THE EFFECTS OF UNEXPECTED EVENTS BETWEEN 1990-2012
ON DOLAR SELLING PRICE IN TURKEY

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ABSTRACT

Expectations regarding the economical and political changes affect directly dollar selling prices. In the finance literature, many studies reveal the relationship between unexpected events and stock prices. However a few studies investigate such a relationship between unexpected events and dollar selling prices in Turkey. This study aims to explain the effect of unexpected events on dollar selling prices in Turkey, for the period 1990-2012 which starts with the 'The invasion of Kuwait-2/8/1990'' and ends with 'Upgrading of Turkey's credit rate by Fitch-6/11/2012'. In order to explain the relationship, event study methodology proposed by MacKinley (1997) is used.The data has been analyzed by two different normal return calculation methods: Constant mean return model (CMR), Mean adjusted return model (MAR). According to both calculation methods, in the most of the post-period days the results are statistically significant. The importance of this study is to show whether significant abnormal returns exist around unexpected events which may lead for the position of the investors.

Keywords: *Unexpected events, Dollar selling price, Event study*

JEL Classification: *G14, G15, G18*

1990-2012 YILLARI ARASINDA GERÇEKLEŞEN BEKLENMEDİK OLAYLARIN
TÜRKİYE'DE DOLAR KUR FİYATINA ETKİLERİ

ÖZ

Ekonomik ve politik gelişmelere ilişkin beklentiler, dolar kur fiyatını doğrudan etkilemektedir. Finans literatüründe, birçok çalışma beklenmedik olayların hisse senedi fiyatlarını etkisini incelemektedir. Ancak Türkiye'de beklenmedik olayların dolarkur fiyatlarına etkisini inceleyen sınırlı sayıda çalışma bulunmaktadır. Bu çalışmanın amacı, 1990-2012 yılları arasında, 2/8/1990 tarihli Kuveyt'in işgali ile başlayıp 6/11/2012 Fitch'in Türkiye'nin kredi notunu arttırması ile sonlanan, beklenmedik olayların Türkiye'de dolar kur fiyatına etkilerini açıklamaktır. Değişkenler arasındaki ilişkiyi incelemek amacıyla, MacKinley (1997) tarafından önerilen olay çalışması yöntemi kullanılmıştır. Elde edilen very iki farklı şekilde analiz edilmiştir: sabit-ortalama getiri modeli

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(Constant mean return model (CMR)), ortalama-düzeltilmiş getirimodeli (Mean adjusted return model (MAR)). Her iki hesaplama yöntemine göre, özellikle olay sonrası dönemde sonuçlar istatistiki olarak anlamlıdır. Çalışmanın önemi, beklenmedik olayların etrafındaki günlerde anlamlı anormal getirinin olup olmadığını göstererek yatırımcıların alacakları pozisyonlarda yol göstermektir.

AnahtarKelimeler: *Beklenmedik olaylar, Dolar kur fiyatı, Olay çalışması.*

Jel Sınıflandırması: *G14, G15, G18*

1. INTRODUCTION

Unexpected events, like terrorist attacks, catastrophic events, economical changes may cause huge effects on stock prices, foreign currency prices etc. Like the stock markets, foreign currency prices flourish also on information. According to the efficient market theory, proposed by Fama (1970), securities' prices fully reflect all information and investors do not receive any abnormal return. However many studies show that there are many anomalies observed for the securities' prices. Based on that background, By using approaches of Chen and Siems (2004), MacKinlay (1997) and Brown and Warner (1980), we aim to examine the effects of fourteen political, terroristic, economical and natural disaster events on the Turkey's dollar price selling. By this way, we are going to show whether abnormal returns exist around the unexpected events. In addition, as well as the academicians, professionals especially in the private sector, will benefit by gaining a clear understanding of the effect of unexpected events on the dollar selling prices. Conceptually, event study analyses differentiate between the returns that would have been expected if the analyzed event would not have taken place (normal returns) and the returns that were caused by the respective event (abnormal returns) (http://www.eventstudytools.com/event-study-methodology; 05.11.2013). Abnormal returns (AR) are the main determining points of this issue. If investors react favorably to an event, we would expect positive abnormal returns. Alternatively, if investors react unfavorably to an event, we would expect negative abnormal returns. By examining the results, we show whether abnormal returns exist in the dollar selling prices in order to make correct and proper interpretations of the unexpected events' results.

The first part of this paper reviews previous literature about the impact of unexpected events especially on stock market performance. Then, data and methodology used in the study are explained. Finally, empirical findings and suggestions are presented.

2. LITERATURE SURVEY

Event studies which have a long history is an approach to measure the effect of an unexpected event on the reaction of the market. One of the most significant study in event study literature has been

done by Brown and Warner (1980, 1985). Brown and Warner used monthly returns in their study in 1980, and the daily returns in 1985; and they analyzed how the particular properties of daily and monthly stock returns and problems encountered in analysis affect the methodologies of event study. As a result of both studies, they drew the attention to the point that under various conditions methodologies based on Ordinary Least Squares model and standard parametric tests work.

Kwok and Brooks (1990) adapted the approach of Brown and Warner to currency markets, and by creating different models for abnormal returns they compared the results. While putting practical proposals for the selection of event study methodology, the study results showed that some of the findings of Brown and Warner cannot be generalized for the currency market.

Generally by touching upon the literature of event study methodology that is applied to stock markets, Mac Kinley (1997) brought applications in different fields up discussion and stated that the methodology can be applied for bonds by transforming it to some extent.

Abadie and Gardeazabal (2003) examined the economic effects of terrorist conflicts in Bask Country by using case study in their research. In this study, they emphasized the fact that at the beginning of 1970's when there was no conflict, the Bask Country took the lead in per capita income rating among seventeen regions in Spain however; after thirty years of terrorism and political turmoil, the region substantially fell behind in the rating. Since the number of studies about this issue is quite low, they tended to analyze this subject. They also included the 1998-1999 truce period in their study and attracted the attention to the point that there occurred rises within the period and following the end of truce there occurred declines in stock shares.

Mandacı (2003), evaluated the impact of general elections in Turkey on the Istanbul Stock Exchange (ISE) for period of 1991-2002. In this study, the ISE-100 index returns, fifteen days before and after the general elections were analyzed. Statistically significant abnormal returns were obtained within the mentioned periods.

Worthington and Valadkhani (2004) aimed at measuring the effect of frequent and high cost natural disasters to the Australia stock market. Australian Stock Exchange (ASX), Ordinaries Index (AOI) daily closing prices between December 31, 1982- January 1, 2002 and 42 natural disasters (severe storm, flood, hurricane, earthquake, great fire) recorded within these dates, deaths in these disasters- insurance losses constitute the data set. In profit modeling, Autoregressive Moving Average model- ARMA that based on Box- Jenkins methodology was used, and the encountered disasters were represented through dummy variables. The results obtained show that great fires, hurricanes and earthquakes have bigger effects on market profits in regard to floods and severe storms.

Chen and Siems (2004) mentioned the strong relation between investors' hopes and fears about future and stock quotes, tried to evaluate effects of terrorist attacks, military action and unforeseen disasters on global stock quotes in this sense, and used the event study methodology in their study.

The study is made up of two parts as USA markets and global capital markets; the first part tries to measure the reaction of USA markets to 14 terrorist attacks or military actions dating back 1915 , and the second part focuses on reaction of global capital markets to Iraq's invasion of Kuwait in 1990 and September 11, 2001 terrorist attacks. Analysis results indicated that USA stock markets are more resilient than in the past and after terrorist attacks they recovered sooner than other markets.

Another research using event study in its analyses was carried out by Akıncı et. al (2005). Akıncı et. al (2005) addressed that there are not detailed studies regarding foreign exchange interventions by central banks of developing countries and in this regard analyzed the effectiveness of foreign exchange interventions for post-crisis period.

Ural and Balaylar (2008) put under the scope the consolidations in Turkish banking sector in the light of developments in markets within the globalization process, and analyzed the effects of these consolidations on share earnings by using event study method.

Kirkulak and Demirkaplan (2008) examined the effects of merger announcements on ISE for period of 1997-2006 by use of event study method. Findings suggested that mergers and acquisitions (M&A) activities intensified after 2001 financial crisis and they drew the attention to the fact that following the mergers and acquisitions the stock quotes that had a tendency to increase prior to merger announcements left this positive tendency.

Kjartansdottir (2009) assessed the abnormal returns of insiders in Iceland stock markets by event study method. The study used a sample of total 3.426 insider learners trade reported between the periods of July 1, 2011- December 31, 2007 and findings suggested that insiders in buy and sell transactions derived abnormal returns during short, medium and long terms.

Mutan and Topçu (2009) measured the effects of ten events, which occurred during January 2, 1990- May 22, 2009 and were based on economic, political, environmental, military and terrorism factors, on ISE-100 Index through event study method. As a result of study, it was concluded that excluding events of August 2, 1990 Iraq's Invasion of Kuwait, April 5, 1994 package of economic measures and September 11, 2001 USA terrorist attacks, the abnormal returns regarding other events were statistically meaningful.

3. METHODOLOGY

Conducting event studies includes several steps: identification of the event, determination of the event window, estimation of pre and post-event windows and the analysis of the data for the mentioned event window. For the analysis of the data, Microsoft Excel 2010 has been used.

In this study, 5 days before and after of the event day is set as event window due to the fact that in Turkey the effects of unexpected events can be observed in short term, as in the studies of Akıncı et. al (2005) and Mandacı (2003).

Figure 1. Estimation Window, Event Window and Post-Event Window

ESTIMATION WINDOW   EVENT WINDOW   POST-EVENT WINDOW

-15   -5   0   +5   +15
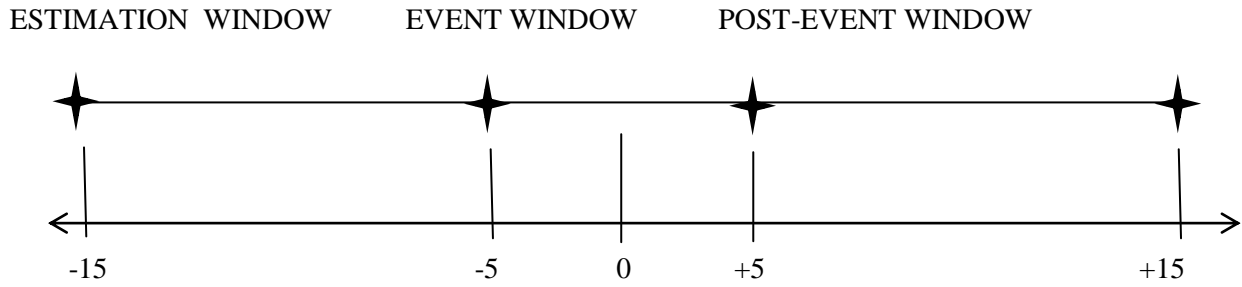
Appraisal of the event's impact requires a measure of the abnormal return.

$$AR_{i\tau} = R_{i\tau} - E(R_{i\tau}|X_\tau)$$
(1)

Where $AR_{i\tau}$ is the abnormal return, $R_{i\tau}$ is the actual return and $E(R_{i\tau}|X_\tau)$ is the normal return. Here, τ is the time period, X_τ is the conditioning information for the normal return model.

In this study we analyze the data by two different models:

1)   Constant Mean Return Model: In this model, X_τ is a constant and the mean return of a given security is constant through time. Here, $R_{i\tau}$ is the time period-t return on security i and τ_{it} is the time period t disturbance term for security i with an expectation of zero and variance σ^2 (MacKinlay, 1997).

$$R_{it} = \mu_i + \tau_{it}$$
(2)

$$E(\tau_{it}) = 0 \, var(\tau_{it}) = \sigma_{\tau i}^2$$
(3)

Here, benchmark is the firm's average stock return which assumed constant over time, X_τ.

$$AR_{i\tau} = R_{i\tau} - X_i$$
(4)

2) Mean-Adjusted Return Model: Mean-adjusted returns which are calculated by subtracting the average return for stock i during the estimation period from the stock's return during the event period s, do not explicitly control for the risk of the stock or the return on the market portfolio during periods (Brown & Warner, 1980 ; Binder, 1998). For each of the event days, daily excess returns were measured by the mean adjusted returns approach.

Here, 10 days period is taken as the event window. $\bar{R}$ is the mean return for 10 days:

$$\bar{R}_j = \frac{1}{10} \sum_{t=-15}^{-6} R_{jt}$$
(5)

After dividing the abnormal returns (AR) by the standard deviations of related period, standardized value is found (SAR).

$$SAR_{i\tau} = \frac{AR_{i\tau}}{\sigma_i}$$
(6)

Since the sample size is smaller than 30, t test is used which inspect if there is abnormal return with the 90% significance level in the pre and post days of the event day. The null hypothesis (H0) suggests there are no abnormal returns within the event window, the alternative hypothesis (H1) suggests the presence of ARs within the event window.

Also we examine cumulative abnormal returns (CAR) for the periods (0,+3) and (0,+5).

$$CAR_{(0,+t)} = \sum_{i=0}^{i=t} AR_i$$

(7)

4. DATA

In this study 14 unexpected political, terroristic, economical and natural disaster events impact on dollar selling price in Turkey which are between 1990-2012 is examined. Dollar selling prices are taken from the central bank exchange rates archive.

Table 1. Events and Dates

1	August 2, 1990	Iraq's Invasion of Kuwait
2	April 19, 1993	Death of Turkish President Turgut Özal
3	April 5, 1994	Package of Economic Measures
4	August 17, 1999	Marmara Earthquake
5	February 19, 2001	2001 Economic Crisis
6	September 11, 2001	9/11 Terrorist Attacks
7	March 1, 2003	Refusal of the Memorandum
8	November 20, 2003	Terrorist Attacks to HSBC Bank and British Consulate
9	March 17, 2008	Closure Case against AKP (Justice and Development Party)
10	July 30, 2008	Refusal of Closure Case
11	September 15, 2008	Bankruptcy of American Investment Bank Lehman Brothers
12	September 12, 2010	Referendum on Constitutional Amendment
13	October 23, 2011	Van Earthquake
14	November 6, 2012	Upgrading of Turkey's credit rating by Fitch

1. <u>August 2, 1990- Iraq's Invasion of Kuwait</u>

With the end of Iran- Iraq war in 1988, the ongoing tension since 1930s between Iraq and Kuwait increased and by claiming that Kuwait stole the oil belonging to Iraq and thus gave harm to Iraq, on August 2, 1990 Saddam regime invaded Kuwait embodying the significant part of world's oil reserves.

2. <u>April 19, 1993- Death of Turkish President Turgut Özal</u>

Turgut Özal who was chosen as 8th President of Turkish Republic by Grand National Assembly of Turkey on October 31, 1989 and took office on November 9, 1989 died due to heart attack that he had on April 19, 1993.

3. April 5, 1994- Package of Economic Measures

At the beginning of 1994 due to increasing government deficit, current account deficit and foreign exchange demand, the status quo became unsustainable in medium and long term; economic equilibriums became to get distorted. In consideration of the emerging developments, the government aimed at bringing down the rate of inflation, increasing exportation and foreign capital flows and rearranging the deteriorating equilibriums; and within this context package of economic measures was announced on April 5, 1994. Through this package it was aimed that from producing and subsiding state structure to a structure enabling the well running of market mechanism with all institutions and principles and regarding the social equilibriums (http://www.ekodialog.com/Konular/1994_krizi.html; 05.11.2012).

4. August 17, 1999- Marmara Earthquake

August 17, 1999 earthquake, which Turkey experienced at very recent time and resulted in great material and spiritual losses, was 7.5 magnitude and Kocaeli- Gölcük centered. According to official reports, 17,127 people died, and 170,000 houses and 42,902 offices were heavily damaged by it. In terms of losses, magnitude and earthquake region 17 August Earthquake is one of the biggest earthquakes experienced in the 20th century and it occurred in a very industrialized region. Kocaeli, Sakarya and Yalova defined as earthquake zone has an important place in petroleum refining, petrochemical, main metal industry, production, montage and repair of motor land vehicles and rubber industry

(http://www.recoveryplatform.org/countries_and_disasters/disaster/26/marmara_earthquake_1999; 05.11.2012).

5. February 19, 2001- Economic Crisis

2001 February crisis has been qualified as the biggest crisis of history of the Republic. After the tension experienced on meeting of MGK (National Security Council) on February 2001, overnight interest in interbank money market increased up 6,200% and equated interest rate became 4,018.6 %. Between February 16 and February 23 loss of foreign currency reserve of Central Bank became 5.36 billion dollars. While the foreign exchange demand was limited to foreigners in November crisis, it was seen in February crisis that internals also demanded foreign exchange. Foreign exchange rate increased in proportion of 40% between 19-28 February (Uygur, 2001).

6. September 11, 2001- September 11 Terrorist Attacks

On September 11, 2001 two towers of World Trade Center, New York, USA and Pentagon's hit in Washington by passenger planes affected the entire world deeply. 2,974 people lost their lives as a result of events which were defined as series of terrorist attacks targeting civilians and soldiers by

United States Government. Markets kept closed for four business days in USA following the attack (http://www.archives.gov/research/alic/reference/terrorism-links.html, 05.11.2012).

7. March 1, 2003- Refusal of the Memorandum

Regarding February 25 Iraq crisis, "Regarding Prime Ministry Memorandum for authorizing the government in Sending of Turkish Armed Forces to foreign countries and the existence of foreign armed forces in Turkey" was submitted to TBMM (Grand National Assembly of Turkey); the memorandum was rejected with 250 negative, 264 affirmative and 19 abstention votes in voting dated Saturday, March 1, 2003 and to which 553 parliamentarians has participated (http://politikaakademisi.org/1-mart-tezkeresinin-turk-dis-politikasina-etkisi/, 05.11.2012).

8. November 20, 2003- Terrorist Attacks to HSBC Bank and British Consulate

On November 2003 in Istanbul in terrorist attacks occurring through bomb laden vehicles 57 people lost their lives and 700 people were injured, too. The first one of these attacks organized on November 15, 2003 to NeveŞalom Synagogue and Beth Israel Synagogue, after 5 days following this, British Consulate in Istanbul and home office of HSBC Bank were targeted (http://news.bbc.co.uk/2/hi/europe/3222608.stm,05.11.2012).

9. March 17, 2008- Opening a Closure Case against AKP (Justice and Development Party)

Closure Case of Justice and Development Party was submitted to Supreme Court by Supreme Court of Appeals Prosecutor Abdurrahman Yalçınkaya on the grounds of "becoming a focus of anti-secular activities" regarding the closure of the party and as well as demanding an accusation of a five year ban of party officials (71 people), including Prime Minister RecepTayyipErdoğan and President Abdullah Gül on politics (http://www.hurriyet.com.tr/english/turkey/9205143.asp, 05.11.2012).

10. July 30, 2008- Refusal of Case of Closure

The Supreme Court returned that instead of its closure, the treasury grants' being cut off to 50 % percent on the grounds that it became a focus of anti- secular activities (http://www.hurriyet.com.tr/gundem/9532066.asp?gid=229&sz=99963 , 05.11.2012).

11. September 15, 2008- Bankruptcy of American Investment Bank Lehman Brothers

The financial turbulence, which was started on August 2007 as a subprime mortgage crisis, turned into a global crisis affecting the entire world in 2008 within a short period of time by bankruptcy of banks and financial institutions, particularly the super investment bank of USA Lehman Brothers. Stock markets collapsed, for the recovery of financial system a great number of bailouts and package of economic measures had been prepared by the governments and central banks of both developing and the developed countries (http://www.nytimes.com/2008/09/15/business/15lehman.html?pagewanted=all&_r=0, 05.11.2012).

12. September 12, 2010- Referendum on Constitutional Amendment

It is holding a referendum on a few amendments on September 12, 2010. The package including 26 points amendment, after being accepted by TBMM it was held a referendum on it by President Abdullah Gül. In result of referendum, with 57.88% affirmative and 42.12% negative votes, the constitutional amendments were accepted (http://www.gloria-center.org/2011/12/turkey%E2%80%99s-september-12-2010-referendum/, 05.11.2012).

13. October 23, 2010- Van Earthquake

On October 23, 2010, in Turkey at 13:41 local time the earthquake happening in Van and lasting for 25 seconds. Epicenter of the earthquake was Tabanlı village which is 17 kilometers far away from Van. In evaluations the earthquake magnitude was announced as 6.6Mw according to Richter scale by Kandilli Observatory. There were 601 loss of lives and 4152 casualties and collapse of 2261 buildings due to earthquake (http://earthquake-report.com/2011/10/23/very-strong-dangerous-earthquake-in-eastern-turkey/, 05.11.2012).

14. November 6, 2012- Fitch increased the credit rating of Turkey

International financial decrement institution Fitch Rating increased the credit rating of Turkey to the level of investable. By increasing the rating of Turkey to one degree, it turned it from BB+ to BBB-. Fitch defined the view of credit rating as "Static". In statement of the institution it was indicated that in increase of ratings improvement in fiscal balances were effective. In the statement it was said "The credit view of Turkey turned into a durable one against shocks". Furthermore, Fitch emphasized that it believed through shrinking current accounts deficit and low inflation, Turkey has been proceeding on the way of turning into a sustainable rate of growth (http://www.cnnturk.com/2012/ekonomi/11/05/fitch.turkiyenin.notunu.yukseltti/683265.0/index.html, 05.11.2012).

5. RESULTS

In this section, we examine the effects of unexpected events between 1990-2012 on dollar selling prices in Turkey.

Table 2. Abnormal Return for Pre and Post of Event Dates (-5,…,+5) for the events Iraq's Invasion of Kuwait, Death of Turkish President TurgutÖzal, Package of Economic Measures, Marmara Earthquake

	Iraq's Invasion of Kuwait (August 2, 1990)				Death of Turkish President TurgutÖzal (April 19, 1993)				Package of Economic Measures (April 5, 1994)				Marmara Earthquake (August 17, 1999)			
	CMR*		MAR**		CMR*		MAR**		CMR*		MAR**		CMR*		MAR**	
	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test
-5	0,000	0,055	0,000	-0,052	0,001	0,524	0,003	0,868	0,001	0,070	-0,004	-0,465	0,004	1,321	0,005	1,127
-4	0,000	-0,229	0,000	-0,174	-0,003	-1,066	-0,002	-0,573	-0,004	-0,389	-0,008	-0,911	-0,001	-0,465	0,000	-0,061
-3	-0,001	-0,511	-0,001	-0,352	-0,003	-1,142	-0,002	-0,585	0,000	0,031	-0,002	-0,234	0,004	1,221	0,004	1,211
-2	-0,001	-1,077	-0,001	-0,939	0,003	1,118	0,004	0,913	-0,001	-0,098	-0,002	-0,277	0,002	0,594	0,002	0,676
-1	-0,003	**-2,495**	-0,003	**-2,758**	0,004	1,554	0,004	1,248	0,007	0,705	0,006	0,664	0,000	-0,158	0,000	-0,100
0	0,000	0,056	0,000	0,059	0,007	**2,349**	0,007	**1,948**	0,010	1,089	0,010	1,079	0,007	**2,157**	0,007	**2,012**
1	0,002	**1,754**	0,002	**1,899**	-0,001	-0,508	-0,002	-0,475	0,321	**33,635**	0,321	**33,751**	0,000	-0,143	-0,001	-0,469
2	-0,002	-1,643	-0,002	-1,794	-0,005	-1,790	-0,005	-1,469	0,212	**22,235**	0,211	**23,073**	0,004	1,133	0,003	1,050
3	-0,003	**-2,496**	-0,003	**-3,441**	0,006	2,124	0,006	1,852	-0,086	**-8,976**	-0,085	**-11,074**	0,001	0,325	0,000	0,102
4	0,002	1,756	0,003	**3,995**	0,002	0,766	0,002	0,635	-0,102	**-10,685**	-0,100	**-15,620**	-0,006	**-1,946**	-0,007	**-2,646**
5	0,003	**2,032**	0,004	**3,056**	-0,012	**-4,052**	-0,012	**-4,350**	-0,005	-0,523	-0,003	-0,506	0,006	**1,812**	0,005	1,655
	t test of CAR (0,+3)		t test of CAR (0,+3)		t test of CAR (0,+3)		t test of CAR (0,+3)		t test of CAR (0,+3)		t test of CAR (0,+3)		t test of CAR (0,+3)		t test of CAR (0,+3)	
	-1,165		-1,167		1,087		0,926		24,151		25,348		1,736		1,436	
	t test of CAR (0,+5)		t test of CAR (0,+5)		t test of CAR (0,+5)		t test of CAR (0,+5)		t test of CAR (0,+5)		t test of CAR (0,+5)		t test of CAR (0,+5)		t test of CAR (0,+5)	
	0,595		1,409		-0,454		-0,518		15,144		17,924		1,363		0,844	

Table 3. Abnormal Return for Pre and Post of Event Dates (-5,…,+5) for the events 2001 Economic Crisis, 9/11Terrorist Attacks, Refusal of the Memorandum, Terrorist Attacks to HSBC Bank and British Consulate

	Economic Crisis (February 19, 2001)				September 11 Terrorist Attacks (September 11, 2001)				Refusal of the Memorandum (March 1, 2003)				Terrorist Attacks to HSBC Bank and British Consulate (November 20, 2003)			
	CMR*		MAR**		Normal with CMR*		Normal with MAR**		CMR*		MAR**		CMR*		MAR**	
	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test
-5	-0,001	-0,275	-0,001	-0,257	0,021	1,467	0,008	0,395	-0,004	-0,824	-0,003	-0,874	0,004	0,546	0,001	0,152
-4	-0,002	-0,541	-0,002	-0,443	0,037	2,542	0,025	1,150	-0,002	-0,353	-0,001	-0,169	-0,004	-0,608	-0,007	-0,721
-3	0,001	0,172	0,001	0,274	-0,001	-0,097	-0,010	-0,438	0,000	0,035	0,001	0,144	-0,004	-0,552	-0,006	-0,733
-2	0,004	1,248	0,004	1,005	-0,006	-0,420	-0,008	-0,607	0,001	0,227	0,003	0,483	-0,001	-0,211	-0,005	-0,544
-1	0,005	1,317	0,005	1,345	0,015	1,014	0,016	1,143	-0,006	-1,133	-0,005	-1,000	-0,003	-0,457	-0,005	-0,565
0	-0,002	-0,457	-0,002	-0,476	0,022	1,498	0,022	1,609	-0,008	-1,576	-0,008	-1,527	-0,003	-0,388	-0,003	-0,398
1	-0,003	-0,876	-0,003	-1,012	0,007	0,482	0,003	0,217	0,035	**6,645**	0,035	**6,470**	0,014	**2,072**	0,013	**1,924**
2	0,007	**1,985**	0,007	**2,235**	0,028	**1,924**	0,021	1,192	-0,008	-1,581	-0,008	-1,444	-0,002	-0,356	-0,002	-0,347
3	-0,004	-1,141	-0,004	-1,179	0,016	1,119	0,011	0,647	-0,017	**-3,153**	-0,015	**-3,078**	0,001	0,183	0,001	0,130
4	0,335	**95,149**	0,334	**100,676**	0,018	1,215	0,015	0,919	0,000	0,018	0,000	0,077	-0,005	-0,807	-0,006	-1,063
5	0,113	**32,218**	0,112	**38,763**	0,043	**2,968**	0,041	**2,220**	0,003	0,552	0,004	0,766	-0,004	-0,668	-0,005	-0,940

t test of CAR (0,+3)	t test of CAR (0,+3)	t test of CAR (0,+3)	t test of CAR (0,+3)	t test of CAR (0,+3)	t test of CAR (0,+3)	t test of CAR (0,+3)	t test of CAR (0,+3)
-0,244	-0,245	**2,511**	**1,820**	0,168	0,328	0,115	0,699
t test of CAR (0,+5)	**t test of CAR (0,+5)**	**t test of CAR (0,+5)**	**t test of CAR (0,+5)**	**t test of CAR (0,+5)**	**t test of CAR (0,+5)**	**t test of CAR (0,+5)**	**t test of CAR (0,+5)**
51,798	**56,227**	**3,758**	**2,833**	0,370	0,600	-0,508	-0,115

Table 4. Abnormal Return for Pre and Post of Event Dates (-5,…,+5) for the events Opening a closure case against AKP, Refusal of the case of closure, Bankruptcy of American Investment Lehman and Brothers

	Opening a Closure Case against AKP (March 17, 2008)				Refusal of the Case of Closure (July 30, 2008)				Bankruptcy of American Investment Lehman and Brothers (September 15, 2008)			
	CMR*		MAR**		CMR*		MAR**		CMR*		MAR**	
	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test
-5	0,026	2,584	0,028	4,989	0,009	1,719	0,006	0,848	0,017	**2,495**	0,019	**3,898**
-4	-0,006	-0,608	-0,005	-0,754	0,003	0,591	0,001	0,157	-0,019	**-2,826**	-0,016	**-3,210**
-3	0,000	-0,036	-0,002	-0,183	0,009	1,843	0,008	1,262	-0,002	-0,233	0,000	0,091
-2	-0,020	-1,957	-0,021	-1,877	0,005	0,980	0,005	1,100	0,008	1,224	0,010	2,282
-1	0,016	1,535	0,016	1,519	0,003	0,543	0,003	0,578	0,017	**2,553**	0,018	**2,516**
0	-0,013	-1,264	-0,013	-1,216	0,003	0,640	0,003	0,619	-0,013	-1,903	-0,013	-1,739
1	0,034	**3,379**	0,031	**2,316**	-0,009	-1,672	-0,009	-1,567	0,011	1,621	0,008	0,969
2	-0,019	**-1,919**	-0,022	**-1,651**	-0,021	**-4,168**	-0,022	**-4,094**	0,009	1,362	0,008	0,797
3	-0,014	-1,364	-0,017	-1,302	0,002	0,371	0,000	-0,008	-0,011	-1,704	-0,012	-1,105
4	0,009	0,902	0,007	0,476	-0,004	-0,862	-0,006	-0,950	0,009	1,417	0,008	0,742
5	0,001	0,084	-0,003	-0,205	0,005	0,911	0,002	0,352	-0,021	**-3,119**	-0,025	**-2,174**
	t-test of CAR (0,+3)		t-test of CAR (0,+3)		t-test of CAR (0,+3)		t-test of CAR (0,+3)		t-test of CAR (0,+3)		t-test of CAR (0,+3)	
	-0,584		-0,806		**-2,414**		**-2,460**		-0,312		-0,404	
	t-test of CAR (0,+5)		t-test of CAR (0,+5)		t-test of CAR (0,+5)		t-test of CAR (0,+5)		t-test of CAR (0,+5)		t-test of CAR (0,+5)	
	-0,074		-0,506		**-1,951**		**-2,187**		-0,950		-0,991	

Table 5. Abnormal Return for Pre and Post of Event Dates (-5,…,+5) for the events Referandum on Constitutional Amendment, Van earthquake, Increase of Turkey's credit note by Fitch

	Referendum on Constitutional Amendment (September 12, 2010)				Van Earthquake (October 23, 2011)				Increase of Turkey's credit note by Fitch (November 6, 2012)			
	CMR*		MAR**		CMR*		MAR**		CMR*		MAR**	
	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test	AR	t-test
-5	-0,005	-0,815	-0,006	-0,915	0,004	0,484	0,002	0,205	0,001	0,386	-0,001	-0,236
-4	-0,008	-1,371	-0,009	-1,492	0,005	0,571	0,003	0,350	0,002	0,727	0,000	0,061
-3	-0,005	-0,904	-0,005	-0,912	0,014	1,545	0,013	1,452	-0,003	-1,582	-0,004	-1,074
-2	-0,005	-0,871	-0,004	-0,796	-0,007	-0,848	-0,008	-0,888	0,000	0,097	-0,001	-0,171
-1	0,006	0,981	0,006	1,224	0,010	1,153	0,010	1,050	-0,001	-0,219	-0,001	-0,185
0	-0,001	-0,182	-0,001	-0,209	-0,007	-0,780	-0,007	-0,752	0,000	-0,062	0,000	-0,056
1	-0,011	**-1,965**	-0,012	**-2,559**	-0,013	-1,496	-0,013	-1,417	-0,006	**-2,816**	-0,006	**-2,753**
2	0,002	0,271	0,002	0,285	-0,012	-1,424	-0,012	-1,318	0,001	0,360	0,001	0,258
3	-0,005	-0,910	-0,004	-0,766	-0,019	**-2,191**	-0,019	**-1,975**	0,005	**2,532**	0,005	**2,340**

4	-0,002	-0,350	0,000	-0,011	-0,002	-0,199	-0,002	-0,183	0,003	1,627	0,004	1,660
5	0,002	0,296	0,003	0,581	0,001	0,140	-0,001	-0,142	0,005	**2,359**	0,005	**2,417**
t-test of CAR (0,+3)		t-test of CAR (0,+3)		t-test of CAR (0,+3)		t-test of CAR (0,+3)		t-test of CAR (0,+3)		t-test of CAR (0,+3)	
-1,393		-1,482		**-2,945**		**-2,745**		0,007		-0,026	
t-test of CAR (0,+5)		t-test of CAR (0,+5)		t-test of CAR (0,+5)		t-test of CAR (0,+5)		t-test of CAR (0,+5)		t-test of CAR (0,+5)	
-1,159		-0,960		**-2,428**		**-2,435**		1,633		1,600	

*: Normal Return is calculated by Constant Mean Return model

**: Normal Return is calculated by Mean Adjusted Return model

As it can be shown in table 2, abnormal returns for which the normal returns are calculated by constant mean return model (CMR) in the case of Iraq's invasion of Kuwait (August 2, 1990), are significant in the first five days except the second day after the event date. As it can be seen in the table, the calculations for CMR and also for the mean adjusted return model (MAR) are similar. Also in the first three and five days after the event, there is no significant CAR.

Coming to the death of President Turgut Özal (April 19, 1993), the significant abnormal returns are found after the event so that in the post-event period according to CMR calculation. The results of the MAR calculation are similar with the CMR one. There is no significant CAR for both of the calculation methods.

The devaluation of Turkish currency is one of the most significant case in the examined events. Especially, the first day just after the devaluation has a record as 73. That demonstrates how it affected the dollar selling prices. In addition nearly all of the post-events days have significant abnormal returns except the second day. CARs are also significant with a high t-test result.

The package of economic measures is another important event such as the devaluation of Turkish Money. In the post-event period, according to CMR and MAR methods, the results are significant for the first fourth days. The CARs are also significant in both (0,3) and (0,5) periods.

When the effect of Marmara Earthquake (August 17, 1999) is measured, there are only two days with positive abnormal return just after the event date and the fifth day. In contrast, the effect of economic crisis is highly significant. Especially the fourth and the fifth days in the post-event period have positive abnormal returns. Similar to these results, CARs are also significant in the (0,5) day interval.

9/11 Terrorist Attacks do not seem to effect dollar selling prices in Turkey according to both CMR and MAR methods. However the refusal of memorandum caused an important change in the dollar selling prices. The first day after the referendum has significant positive abnormal return.

For the event which is terrorist attack to HSBC Bank and British Consulate on November 20, 2003 there is one significant abnormal return which is after the event day for both calculation

methods. So there is no cumulative abnormal return after the 3 days and 5 days of the event, as expected.

When we come to the event of opening a closure case against AKP (March 17, 2008), a rare difference appears. For the CMR calculations, after the next 2 days of the event, we have significant abnormal return although for the MAR calculations there is just one significant abnormal return just after the event. Also we can't see any significant cumulative abnormal return.

For the next event which is the refusal of the case of closure on July 90, 2008 we see significant abnormal return in the second day after the event for the both methods of CMR and MAR. Also we have significant abnormal returns for both (0,+3) and (0,+5) periods.

Bankruptcy of American Investment Lehman and Brothers (September 15, 2008) give a signal to Turkish dollar selling price before the event since for the CMR model in the 3 of 5 days and for the MAR model in the 4 of 5 days before the event abnormal return is significant. Cumulative abnormal returns are insignificant for the post event period of the event.

For the event of referendum on constitutional amendment on September 12, 2010 there is one significant abnormal return that is a day after the event date for the both methods CMR and MAR. Again CARs are insignificant for the stated periods.

When we come to the next event which is Van Earthquake (October 23, 2011) the third day after the event has significant abnormal return. In addition (0,+3) and (0,+5) periods have statistically significant abnormal returns for the both CMR and MAR methods.

The last event, the upgrading of Turkey's credit note by Fitch has significant abnormal returns in the first, third and the fifth days after the event. As it can be seen from the table, there is no cumulative abnormal returns for the stated periods.

6. CONCLUSION

In this study, we examined whether abnormal returns exist in the dollar selling prices. In addition, unlike most of the other studies, this paper computes the effects of unexpected events on dollar selling prices in Turkey with two different abnormal return models: CMR and MAR. According to both calculation models, the effects of unexpected events are statistically significant especially in the post-event period (0,+5). We did not care about the pre-event periods since unexpected events appear suddenly. We just examined the pre-event period of the bankruptcy of American Investment Lehman and Brothers (September 15, 2008) due to the signals of the crisis in the mentioned period.

By examining the results, after the political events such as the invasion of Kuwait, death of Turkish president Turgut Özal, closure case against AKP, refusal of the closure case and referendum on constitutional amendment; it can be seen that especially in the first three days, the effects are observed. Coming the political events such as package of economic measures, 2001 economic crisis,

bankruptcy of American Investment Lehman and Brothers and upgrading of Turkey's credit note by Fitch; the abnormal returns are still seen in the first three days after the events. For the catastrophic events, the abnormal returns are seen just after the event day.

Overall, our results are significant particularly for the economical events in which the impact is more effective and can be observed more than one day. On the other hand, the results highlight the fact that the political, catastrophical and terroristic events do not impact the dollar selling prices as much as the economical ones. This can be considered as a crucial information for the foreign currency market.

In this study, we only considered unexpected events as the sole factor on dollar selling prices although there can be many other reasons. As a suggestion, the co-movement of dollar selling prices with European countries' may be examined. In addition, with a classification, the effects of economical, political and catastrophical events can be analyzed in different studies. Moreover other methods can be used to compute the effects of unexpected events.

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