negatively separate from those markets. Secondly, this study quantitatively proved that the shocks that are originated from the group of emerging markets significantly affect other emerging markets in very short term while shocks from a developed country, USA in our case, show its impacts in a longer term. In this case, policy makers should be aware of the danger that instability of an emerging country may have a significant impact on their financial markets very quickly. In other words, while an emerging country has strong and healthy dynamics, a negative shock from other emerging countries may also negatively and significantly affect that specific country in the first or second day. Therefore, policy makers should be aware of the time periods while taking precautions to the negative developments in other countries.

As a result, the findings of this chapter clearly prove that an emerging country is open to financial shocks even if the country is politically tranquil due to significant effects of the group of emerging markets and the USA. In case of a political stress, on the other hand, the situation becomes more complicated as some of the political crisis cause financial markets to react negatively internal news instead of external shocks. Therefore, in emerging countries, investors and policy makers should always consider political stability of the country, dynamics of the political tension and the risk level of the group of emerging markets in the short term and the changes in the short-term interest rates of USA in the rather longer term.

Appendix

See **Tables 1–9**.

Vector autoregression estimates				
	USD_TRY	**USA**	**TR**	**MSCI_EMERGING**
USD_TRY(−1)	1.239555	−0.001096	−0.149446	−0.234697
	(0.02242)	(0.00351)	(0.07595)	(0.30998)
	[55.2812]	[−0.31261]	[−1.96770]	[−0.75714]
USD_TRY(−2)	−0.428334	−0.001819	0.434834	−0.279474
	(0.03463)	(0.00541)	(0.11729)	(0.47870)
	[−12.3698]	[−0.33595]	[3.70736]	[−0.58382]
USD_TRY(−3)	0.188575	0.003611	−0.244834	0.474752
	(0.02251)	(0.00352)	(0.07624)	(0.31118)
	[8.37756]	[1.02591]	[−3.21119]	[1.52566]

Vector autoregression estimates				
	USD_TRY	**USA**	**TR**	**MSCI_EMERGING**
USA(−1)	0.078956	0.973994	−0.164896	−1.484175
	(0.13915)	(0.02176)	(0.47131)	(1.92359)
	[0.56743]	[44.7690]	[−0.34987]	[−0.77157]
USA(−2)	−0.194843	0.189506	−0.492364	0.445107
	(0.19382)	(0.03031)	(0.65652)	(2.67948)
	[−1.00526]	[6.25325]	[−0.74996]	[0.16612]
USA(−3)	0.122793	−0.162329	0.641158	1.137173
	(0.13949)	(0.02181)	(0.47246)	(1.92829)
	[0.88032]	[−7.44312]	[1.35705]	[0.58973]
TR(−1)	0.018625	−0.001770	1.175840	−0.003223
	(0.00649)	(0.00101)	(0.02198)	(0.08970)
	[2.87047]	[−1.74446]	[53.5019]	[−0.03593]
TR(−2)	−0.031462	0.001251	−0.158691	0.110968
	(0.00993)	(0.00155)	(0.03362)	(0.13723)
	[−3.16940]	[0.80626]	[−4.71967]	[0.80864]
TR(−3)	0.011875	0.000448	−0.022727	−0.112278
	(0.00647)	(0.00101)	(0.02191)	(0.08941)
	[1.83610]	[0.44281]	[−1.03744]	[−1.25577]
MSCI_EMERGING(−1)	0.006609	−0.000374	−0.013413	0.950738
	(0.00164)	(0.00026)	(0.00556)	(0.02268)
	[4.02779]	[−1.45922]	[−2.41343]	[41.9154]
MSCI_EMERGING(−2)	−0.008802	6.42E-05	0.019646	0.033825
	(0.00229)	(0.00036)	(0.00776)	(0.03166)
	[−3.84306]	[0.17935]	[2.53237]	[1.06829]
MSCI_EMERGING(−3)	0.002344	0.000305	−0.004392	0.004523
	(0.00165)	(0.00026)	(0.00558)	(0.02277)
	[1.42275]	[1.18279]	[−0.78721]	[0.19864]
C	0.001672	−0.000695	−0.104660	0.530523
	(0.01176)	(0.00184)	(0.03982)	(0.16252)
	[0.14220]	[−0.37831]	[−2.62837]	[3.26443]
R-squared	0.998765	0.999927	0.999116	0.985729
Adj. R-squared	0.998758	0.999926	0.999111	0.985646
Sum sq. resids	2.957368	0.072297	33.92978	565.1823
S.E. equation	0.037798	0.005910	0.128028	0.522527
F-statistic	139543.2	2,358,791.	194978.8	11914.92
Log likelihood	3873.742	7739.029	1332.489	−1597.100
Akaike AIC	−3.706906	−7.418175	−1.266912	1.545943
Schwarz SC	−3.671697	−7.382966	−1.231703	1.581152
Mean dependent	2.728274	0.738451	11.06632	40.88733
SD dependent	1.072606	0.689107	4.293795	4.361402

Sample (adjusted): 1/06/2011–12/31/2018.
Included observations: 2083 after adjustments.
Standard errors in () & t-statistics in [].

Table 1.
VAR estimates result for full period.

Vector autoregression estimates				
	USD_TRY	**TR**	**USA**	**MSCI_EMERGING**
USD_TRY(−1)	−0.872545	8.859426	−0.060340	−31.14791
	(0.62071)	(3.47853)	(0.29360)	(41.8594)
	[−1.40573]	[2.54689]	[−0.20552]	[−0.74411]
USD_TRY(−2)	0.308087	13.98951	0.103715	−92.17556
	(0.60804)	(3.40756)	(0.28761)	(41.0055)
	[0.50668]	[4.10543]	[0.36061]	[−2.24788]
TR(−1)	−0.021083	0.888519	−0.005818	−4.368654
	(0.04691)	(0.26291)	(0.02219)	(3.16377)
	[−0.44939]	[3.37956]	[−0.26218]	[−1.38084]
TR(−2)	0.127874	−0.081052	−0.029449	−12.88844
	(0.05263)	(0.29492)	(0.02489)	(3.54897)
	[2.42989]	[−0.27483]	[−1.18308]	[−3.63160]
USA(−1)	1.360505	2.451433	0.474769	−46.93249
	(1.13015)	(6.33354)	(0.53457)	(76.2157)
	[1.20382]	[0.38706]	[0.88814]	[−0.61579]
USA(−2)	1.357323	−27.54796	0.247523	32.81856
	(1.41483)	(7.92892)	(0.66922)	(95.4140)
	[0.95935]	[−3.47437]	[0.36987]	[0.34396]
MSCI_EMERGING(−1)	−0.013139	0.090067	−0.001294	0.300612
	(0.00716)	(0.04014)	(0.00339)	(0.48306)
	[−1.83430]	[2.24372]	[−0.38187]	[0.62231]
MSCI_EMERGING(−2)	−0.002236	0.142830	0.002761	0.051437
	(0.00847)	(0.04748)	(0.00401)	(0.57139)
	[−0.26393]	[3.00808]	[0.68888]	[0.09002]
C	1.753591	−41.44923	0.239769	391.0476
	(2.30845)	(12.9369)	(1.09191)	(155.678)
	[0.75964]	[−3.20396]	[0.21959]	[2.51190]
R-squared	0.981377	0.991826	0.951979	0.986179
Adj. R-squared	0.906885	0.959132	0.759893	0.930895
Sum sq. resids	0.000261	0.008212	5.85E-05	1.189129
S.E. equation	0.011434	0.064077	0.005408	0.771080
F-statistic	13.17424	30.33649	4.956014	17.83851
Log likelihood	42.95073	23.99218	51.18588	−3.372616
Akaike AIC	−6.172859	−2.725851	−7.670159	2.249567
Schwarz SC	−5.847309	−2.400300	−7.344609	2.575117
Mean dependent	1.741182	8.368442	0.272727	42.97664
SD dependent	0.037470	0.316965	0.011037	2.933228

Sample: 7/29/2011–8/12/2011.
Included observations: 11.
Standard errors in () & t-statistics in [].

Table 2.
VAR estimates result for political stress #1.

Vector autoregression estimates				
	USD_TRY	**TR**	**USA**	**MSCI_EMERGING**
USD_TRY(−1)	1.045822	1.551895	0.082439	−16.61406
	(0.35577)	(3.63916)	(0.07309)	(17.9657)
	[2.93957]	[0.42644]	[1.12787]	[−0.92477]
USD_TRY(−2)	−0.592774	0.541974	0.086876	4.068066
	(0.38266)	(3.91418)	(0.07862)	(19.3234)
	[−1.54909]	[0.13846]	[1.10506]	[0.21053]
TR(−1)	0.000282	0.879367	−0.015476	1.021491
	(0.03042)	(0.31120)	(0.00625)	(1.53631)
	[0.00926]	[2.82575]	[−2.47605]	[0.66490]
TR(−2)	0.020745	−0.085642	0.007593	−1.961514
	(0.02836)	(0.29005)	(0.00583)	(1.43189)
	[0.73162]	[−0.29527]	[1.30335]	[−1.36988]
USA(−1)	1.896724	18.28130	−0.244931	−19.59458
	(1.23033)	(12.5849)	(0.25277)	(62.1287)
	[1.54164]	[1.45264]	[−0.96899]	[−0.31539]
USA(−2)	−0.351707	15.14300	0.055503	−52.90086
	(1.28545)	(13.1487)	(0.26409)	(64.9120)
	[−0.27361]	[1.15167]	[0.21017]	[−0.81496]
MSCI_EMERGING(−1)	−0.006059	−0.069716	0.002865	0.531484
	(0.00809)	(0.08272)	(0.00166)	(0.40836)
	[−0.74921]	[−0.84281]	[1.72434]	[1.30151]
MSCI_EMERGING(−2)	0.011379	−0.007283	−0.003909	−0.024268
	(0.00942)	(0.09636)	(0.00194)	(0.47571)
	[1.20785]	[−0.07558]	[−2.01978]	[−0.05101]
C	0.270639	−8.592797	0.095488	68.32132
	(0.88691)	(9.07206)	(0.18221)	(44.7866)
	[0.30515]	[−0.94717]	[0.52404]	[1.52549]
R-squared	0.779097	0.964512	0.648236	0.870906
Adj. R-squared	0.602375	0.936121	0.366825	0.767630
Sum sq. resids	0.002105	0.220288	8.89E-05	5.368774
S.E. equation	0.014510	0.148421	0.002981	0.732719
F-statistic	4.408603	33.97284	2.303518	8.432841
Log likelihood	59.56320	15.38413	89.63188	−14.95336
Akaike AIC	−5.322442	−0.672013	−8.487566	2.521406
Schwarz SC	−4.875076	−0.224648	−8.040200	2.968772
Mean dependent	1.884921	5.980695	0.271579	40.16632
SD dependent	0.023011	0.587241	0.003746	1.520014

Sample: 5/28/2013–6/21/2013.
Included observations: 19.
Standard errors in () & t-statistics in [].

Table 3.
VAR estimates result for political stress #2.

Vector autoregression estimates				
	USD_TRY	**TR**	**USA**	**MSCI_EMERGING**
USD_TRY(−1)	0.252091	4.905135	−0.100362	−3.579565
	(1.02806)	(3.21845)	(0.17927)	(6.53266)
	[0.24521]	[1.52407]	[−0.55983]	[−0.54795]
USD_TRY(−2)	−0.294757	8.237847	0.007630	20.28858
	(1.42700)	(4.46736)	(0.24884)	(9.06764)
	[−0.20656]	[1.84401]	[0.03066]	[2.23747]
TR(−1)	0.108817	−0.159976	0.025424	1.179018
	(0.15216)	(0.47636)	(0.02653)	(0.96690)
	[0.71513]	[−0.33583]	[0.95816]	[1.21938]
TR(−2)	0.043346	−0.073717	0.004355	0.396928
	(0.06720)	(0.21036)	(0.01172)	(0.42699)
	[0.64507]	[−0.35042]	[0.37162]	[0.92960]
USA(−1)	4.359186	6.880054	1.223262	−8.315462
	(5.69159)	(17.8181)	(0.99249)	(36.1663)
	[0.76590]	[0.38613]	[1.23251]	[−0.22992]
USA(−2)	−4.603798	−12.52887	−1.557584	−176.5719
	(10.1715)	(31.8428)	(1.77369)	(64.6331)
	[−0.45262]	[−0.39346]	[−0.87816]	[−2.73191]
MSCI_EMERGING(−1)	−0.042445	−0.279831	−0.012791	−1.229423
	(0.07507)	(0.23500)	(0.01309)	(0.47700)
	[−0.56543]	[−1.19075]	[−0.97716]	[−2.57741]
MSCI_EMERGING(−2)	0.076973	0.263341	0.010266	0.595434
	(0.06557)	(0.20527)	(0.01143)	(0.41664)
	[1.17394]	[1.28292]	[0.89786]	[1.42913]
C	−0.504984	−14.32025	0.366730	64.21933
	(2.80039)	(8.76691)	(0.48833)	(17.7947)
	[−0.18033]	[−1.63344]	[0.75099]	[3.60891]
R-squared	0.944309	0.994128	0.799905	0.977004
Adj. R-squared	0.498785	0.947151	−0.800856	0.793032
Sum sq. resids	0.000592	0.005804	1.80E−05	0.023913
S.E. equation	0.024336	0.076186	0.004244	0.154638
F-statistic	2.119544	21.16193	0.499703	5.310618
Log likelihood	34.48162	23.06937	51.94686	15.99023
Akaike AIC	−5.096325	−2.813875	−8.589371	−1.398046
Schwarz SC	−4.823998	−2.541548	−8.317045	−1.125720
Mean dependent	2.093070	8.858114	0.249000	40.94500
SD dependent	0.034374	0.331400	0.003162	0.339910

Sample: 12/17/2013–12/30/2013.
Included observations: 10.
Standard errors in () & t-statistics in [].

Table 4.
VAR estimates result for political stress #3.

Vector autoregression estimates				
	USD_TRY	**TR**	**USA**	**MSCI_EMERGING**
USD_TRY(−1)	−0.519237	5.242203	−0.018683	12.66113
	(0.53772)	(8.59526)	(0.07212)	(28.5601)
	[−0.96563]	[0.60989]	[−0.25906]	[0.44332]
USD_TRY(−2)	−0.521707	3.284314	−0.116449	34.40483
	(0.38776)	(6.19818)	(0.05201)	(20.5951)
	[−1.34546]	[0.52988]	[−2.23911]	[1.67053]
TR(−1)	0.033199	0.584900	−0.002042	−1.450924
	(0.02810)	(0.44925)	(0.00377)	(1.49274)
	[1.18128]	[1.30196]	[−0.54171]	[−0.97198]
TR(−2)	0.024623	0.209647	−0.007635	0.635585
	(0.03095)	(0.49468)	(0.00415)	(1.64371)
	[0.79564]	[0.42380]	[−1.83935]	[0.38668]
USA(−1)	−2.852733	−1.444260	−0.348541	65.70581
	(2.87562)	(45.9662)	(0.38569)	(152.735)
	[−0.99204]	[−0.03142]	[−0.90369]	[0.43019]
USA(−2)	1.643630	56.99025	−0.609977	39.20152
	(2.56418)	(40.9878)	(0.34391)	(136.193)
	[0.64100]	[1.39042]	[−1.77363]	[0.28784]
MSCI_EMERGING(−1)	−0.009292	0.051124	−0.001046	1.098503
	(0.01213)	(0.19387)	(0.00163)	(0.64419)
	[−0.76609]	[0.26370]	[−0.64291]	[1.70524]
MSCI_EMERGING(−2)	0.012677	−0.037399	−0.002046	−0.335273
	(0.01016)	(0.16248)	(0.00136)	(0.53989)
	[1.24711]	[−0.23017]	[−1.50076]	[−0.62100]
C	3.995803	−30.06631	0.974848	−107.8384
	(2.68089)	(42.8534)	(0.35957)	(142.392)
	[1.49048]	[−0.70161]	[2.71117]	[−0.75733]
R-squared	0.893257	0.940998	0.955591	0.778050
Adj. R-squared	0.608608	0.783658	0.837167	0.186182
Sum sq. resids	0.000172	0.043909	3.09E−06	0.484785
S.E. equation	0.007568	0.120980	0.001015	0.401989
F-statistic	3.138103	5.980680	8.069210	1.314567
Log likelihood	49.89570	16.63606	74.00372	2.226473
Akaike AIC	−6.815950	−1.272677	−10.83395	1.128921
Schwarz SC	−6.452270	−0.908997	−10.47027	1.492601
Mean dependent	2.151733	9.187219	0.234792	44.07875
SD dependent	0.012098	0.260102	0.002516	0.445605

Sample: 7/31/2014–8/15/2014.
Included observations: 12.
Standard errors in () & t-statistics in [].

Table 5.
VAR estimates result for political stress #4.

Vector autoregression estimates				
	USD_TRY	**TR**	**USA**	**MSCI_EMERGING**
USD_TRY(−1)	0.708805	0.249663	0.034715	2.442156
	(0.16209)	(0.45042)	(0.02559)	(3.85036)
	[4.37278]	[0.55429]	[1.35656]	[0.63427]
USD_TRY(−2)	0.122357	0.043897	−0.025023	1.655415
	(0.16238)	(0.45120)	(0.02564)	(3.85707)
	[0.75354]	[0.09729]	[−0.97614]	[0.42919]
TR(−1)	−0.004405	0.903572	−0.009074	−2.033973
	(0.05723)	(0.15902)	(0.00903)	(1.35938)
	[−0.07697]	[5.68205]	[−1.00429]	[−1.49625]
TR(−2)	−0.064607	−0.116529	−0.001492	0.684540
	(0.05883)	(0.16348)	(0.00929)	(1.39745)
	[−1.09819]	[−0.71282]	[−0.16062]	[0.48985]
USA(−1)	0.329242	1.942183	0.669188	−15.31464
	(1.00376)	(2.78919)	(0.15847)	(23.8431)
	[0.32801]	[0.69633]	[4.22288]	[−0.64231]
USA(−2)	0.969726	0.107627	0.224866	−24.57049
	(1.01086)	(2.80893)	(0.15959)	(24.0118)
	[0.95930]	[0.03832]	[1.40904]	[−1.02327]
MSCI_EMERGING(−1)	−0.009986	−0.010206	0.000254	0.938702
	(0.00657)	(0.01826)	(0.00104)	(0.15607)
	[−1.51989]	[−0.55900]	[0.24527]	[6.01475]
MSCI_EMERGING(−2)	0.009639	0.019322	−0.001503	−0.141877
	(0.00673)	(0.01869)	(0.00106)	(0.15978)
	[1.43299]	[1.03376]	[−1.41540]	[−0.88797]
C	0.880645	0.680372	0.173718	23.55633
	(0.46135)	(1.28196)	(0.07283)	(10.9587)
	[1.90886]	[0.53073]	[2.38512]	[2.14956]
R-squared	0.945737	0.897486	0.968769	0.962453
Adj. R-squared	0.936693	0.880401	0.963564	0.956195
Sum sq. resids	0.019811	0.152969	0.000494	11.17816
S.E. equation	0.020316	0.056452	0.003207	0.482575
F-statistic	104.5732	52.52882	186.1174	153.7995
Log likelihood	146.1108	87.85686	251.3305	−34.45046
Akaike AIC	−4.810905	−2.766907	−8.502823	1.524577
Schwarz SC	−4.488318	−2.444320	−8.180236	1.847164
Mean dependent	2.743363	11.41014	0.297242	37.78491
SD dependent	0.080744	0.163236	0.016803	2.305703

Sample: 6/08/2015 8/25/2015.
Included observations: 57.
Standard errors in () & t-statistics in [].

Table 6.
VAR estimates result for political stress #5.

Vector autoregression estimates				
	USD_TRY	**TR**	**USA**	**MSCI_EMERGING**
USD_TRY(−1)	0.208853	0.554838	−0.258267	−7.360014
	(0.21444)	(0.27058)	(0.20349)	(13.1649)
	[0.97393]	[2.05054]	[−1.26918]	[−0.55906]
USD_TRY(−2)	0.028340	−0.576283	0.151205	−10.63891
	(0.26409)	(0.33322)	(0.25060)	(16.2126)
	[0.10731]	[−1.72944]	[0.60337]	[−0.65621]
TR(−1)	−0.847586	0.133623	−0.028234	−17.66526
	(0.41552)	(0.52430)	(0.39430)	(25.5093)
	[−2.03980]	[0.25486]	[−0.07161]	[−0.69250]
TR(−2)	−0.471574	−0.045990	0.110749	−0.187963
	(0.36342)	(0.45856)	(0.34486)	(22.3107)
	[−1.29759]	[−0.10029]	[0.32114]	[−0.00842]
USA(−1)	−2.406126	−0.632717	1.249959	−80.84426
	(1.16439)	(1.46920)	(1.10491)	(71.4826)
	[−2.06643]	[−0.43065]	[1.13127]	[−1.13096]
USA(−2)	3.931361	0.807797	−0.060307	66.93084
	(1.29648)	(1.63587)	(1.23026)	(79.5917)
	[3.03234]	[0.49380]	[−0.04902]	[0.84093]
MSCI_EMERGING(−1)	0.010020	−0.008902	0.004755	−0.659546
	(0.01389)	(0.01753)	(0.01318)	(0.85275)
	[0.72132]	[−0.50792]	[0.36075]	[−0.77344]
MSCI_EMERGING(−2)	0.035343	−0.011427	0.000584	0.064169
	(0.01135)	(0.01432)	(0.01077)	(0.69677)
	[3.11402]	[−0.79790]	[0.05422]	[0.09210]
C	15.00712	11.04252	−0.880388	315.4749
	(5.87354)	(7.41108)	(5.57353)	(360.580)
	[2.55504]	[1.49000]	[−0.15796]	[0.87491]
R-squared	0.976238	0.940271	0.993659	0.937157
Adj. R-squared	0.881190	0.701355	0.968296	0.685786
Sum sq. resids	6.20E−05	9.86E−05	5.58E−05	0.233487
S.E. equation	0.005566	0.007023	0.005281	0.341677
F-statistic	10.27098	3.935577	39.17780	3.728184
Log likelihood	50.87040	48.31268	51.44711	5.580570
Akaike AIC	−7.612800	−7.147761	−7.717657	0.621715
Schwarz SC	−7.287250	−6.822210	−7.392107	0.947265
Mean dependent	2.900682	11.35010	0.435164	34.01700
SD dependent	0.016147	0.012850	0.029661	0.609542

Sample: 11/24/2015–12/08/2015.
Included observations: 11.
Standard errors in () & t-statistics in [].

Table 7.
VAR estimates result for political stress #6.

Vector autoregression estimates				
	USD_TRY	**TR**	**USA**	**MSCI_EMERGING**
USD_TRY(−1)	−0.037991	1.379474	0.026738	1.548057
	(0.15992)	(0.37246)	(0.03780)	(1.29406)
	[−0.23756]	[3.70373]	[0.70742]	[1.19628]
USD_TRY(−2)	0.664323	0.991110	−0.007986	−2.964535
	(0.21112)	(0.49171)	(0.04990)	(1.70841)
	[3.14659]	[2.01564]	[−0.16005]	[−1.73526]
TR(−1)	−0.162109	0.281267	0.021652	1.083173
	(0.09284)	(0.21622)	(0.02194)	(0.75124)
	[−1.74614]	[1.30083]	[0.98678]	[1.44184]
TR(−2)	−0.048103	0.104220	−0.013276	−0.898872
	(0.07228)	(0.16834)	(0.01708)	(0.58489)
	[−0.66551]	[0.61910]	[−0.77712]	[−1.53684]
USA(−1)	2.328077	−12.13171	1.062720	14.50641
	(1.90754)	(4.44268)	(0.45085)	(15.4357)
	[1.22046]	[−2.73072]	[2.35717]	[0.93980]
USA(−2)	−2.262053	13.16730	0.004139	−7.328605
	(1.82020)	(4.23925)	(0.43020)	(14.7289)
	[−1.24275]	[3.10604]	[0.00962]	[−0.49757]
MSCI_EMERGING(−1)	−0.116796	0.068353	−0.010143	−0.187650
	(0.04461)	(0.10390)	(0.01054)	(0.36098)
	[−2.61818]	[0.65790]	[−0.96199]	[−0.51984]
MSCI_EMERGING(−2)	0.023493	−0.263795	−0.004722	−0.082381
	(0.03527)	(0.08215)	(0.00834)	(0.28544)
	[0.66601]	[−3.21096]	[−0.56636]	[−0.28861]
C	6.501998	5.274677	0.351928	42.78517
	(2.04631)	(4.76587)	(0.48364)	(16.5586)
	[3.17743]	[1.10676]	[0.72766]	[2.58386]
R-squared	0.855084	0.959389	0.991451	0.725483
Adj. R-squared	0.661862	0.905240	0.980052	0.359461
Sum sq. resids	0.002215	0.012015	0.000124	0.145044
S.E. equation	0.019214	0.044750	0.004541	0.155480
F-statistic	4.425407	17.71779	86.97880	1.982072
Log likelihood	44.86974	32.18810	66.50640	13.50670
Akaike AIC	−4.782632	−3.091747	−7.667519	−0.600893
Schwarz SC	−4.357802	−2.666916	−7.242689	−0.176063
Mean dependent	3.025113	9.883607	0.729647	35.91900
SD dependent	0.033043	0.145372	0.032153	0.194268

Sample: 7/15/2016–8/04/2016.
Included observations: 15.
Standard errors in () & t-statistics in [].

Table 8.
VAR estimates result for political stress #7.

Vector autoregression estimates				
	USD_TRY	**TR**	**USA**	**MSCI_EMERGING**
USD_TRY(−1)	1.112781	−0.296064	−0.009584	−0.251992
	(0.14951)	(0.30256)	(0.00484)	(0.38034)
	[7.44288]	[−0.97852]	[−1.97877]	[−0.66254]
USD_TRY(−2)	−0.203608	0.660003	0.004431	−0.652522
	(0.14567)	(0.29479)	(0.00472)	(0.37057)
	[−1.39776]	[2.23891]	[0.93908]	[−1.76088]
TR(−1)	0.129738	1.050609	0.000190	−0.234949
	(0.06417)	(0.12986)	(0.00208)	(0.16324)
	[2.02184]	[8.09048]	[0.09140]	[−1.43930]
TR(−2)	−0.100454	−0.143475	0.002212	0.448261
	(0.06676)	(0.13511)	(0.00216)	(0.16984)
	[−1.50463]	[−1.06192]	[1.02261]	[2.63932]
USA(−1)	−3.823444	−4.286335	0.804341	−9.608025
	(4.55697)	(9.22198)	(0.14762)	(11.5926)
	[−0.83903]	[−0.46480]	[5.44863]	[−0.82881]
USA(−2)	1.561428	12.25069	0.093564	−4.784711
	(4.43729)	(8.97979)	(0.14375)	(11.2881)
	[0.35189]	[1.36425]	[0.65090]	[−0.42387]
MSCI_EMERGING(−1)	0.085443	0.064802	−0.000532	0.614351
	(0.05032)	(0.10183)	(0.00163)	(0.12800)
	[1.49812]	[0.63640]	[−0.32661]	[4.79958]
MSCI_EMERGING(−2)	−0.021460	−0.075181	0.001042	0.162597
	(0.05144)	(0.10409)	(0.00167)	(0.13085)
	[−0.41721]	[−0.72225]	[0.62550]	[1.24262]
C	2.387621	−18.00681	0.193460	43.62729
	(4.73605)	(9.58438)	(0.15342)	(12.0481)
	[0.50414]	[−1.87877]	[1.26095]	[3.62108]
R-squared	0.954022	0.986646	0.949950	0.831893
Adj. R-squared	0.947681	0.984804	0.943046	0.808706
Sum sq. resids	1.615137	6.614623	0.001695	10.45240
S.E. equation	0.166875	0.337706	0.005406	0.424516
F-statistic	150.4354	535.6535	137.6044	35.87724
Log likelihood	29.72776	−17.50265	259.5212	−32.83053
Akaike AIC	−0.618739	0.791124	−7.478245	1.248673
Schwarz SC	−0.322587	1.087277	−7.182093	1.544825
Mean dependent	5.668028	22.54157	2.338678	43.14940
SD dependent	0.729557	2.739510	0.022652	0.970606

Sample: 7/02/2018–10/02/2018.
Included observations: 67.
Standard errors in () & t-statistics in [].

Table 9.
VAR estimates result for political stress #8.

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References

[1] Longstaff FA. The sub-prime credit crisis and contagion in financial markets. Journal of Financial Economics. 2010;**97**:436-450

[2] Reinhart CM, Rogoff KS. The aftermath of the financial crisis. In: Working Paper. National Bureau of Economic Research; 2009

[3] Brunnermeier MK, Pedersen LH. Market liquidity and funding liquidity. Review of Financial Studies. 2009;**22**: 2201-2238

[4] Melvin M, Taylor PM. The crisis in the foreign exchange market. Journal of International Money and Finance. 2009; **28**:1317-1330

[5] Tang DY, Yan H. Market conditions, default risk and credit spread. Journal of Banking & Finance. 2010;**34**:743-753

[6] Billio M, Gatemansky M, Lo AW, Pelizzon L. Measuring Systemic Risk in the Finance and Insurance Sectors. Working Paper: Massachusetts Institute of Technology; 2010

[7] Diamond WD, Rajan RG. Liquidity shortages and banking crises. Journal of Finance. 2005;**60**:615-647

[8] Enenajor E, Sebastian A, Witmer J. An assessment of the bank of Canada's term PRA facility. North American Journal of Economics and Finance. 2012; **23**:123-143

[9] McAndrews J, Sarkar A, Wang Z. The Effect of the Term Auction Facility on the London Inter-Bank Offered Rate. Federal Reserve Bank of New York; 2009 Staff Report No. 335

[10] Pais A, Stork PA. Contagion risk in the Australian banking and property sectors. Journal of Banking & Finance. 2011;**35**:681-697

[11] Sarkar A. Liquidity risk, credit risk, and the Federal Reserve's responses to the crisis. Financial Market Portfolio Management. 2009;**23**:335-348

[12] Yang HF, Liu CL, Chou YR. Interest rate risk propagation: Evidence from the credit crunch. North American Journal of Economics & Finance. 2014;**28**: 242-264

[13] Changa CL, McAleerc M, Tansuchat R. Conditional correlations and volatility spillovers between crude oil and stock index returns. North American Journal of Economics and Finance. 2013;**25**:116-138

[14] Forbes KJ, Rigobon R. No contagion, only interdependence: Measuring stock market co-movements. Journal of Finance. 2002;**57**:2223-2261

[15] Mandilaras A, Bird G. Foreign exchange markets in South-East Asia 1990–2004: An empirical analysis of spillovers during crisis and non-crisis periods. North American Journal of Economics and Finance. 2007;**18**:41-57

[16] Habib MM. Financial contagion, interest rates and the role of the exchange rate as shock absorber in Central and Eastern Europe. In: Discussion Paper. Bank of Finland Institute for Economies in Transition; 2002

[17] Edwards S. Interest rate volatility, contagion and convergence: An empirical investigation of the cases of Argentina, Chile and Mexico. Journal of Applied Economics. 1998;**1**:55-86

[18] Bernanke BS. On the predictive power of the interest rate spread. New England Economic Review. 1990; **November–December**:51-68

[19] Friedman BM, Kuttner KN. Money, income, price, and interest rates. American Economic Review. 1993;**82**: 472-492

[20] Gertler M, Hubbard RG, Kashyap A. Interest rate spread, credit constraints, and investment fluctuations: An empirical investigation. In: Hubbard RG, editor. Financial Markets and Financial Crises. Chicago: University of Chicago Press; 1991. pp. 11-31

[21] Borensztein E, Zettelmeyer J, Philippon T. Monetary Independence in Emerging Markets: Does the Exchange Rate Regime Make a Difference? Working Paper: IMF; 2001

[22] Demirel UD. The transmission of foreign interest rate shocks to a small-open economy: The role of external debt and financial integration. The B.E. Journal of Macroeconomics. 2009;**9**(1): 1-37

[23] Allegret JP, Couharde C, Guillaumin C. The impact of external shocks in East Asia: Lessons from a structural VAR model with block exogeneity. International Economics. 2012;**132**(4):35-89

[24] Andrle M, Garcia-Saltos R, Ho G. The role of domestic and external shocks in Poland: Results from an agnostic estimation procedure. In: IMF Working Paper. 2013

[25] Pelipas I, Shymanovich G, Kirchner R. International linkages and external shocks: A Global VAR Perspective for Belarus. Evidence from Different Model Specifications. Belarus: German Economic Team; 2016. Policy Study Series No. 02/2016

[26] Edwards S. Interest rates, contagion and capital controls. In: NBER Working Paper. 2000

[27] Zivot E, Wang J. Modelling Financial Time Series with S-PLUS. New York: Springer-Verlag; 2006