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RETURN AND VOLATILITY SPILLOVERS BETWEEN BİST100 AND EQUITY MARKETS OF COUNTRIES HAVING HIGH FOREIGN TRADE VOLUME

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Abstract

Over the past ten years, Turkey has actualized most intensive foreign trade with Germany, the UK, Russia and China. This study is also wonder that whether the same financial relations perform among the Turkey and trade partners in the equity markets. Therefore, five equity markets was determined for each country consist of the BIST100, FTSE100, DAX, RTS and SSEC as representative of the Capital markets. In this study, the VAR-EGARCH model was used that allow to examine interrelations among equity markets in terms of mutual returns and volatility spillover and in directions of asimetric spillover. The model was run by using daily closing price of the equity markets covered period of January 2, 2009 and December 29, 2017 thats not to coincided with the 2008 financial Crisis. According the results of the study, It was seen that only two countries; Germany and the UK, make a return spillovers to Turkey's equity market already actualized most intensive export volume.

Keywords: Return and Volatility, Var egarch, Foreign Trade Partners.

Jel Codes: G32, E44, F21, F30.

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TÜRKİYE VE TİCARET ORTAKLARI BORSALARI ARASINDA GETİRİ VE VOLATİLİTE YAYILIMI

Öz

Son on yılda, Türkiye en yoğun dış ticaretini Almanya, Birleşik Krallık, Rusya ve Çin ile gerçekleştirmiştir. Bu çalışma ise Türkiye ile dış ticaret ortakları finansal piyasaları arasında aynı ilişkinin gerçekleşip gerçekleşmeyeceğini merak etmektedir. Buna nedenle bu ülkelerin sermaye piyasalarını temsilen BIST100, FTSE100, DAX, RTS ve SSEC endekslerinden oluşan beş pay piyasası belirlenmiştir. Bu çalışmada pay piyasaları arasında ilişkilerin çift yönlü ve asimetrik getiri ve volatilité yayılımının ölçülmesine imkân veren VAR-EGARCH modeli kullanılmıştır. Model, 2008 mali krizine rastlamayan 2 Ocak 2009 ve 29 Aralık 2017 tarihlerinde kapsayan pay piyasalarının günlük kapanış fiyatı kullanılarak yapılmıştır. Çalışmanın sonuçlarına göre; Türkiye pay piyasası üzerinde yalnızca en yoğun ihracat yaptığı 2 ülke olan Almanya ve Rusya'nın bir getiri yayılımı gerçekleştirdiği görülmüştür.

Anahtar Kelimeler: Getiri ve Volatilité, VAR-EGARCH, Dış Ticaret Ortakları.

Jel Kodları: G32, E44, F21, F30.

1. INTRODUCTION

The concept of economic growth, progress and economic development is not only an significant concept but also important in the variables that this growths dependent on. However, it has obligated to us to chase the macroeconomic variables and many kind of financial markets which brings about the formation of macroeconomic variables. In particular, for several last decades, the independency and correlation between financial markets and economic growth has investigated and emphasized on studies by McKinnon (1973), Shaw 1973, Pagano (1993).

The literature related with macroeconomic variables and growth of a country, number of the studies have focused bilateral correlations and interdependency between them such as unemployment rate, inflation, interest rates, aggregate savings, aggregate consumptions and soo on. Otherwise, as to foreign trade of a country, in many research have focused mainly liberalisations Krueger (1998), Greenaway et al., (2002), foreign direct investment; Hong (2014), Iamsiraroj and Ulubaşođlu (2015), Mohamed et. al., (2017), Conybeare (2017), economic policies; Eland, (2018). On the other hand, numerous studies of the financial markets consist of the econometric analyzes between different markets by using financial market instruments and derivatives; Levinen (1999), Rousseau and Wachtel (2000), Bekaert et al. (2001). Therefore it has been expected that decisions of the international investment, investment diversification guided to based on the results of these analyzes.

In fact, there are different kind of the studies that point out the foreign trade partners of a country included export - import rates and regional proximity. Badia-Miró et al. (2018),

Gereffi (2018). Numbers of the international trade studies that have focused comparative advantages to across the countries by using factor endowment, technology and scale economies as sources of the variables (Beck, 2000).

This study have focused four country which performed to most intensive export and import rates with turkey in last 10 years. Turkey have actualized intensive export with Germany, the UK. While Turkey have actualized import with China and Russia next to Germany (Tüik, 2018). Turkey is close to these countries as a commercial terms. This commercial proximity between countries is not only in the commercial field but also in the financial markets in general. (Beck, 2000). This study intended to investigate the correlations and dependencies of financial markets of the Turkey and its foreign trade partners by using stock market dates as a represent the financial markets for each countries.

Financial markets, which played a decisive role in the progress of the economy, became even more significant by implemented financial liberalization that emerged in different parts of the World. Meanwhile, the liberalization process also effect the trade relations and interdependency across the countries (Sok-Gee, 2010: 157).

Especially, by Emerging the freedom of financial capital movements after 1980 and with the support of technology-supported instruments throught the World, induced the capitals to distribute from capital abundant country to less ones. The free movement of capital provided to savings of the some countries funds, while funding some countries. In addition, the acquisition of price and return information about the markets at the same time by all market actors eliminates the possibility of obtaining arbitrage returns based on the price difference. The impact of a shock in one of the more commercially and financially integrated countries on other countries has led to similar movements in the stock markets (Özşahin, 2017: 602).

Although it has shown as a desirable objective in industrialized countries since World War II, some developed countries such UK had completely removed capital controls in begining of the 1980. The reason why this process takes so long is thought provoking (Aşıkoğlu and Kayahan, 2008: 158). The UK economy is one of the developed country groups and has achieved sustainable economic growth. As a matter of fact, the studies that will support this development are carried out successfully with the economic programs implemented in the country. So the Bank of England fulfills the duties of ensuring stability in the monetary and fiscal policy and determining the interest rates in the UK economy where free exchange rates

and capital controls are not available. The budget works are carried out by the ministry and the targets are set in March each year (Counsellors, 2018).

The UK economy has been growing steadily since 1992 continued successfully. However, the increase in private consumption expenditures between 1997-2004 over the increase in growth caused household borrowing in the country. The country's debt / income ratio reached its highest level since the 1980s in 2007, making the relationship between the market and the interest level more sensitive. This process is equivalent to the world crisis the country's economy has also made a difficult situation. The contraction in the GDP by 4.9% in 2009 was written in the history of Britain's economy as the most serious decline since World War II. But the UK economy grew by 1.3% passes these difficult times in 2010 (Republic of Turkey Ministry of Economy, 2015a).

As a representative of the the capital markets of the UK is FTSE100 index listed on the London Stock Market the largest 100 companies by market value. Inspecting the FTSE 100 responsible with the transaction, by FTSE EMEA (Europe, Middle East and Africa) Committee It is moderated. If a FTSE 100 company is in the order of 111 or lower if graded, it will be automatically shifted to the FTSE 250 index and the FTSE 250 will the company with the highest rating will be included in FTSE 100 index (Cengiz, 2004: 90-93).

The another counter part of the Turkey is Germany is that the leader of the production of the European countries with its great economy. With a population more than 80 million the most advanced market in the EU, Germany, industrial and manufacturing progress In addition to the fact that today value has come a way. In addition to these, in the year 2009 in Germany a decline of 5% was seen as the worst of the last 60 years as recorded. As a result of this decline in wages increases in addition to the slowdown and employment problem, especially the consumer's Euro have the idea that prices will increase with the introduction of It has been suggested that the downsides are effective. In the same year, the other development is that ratio of the 14,3% decrease in exports. This decline of the Germany economy as the biggest decline seen since 1950 and also that caused the first place in export lost in 2009. In following years, Germany realized a growth of 3,9% in 2010, 3,7% in 2011 and German economy has quickly recovered. However, by the year of 2014 inflation also declined due to the decrease in oil prices (Republic of Turkey Ministry of Economy, 2015b).

Germany has intended to maintain an auditable structure and make a more effective flow of the capilal in international banking area therefore established the Germany Federal Financial Supervisory Authority in 2002 (Mwenda and Mvula, 2003: 35-56).

Germany Federal Financial Supervisory Authority is an institution that previously regulated banking, insurance sectors and capital markets under the same roof and institutions by federal agencies. Shortly takes an role take measures against some situations that might endanger the security of assets in the banking sector, hurt the regular management of the banking profession and create problems for the national economy. The main framework of financial regulatory transactions can be classified as monitoring, disciplining and coordinating the behavior of financial institutions. On the other hand role of financial markets in a country's economy is higher than in other markets, the volatilities applied to financial markets differ according to those applied to other markets. The most important reasons for this difference, the effects of financial markets on the overall economy are higher than other markets and it is a close relationship with the monetary policies implemented by governments. Due to these factors, the regulation of financial markets should take into account macroeconomic objectives (unemployment, inflation, balance of payments, etc.) as well as increasing the efficiency of monetary policies as well as ensuring the efficiency of markets. When a distinction is made between financial markets in the form of banks and other financial intermediaries, regulations in the banking sector should be based on the understanding of eliminating or minimizing systematic risks. The regulations for the capital market have a more liberal structure; protection of investors and equals competitive competition between market participants (Gökçe and Ciğerci, 2014: 1-2).

In recent decades, pace of the capitals in financial markets reached a point that can even destroy itself. Particularly, this capital movement in emerging markets include much more risk factor compared to developed countries. As a sample of the East and Russian financial crisis exist of 1990s, economist offered measures to prevent outflow of the capital such as implementation of the tobin tax (Edwards and Susmel, 2001: 1).

Russia is also one of the foreign trade partners of the Turkey that is one of the 3 countries with the most intensive import between years of the 2008-2017. Russian also located between emerging markets whose financial markets is differentiated to others in extent to such as historical, cultural, and institutional factors properties. Since the early 1990s, Russian policy-makers have put actions major economic and financial reforms to provide its own market new financial instruments. On the other hand, due to Russia is rich in energy resources, it is under the volatility effect of the associated to the prices in global markets (Hayo and Kutan, 2005: 374).

Today, Russia is also has considered as a investable part of destinations in around the world by American investors. The Russian economy has always been significant for Europe, Eastern Europe which based traditionally strong economic relations with Russia in business and trade. Lastly, Asia has become central for Russian policymakers, by rapid economic growth in the region in particular (Saleem, 2009: 9).

When the take the a look the course of relations between Russia and Turkey is decisive in terms of economic and geopolitical processes in all Eurasia. Indeed, Russia and Turkey are the largest countries of this region. The importance of this has increased even more, political and economic instability, regional problems poses a serious threat to everyone. In this sense, the cooperation between the two countries regional stability. Nowadays, Turkey is a Eurasian in all conditions with close cooperation between Russia by creating synergy, it will serve to provide economic development and peace. Within the Russian economy, turkish investments have focused more manufacturing, infrastructure, real estate, foodsectors. Shortly, It may mention about these coopretions between two countries will benefits on both sides that as long as to peace and right-minded patterns in this region (DEİK, 2017: 24).

As compared to 40 years ago after the China opened the foreign trade and investment and processign free-market reforms in 1979, China captured the role of the world's fastest-growing economies, with real annual gross domestic product (GDP) growth averaging 9.5% through 2017. Therefore China reached the fastest sustained expansion by a major economy in history as rely on by Word Bank (Morrison, 2018: 1-5).

Average annual growth rate of trade of the china has been more than 15% since 1979. By 2009, some of the succesfull process in the economy China overtook Japan to become the second largest economy in theworld. In 2010, China overtook Germany to become the largest exporting country in the world. In 2013, it overtook the United States to become the largest trading country in the world: the total volume of exports and imports as a percentage of GDP was larger in China than in the United States. In 2014, Chinese GDP measured by purchasing power parity (PPP) overtook that of the United States, making China the largest economy in the world. And in 2015, China's per capita GDP was US\$ 7960. From less than one-third of the average for subSaharan African countries, China's per capita GDP was now some five times higher. China's per capita GDP reached US\$8,640 and trade consisted of 31.1 per cent of GDP in 2017 Unlike numerous emerging markets, China is differentiated as extent to avoiding a systemic financial and economic crisis in the past 40 years, however the country assisted to the Asian economies to quickly pull out of the 1997–98 financial crisis by not only

devaluing the China's currency and maintaining dynamic growth, and also prompted the world economy avoid a downward spiral in the 2008 Global crisis by using fiscal stimulus to achieve quick recovery, contributing more than 30 per cent of global growth annually (Lin, 2017: 2; Lin, 2018: 4).

The commercial relations between China and Turkey is based well established roots. The Republic of China is the global trading partner after Germany and its first trading partner in East Asia. Beside of these, 16 th Composite Economic Commission (KEK) meeting between Turkey and China was held in Beijing in September 2009 and the 17 th will be established by turkish side by 2018. Therefore, China has completely passed \$ 2 billion investment in Turkey. The sectoral distribution of investments is as follows: energy, infrastructure, logistics, finance, diving, telecommunications and livestock. In 2012, an agreement between the Central Bank of Turkey and China signed in 2015 and renewed for 3 years. In 2016, the first cash withdrawal and cash flow utilization was realized within the scope of the settlement contract (The Republic of Turkey Ministry of Foreign Affairs, 2018a).

Lastly, Turkey received BIST 100 Index, representing their share of the financial equity market consists of 100 shares selected from real estate investment trusts and venture capital investment trusts traded in the Corporate Products Market with the companies traded in the national market and includes the shares included in the BIST 30 and BIST 50 indices. BIST 100-30 Index consists of 70 shares that are included in BIST 100 Index and not included in BIST 30 Index. BIST Corporate Governance Index is also consists of the shares of companies that are traded in the Borsa İstanbul Markets and have a minimum corporate governance rating. BIST whole index; Excluding Securities Investment Trusts. It consists of the shares of companies traded on Borsa İstanbul Markets. BIST All-100 Index; It is composed of shares not included in BIST 100 Index and included in BIST all indexe (BIST, 2015:4-5).

2. RELATED LITERATURES

Aftermath of the extensive literature research deal with return and volatility spillover that it was obtained that numerous studies handle the return and volatility among equity markets. Apart from these papers, in less of them was used among exchange rates such as (Kılıç ve Polat, 2020) However, at end of the literature research it was attained the GARCH model is most commanly used by researchers in this field. Despite there are many studies about return and volatility spillover which included in Turkeys equity markets, it couldnt coincide an emprical study that's about direct related with Turkey and equity markets of the foreign trade

partners of Turkey by using VAR EGARCH model. However, while the most of the studies that deal with capital markets among Turkey and the trade partners made according to very common classification such as developed or undeveloped countries, some of them have also focused regional and border countries. This paper differ from previous literatures in that its the first to use VAR-EGARCH model among equity market of the Turkey and foreign trade partners. In this contex, Mainly summarized literature consist of Turkeys most intensive foreign trade partners such as Germany, Russia, the UK and Russia.

Beirne et al.(2009) used tri-variate VAR-GARCH framework with the BEKK to examine volatility spillover among the matured markets and 41 emerging markets for different time periods. According to common results of the study, it was obtained evidences in support of the previous studies that proves remarkable return and volatility spillover from matured to emerging markets. A recent study by Gök (2013) employed VAR-EGARCH model to investigate return and volatility spillover from developed EU countries to Turkey by using daily closing prices of the stock markets for time period from 02.01.2002- 30.09.2013. That also provide further evidences in support of return and volatility spillover among the Turkey and developed countries.

However, according to findings of the VAR-EGARCH model, Turkey is found is most effected country both in terms of the return and volatility. The another substantial evidences that also all countries including developed countries such as United Kingdom and France are under the influences of the Germany in terms of the return and volatility. In the context of the foreign trade partners of the Turkey, in study of Grobsy (2010) and Cotter (2004), has found a comovement between stock markets of the Germany and UK. And also Kasa (1992) suggested that the same directions between Germany and the UK. This study had examined between stock markets of the USA, Japan, Canada UK and Germany by using monthly and 3 months price value.

Beside to developed European countries, Lenardon ve Amirdjanova (2006) examined by adding stock share of the USA to model. As the results of the study indicate that USA impact to all European share market as European countries co-movement which included Germany and UK in support of the previous studies. In study of the Boztosun and Çelik (2011) that used Johansen-Juselius cointegration analysis between stock market of the Turkey and some developed countries's stock markets which consist of the Germany and UK during the period of 2002-2009 years. Kılıç. vd. (2021) investigated return and volatility spillover among D8 stock markets in period of 03.02.2013 - 28.03.2021. the study reached cointegration between

stock markets. As to take a look studies of the among Russian equity market and other markets, Saleem and Vaihekoski, (2008) have found surprisingly, no statistically reasonable spillovers are found among the Russian stock market and EU stock markets in the post-crisis period (1999-2007). Shortly, highly level of the significant, but negative, shocks and volatility spillovers from Russia to the other markets are observed during the crisis period of the crisis period (Aug. 1998-Dec. 1998).

According to results of the study, they have found long term cointegration between the Turkey and these developed countries. And also Çıtak and Gözbaşı (2007) have suggested in the same directions of the long term cointegrations between Turkey and Germany, UK.

The studies that included China and Russian equity markets, Evlimoğlu and Condur (2012) have investigated short-term relationships between the stock market indices of Germany, Japan, US, India, Brazil Turkey, China, Russia by using daily stock price in the period before (2007-2007) and post-mortgage crisis (2007-2010). According to result, in the period after the crisis began in Turkey on returns, reduced the effects of developed countries' stock markets has been determined that the effects of increased emerging markets.

For the Chinese stock markets Ma and Barnes (2001) investigated the effectiveness level of the Chinese Stock Exchange by using the Fama standards that covered the period between 1990 and 1998, In study of covered both in the Shanghai Stock Exchange and in the Shenzhen Stock Exchange. It was obtained that Chinese Stock Exchange was found to be ineffective even in weak form.

3. DATE AND METHODOLOGY

This study's date set includes the daily closing price of the 5 equity market consist of the Turkey and its foreign trade partners between January 2, 2009 and December 29, 2017. In determining foreign trade partners of the Turkey based on Turkish Statistical Institute (TÜİK) datebank which has provided since 10 years imports and exports rates between Turkey and foreign countries. Turkey actualized the most intensive export-import with Germany, China, Russia and UK. between years of the 2008-2017. However, inspired of this relations among the countries, 5 equity market was determined for each country consist of the BIST100, FTSE100, DAX, RTS and SSEC as representative of the Capital markets. This study has been used since the end of the year since 2009 in order not to coincide with the 2008 crisis. All dates obtained from investing.com. (Investing, 2018).

In this study, the relations among the financial markets was measured by using VAR-EGARCH model. The model firstly, eliminates the two-step procedure procedure, however, problems with the estimated regression are avoided. In addition, it increases the power of tests to reveal the effectiveness and interaction between markets. The model, on the other hand, is the most suitable model for measuring the probability of asymmetry in the transmission mechanism. Because; it provides the opportunity for a market to investigate the impact of its own shocks and cross-market shocks on volatility. It is seen that the news in a market provides information to investors who want to invest in other markets both in size and in negative or positive (Koutmos ve Booth, 1995: 749).

The VAR E-GARCH model proposed by Koutmos (1996) indicate that short run dynamic relations between variables;

$$R_{i,t} = \beta_{i,0} + \sum_{j=1}^n \beta_{i,j} R_{j,t-1} + \varepsilon_{i,t} \quad i, j = 1, 2, \dots, n \quad (1)$$

$$\sigma_{i,t}^2 = \exp[\alpha_{i,0} + \sum_{j=1}^n \alpha_{i,j} f_j(z_{j,t-1}) + \gamma_i \ln(\sigma_{i,t-1}^2)] \quad i, j = 1, 2, \dots, n \quad (2)$$

$$f_j(z_{j,t-1}) = (|z_{j,t-1}| - E(|z_{j,t-1}|) + \delta_j z_{j,t-1}) \quad j = 1, 2, \dots, n \quad (3)$$

$$L(\theta) = -0,5 (NT) \ln(2\pi) - \frac{1}{2} \sum_{t=1}^T (\ln|S_t| + \varepsilon_t' S_t^{-1} \varepsilon_t) \quad (4)$$

In equations (1), the conditional mean in each stock market seen in the equation, as well as its own past returns a function of past returns between markets and explains the returns of each market as a vector autoregression (VAR). For $i \neq j$, $\beta_{i,j}$ shows that lead-lag relations between markets. If the $\beta_{i,j}$ coefficient is meaningful that indicate i market leading to j market. On the other wise, current return on the j market can be used to predict the future return of the i market. In equations (2); $\alpha_{i,j}$, shows that volatility spillover between markets. by the condition of being statistically meaningfull, positive $\alpha_{i,j}$ and negative δ_j , shows that negative shocks in the j market have a greater impact on volatility of the i market. In addition to asymmetric volatility spillovers between different markets in equations, the term of γ_i indicate persistence of volatility between the markets. In equation (3); δ_j measures the impact of past shocks on volatility. $f(\cdot)$ refers to the asymmetric function of past standardized shocks; in case of the $z_{j,t-1} < 0$; $(-1 + \delta_j)$, in case of the $z_{j,t-1} > 0$; $(1 + \delta_j)$ (Savva vd. 2004:12).

Lastly, the equations (4) includes VAR E-GARCH model indicate all functions mentioned previous equations. N shows number of equations for each examined equation, T sembol reflect the number of observations, θ is 5×1 predict parameter vector, $\varepsilon_t' = [\varepsilon_{1,t} \varepsilon_{2,t} \dots \varepsilon_{i,t}]$

indicates the vector of changes at time t , the symbol of S_t shows 5×5 time-dependent conditional variance covariance matrix (Koutmos, 1996: 977-978).

4. EMPIRICAL RESULTS

Many statistical results in time series are performed under the assumption of station stability. Because of the using non-stationary series may cause misleading results in equations. Time series are divided into static and non-stationary series according to deviations from the average. The series, which are free of periodic fluctuations or where the mean and variance of the series show a symmetrical change, are called stationary series. For two different reasons, such as the mean of the series and auto-correlations of time, the series stability is eliminated. Since the first contains a deterministic and a stochastic trend in the second; first of all, it should be determined whether the trend in the series is stochastic or deterministic. For the non-stationary series it should be applied some correction techniques such as taking the difference, taking the natural logarithm etc. (Akdi, 2010: 2-3).

Therefore, due to the price series used in this study were non-stationary distributed, it was applied to taking logarithm method by using $\ln(P_t/P_{t-1})$ to get substantial results. The logarithmed values may be seen in Table 3; symbolized by LNBIST100, LNFTSE100, LNDAX, LNRTS, LNSSEC in diagrams. As it has shown in Table 3, all diagrams consist of the price values of BIST100, FTSE100, DAX, RTS and SSEC indexes contain trend movement. And also an overall increase was observed in the long run and it was concluded that the series were non-stable due to these effects that seen in these series.

In addition, the t-statistic values obtained for the series given in Table 4 are less than the critical values of t values at the level of significance of 0.10 and also this result proves that the price series are not stable.

Graph 1. The Graphs of Price Series and Return Series

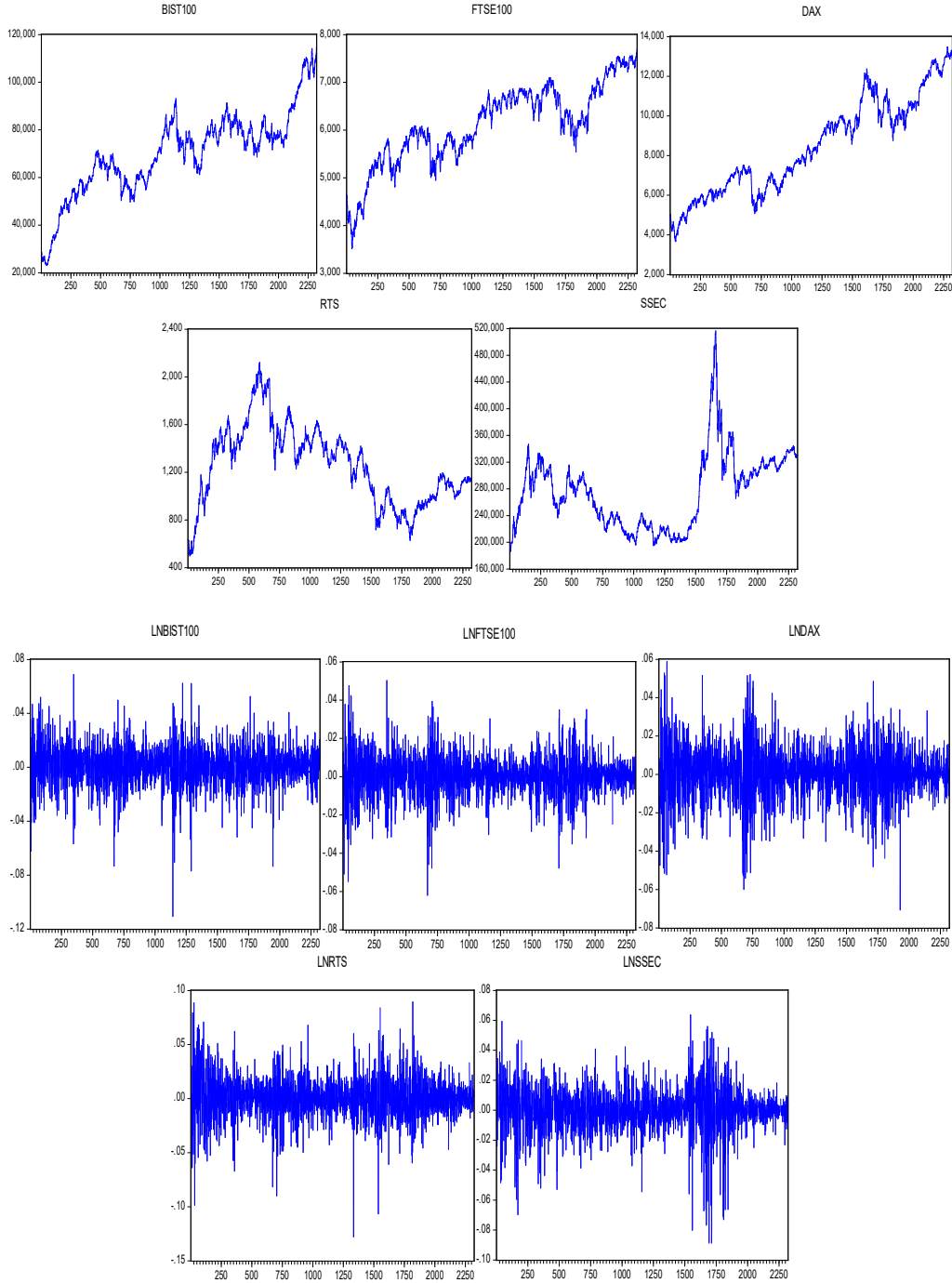


Table 1. Unit Root Tests for Price Series and Return Series

		Price Series		Return Series	
		ADF	PP	ADF	PP
TURKEY	S	-1.311262	-	-	-48.94358***
	S/T	-2.705574	-	48.96903***	-48.94647***

			2.586666	48.96894***	
UK	S	-1.586853	- 1.487153	- 46.65836***	-46.86343***
	S/T	-3.266380	- 3.278574	- 46.64786***	-46.85187***
GERMANY	S	-0.643986	- 0.656123	- 46.16667***	-46.17154***
	S/T	-3.389683	- 3.389683	- 46.15684***	-46.16129***
RUSSIAN	S	-2.244126	- 2.139542	- 43.99772***	-43.96298***
	S/T	-3.044662	- 3.014181	- 43.99898***	-43.96170***
CHINA	S	-2.310063	- 2.305262	- 6.014032***	-44.77010***
	S/T	-2.442440	- 2.378918	- 6.015226***	-44.76025***
		MacKinnon- values		intercept	intercept and the time trend
			%1	-3.436605	-3.967160
			%5	-2.864190	-3.414269
			%10	-2.568233	-3.129251

In Table 1: Turkey, Britain, Germany, Russia and China share tables of unit root tests of the market price-return series are given. The ADF and PP test statistics were calculated at 1%, 5% and 10% significance level in intercept and intercept and the time trend. According to unit root test results, it was determined that price series were not stable. In the series of logarithmic returns, the station has been proven to be stable since there is no unit root. In the other wise, Due to the fact that there are heteroscedasticity problems in the error terms obtained from time series models.

First of all, it is necessary to determine the appropriate lag lengths for VAR model and to estimate the EGARCH model over the error terms of the established VAR model. The purpose of determining the appropriate lag lengths is to determine the lag of the information that occurred in previous periods and the lag in explaining the price of today. The model of this study was estimated based on Akaike’s Information Criteria(AIC), which the most appropriate lag lengths was found (2). In addition to these results the Hannan-Quinn Criterion(HQC), Final Prediction Error (FPE) indicate the same appropriate lag lengths (2). For this study, VAR (2) -EGARCH model was run to investigate return and volatility spillover among the markets by using WinRATS Classroom 9.0 Package Program Reveals. The results of the analysis are given in Table 2, 3 below.

Table 2. The results of the VAR (2) –EGARCH model (Mean Equations)

Turkey		United kingdom		Germany		Russian		China	
Mean Equat	Coefficient [T] Statistic	Mean Equati	Coefficie nt	Mean Equati	Coefficie nt	Mean Equation	Coefficient [T] Statistic	Mean Equation	Coefficient [T] Statistic

ion		on	[T] Statistic	on	[T] Statistic				
$R_{constant}$	0.0595645 [2.71287]***	$R_{constant}$	-0.003338 6 [-0.24312]	$R_{constant}$	0.022569 1 [1.28535]	$R_{constant}$	-0.0225638 [-0.94012]	$R_{constant}$	0.0200100 [1.12273]
$R_{TURK, TURK(-1)}$	-0.0462417 [2.66963]***	$R_{UK, UK(-1)}$	-0.018460 3 [-0.93397]	$R_{GER, GER(-1)}$	0.038266 8 [1.70657]*	$R_{RUS, RUS(-1)}$	0.0108728 [0.68633]	$R_{CHI, CHI(-1)}$	-0.0074622 [-0.44596]
$R_{TURK, TURK(-2)}$	0.0255673 [1.58196]	$R_{UK, UK(-2)}$	0.006632 0 [0.24056]	$R_{GER, GER(-2)}$	-0.017551 1 [-0.75067]	$R_{RUS, RUS(-2)}$	0.0338399 [1.83701]*	$R_{CHI, CHI(-2)}$	0.0067777 [0.47119]
$R_{TURK, UK(-1)}$	0.0648475 [2.11533]**	$R_{UK, TURK(-1)}$	-0.015073 2 [-1.52636]	$R_{GER, TURK(-1)}$	-0.021116 7 [-1.63526]	$R_{RUS, TURK(-1)}$	-0.0158662 [-0.71957]	$R_{CHI, TURK(-1)}$	0.0281025 [1.74304]*
$R_{TURK, UK(-2)}$	0.1134750 [3.41768]***	$R_{UK, TURK(-2)}$	0.001701 2 [0.20222]	$R_{GER, TURK(-2)}$	-0.025821 4 [-2.31640]**	$R_{RUS, TURK(-2)}$	-0.0186237 [-0.93795]	$R_{CHI, TURK(-2)}$	0.0173689 [1.31830]
$R_{TURK, GER(-1)}$	0.0409366 [1.68136]*	$R_{UK, GER(-1)}$	0.015842 3 [0.95459]	$R_{GER, UK(-1)}$	-0.030941 1 [-1.15438]	$R_{RUS, UK(-1)}$	0.1723499 [5.08676]***	$R_{CHI, UK(-1)}$	0.0747960 [2.88159]***
$R_{TURK, GER(-2)}$	-0.0472072 [-2.06456]**	$R_{UK, GER(-2)}$	-0.026767 8 [-1.37163]	$R_{GER, UK(-2)}$	0.012705 2 [0.39779]	$R_{RUS, UK(-2)}$	-0.0333853 [-0.77363]	$R_{CHI, UK(-2)}$	0.0504092 [1.89375]*
$R_{TURK, RUS(-1)}$	-0.0094983 [-0.67894]	$R_{UK, RUS(-1)}$	0.013910 5 [1.70760]*	$R_{GER, RUS(-1)}$	0.013219 1 [1.16179]	$R_{RUS, GER(-1)}$	0.0013025 [0.04292]	$R_{CHI, GER(-1)}$	0.0272583 [1.48370]
$R_{TURK, RUS(-2)}$	-0.0141610 [-0.96691]	$R_{UK, RUS(-2)}$	0.003742 2 [0.44901]	$R_{GER, RUS(-2)}$	0.007975 8 [0.70122]	$R_{RUS, GER(-2)}$	0.0483196 [1.51314]	$R_{CHI, GER(-2)}$	-0.0661482 [-3.12993]***
$R_{TURK, CHI(-1)}$	-0.0142766 [-0.91386]	$R_{UK, CHI(-1)}$	-0.002828 4 [-0.28604]	$R_{GER, CHI(-1)}$	-0.005226 3 [-0.39842]	$R_{RUS, CHI(-1)}$	0.0134325 [0.57775]	$R_{CHI, RUS(-1)}$	0.0097748 [0.72102]
$R_{TURK, CHI(-2)}$	0.0107923 [0.62410]	$R_{UK, CHI(-2)}$	0.021894 1 [2.42175]**	$R_{GER, CHI(-2)}$	0.014660 1 [1.22242]	$R_{RUS, CHI(-2)}$	0.0091428 [0.45890]	$R_{CHI, RUS(-2)}$	0.0059829 [0.50980]
***Denotes statistically significant at %1. ** Denotes statistically significant at %5.						Abbreviations in the table			
						R: Return	δ₁: leverage	LB-Q: Autocorrelation test	

*Denotes statistically significant at %10.		effect	
	A:Volatility	γ_1 : volatility persistence	ARCH-LM: heteroskedasticity

Table 3. The results of the VAR (2) –EGARCH model (Variance Equations)

Turkey		United kingdom		Germany		Russian		China	
Variance Equation	Coefficient [T] Statistic	Variance Equation	Coefficient [T] Statistic	Variance Equation	Coefficient [T] Statistic	Variance Equation	Coefficient [T] Statistic	Variance Equation	Coefficient [T] Statistic
$A_{constant}$	-0.0738961 [-4.77991]**	$A_{constant}$	-0.0712780 [-7.27873]***	$A_{constant}$	-0.0526003 [-7.33469]***	$A_{constant}$	-0.0781492 [-7.65036]**	$A_{constant}$	-0.1094299 [-11.34772]***
$ARCH_{A_{TURK, TURK}}$	0.1368857 [10.76465]***	$ARCH_{A_{UK, UK}}$	0.0419464 [6.53924]***	$ARCH_{A_{GER, GER}}$	0.0002548 [1.52556]	$ARCH_{A_{RUS, RUS}}$	0.0665614 [6.16336]**	$ARCH_{A_{CHI, CHI}}$	0.0984906 [9.14381]***
$A_{TURK, UK}$	0.0500596 [4.87806]***	$A_{UK, TURK}$	0.0027688 [0.40096]	$A_{GER, TURK}$	0.0119753 [2.42827]**	$A_{RUS, TURK}$	0.0250020 [3.17052]**	$A_{CHI, TURK}$	0.0248828 [3.08131]***
$A_{TURK, GER}$	-0.0006888 [-1.49648]	$A_{UK, GER}$	0.0000745 [0.96431]	$A_{GER, UK}$	0.0056452 [1.30393]	$A_{RUS, UK}$	0.0053630 [1.15642]	$A_{CHI, UK}$	0.0023128 [0.46339]
$A_{TURK, RUS}$	0.0159674 [1.30609]	$A_{UK, RUS}$	0.0148334 [2.10908]**	$A_{GER, RUS}$	0.0359652 [5.45446]***	$A_{RUS, GER}$	-0.0001017 [-0.90900]	$A_{CHI, GER}$	0.0000216 [0.23282]
$A_{TURK, CHI}$	-0.0296903 [-2.09331]*	$A_{UK, CHI}$	0.0302857 [3.50297]***	$A_{GER, CHI}$	0.0220392 [3.26675]***	$A_{RUS, CHI}$	0.0251954 [2.28487]*	$A_{CHI, RUS}$	0.0259723 [3.29471]***
δ_1	-0.5997626 [-5.85787]**	δ_1	-1.7496130 [-6.61294]***	δ_1	-171.1027370 [-1.75115]***	δ_1	-0.7618619 [-6.72272]**	δ_1	0.2073433 [3.12723]***
GARCH γ_1	0.9088550 [75.27819]***	GARCH γ_1	0.9783170 [258.51420]**	GARCH γ_1	0.9869715 [468.82304]***	GARCH γ_1	0.9868956 [355.30766]***	GARCH γ_1	0.9937616 [516.09967]
LB-Q	8.225 [0.767342]	LB-Q	7.852 [0.796549]	LB-Q	7.272 [0.839135]	LB-Q	10.878 [0.539413]	LB-Q	23.428 [0.024302]**
ARCH-LM	9.058120 [0.69795839]	ARCH-LM	10.877650 [0.53943225]	ARCH-LM	9.124364 [0.69227298]	ARCH-LM	5.556326 [0.93677785]	ARCH-LM	5.276819 [0.94808809]
Abbreviations in the table									

***Denotes statistically significant at %1. ** Denotes statistically significant at %5. *Denotes statistically significant at %10.	R: Return	δ₁: leverage effect	LB-Q: Autocorrelation test
	A: Volatility	γ₁: volatility persistenc e	ARCH-LM: heteroskedasticity

According to mean equations in Table 3, in terms of the returns; the turkish equity market was effected by the Germany and UK equity markets. While the 2 days prior to the FTSE100 market price values affect the current priceses of Turkey at most with % 1 significant level, Turkey has not accepted any return spillovers form Russia and China. When the variance equation of the model is considered, it is understood that it is under the spillover of volatility from UK And China with its own market. It is understood the volatility persistence for the Turkish market is about 0.90 from the γ_1 term and understood from the coefficient of the leverage term δ : -0.5997626 where the negative information shocks are more dominant than positive news.

For the UK equity market, in terms of the return spillover, there are not significant returnspillovers from both the Germany and Turkey with its own market. Its observed that there is only weak positive return spillver from China and Russia. and also according to variance equation, likewise was no evidence of a volatility spillover from Turkey and Germany. The result is consistent with the study Cotter (2004). In this equation where negative shocks are more dominant than the positives shocks, there is no specification error.

According to results of the mean equation of the Russia; only UK effects Its returns with its own markets. In term of the volatility spillover; emerging markets more influenced Russian market than developed markets. Except for UK and Germany, its was found unidirectional significant volatility spillover from Turkey and bilateral direction exists from China to Russian markets. In this equation where one of the highest volatilitiy persistence with γ : 0.9868956, there is no specification error.

For the China`equity markets; except for Russia and with own markets, All countries effected it. While these return spillover existed simetric and bilateral direction from the UK, unidirectional spillover existed from Germany and Turkey. On the other hand, it was realized Germany`return effect is asimetric. According to variance equation of the China; emerging markets more influenced like Russia. It was obtained robust bilateral volatility spillover From Turkey and Russia to Russian equity market. Beside of these, China was seen the highest volatility persistence country with γ : 10.9937616.

Lastly; in term of the return; it was found to be the most affected country Turkey which is affiliated to own historical dates compared to others. And also it was obtained evidences despite the UK that is most effective country made positive direction of the return spillovers to others in equations, the China is first country that accepts the highest return spillover from UK and Turkey with the positive direction, negative direction from Germany. In term of the volatility; only Germany was detected that is not effected from its own volatility spillovers. From the other hand, the evidences in variance equations indicate that the China is most effective country makes volatility spillovers to all country with positive direction except Turkey which received asymmetric volatility spillovers.

5. CONCLUSION AND RECOMMENDATIONS

The purpose of this study is to examine capital markets relations among the Turkey and its foreign trade partners by using daily price values of the equity markets. For this reason, the VAR E-GARCH model was run to analyse relations among the markets. Despite the VAR is not a volatility model, it provides us to have idea at the extent to which multilateral interaction exists among these markets. At the end of the study, it was obtained empirical evidences and findings are support of the idea that there are statistically significant relations between capital markets in Turkey and its foreign trade partners that has been already existed in extent to export and import for 9 years.

The UK and German are first two countries which has performed most intensive export commercial with Turkey. At the same time, only two equity markets of the these countries, passed price values effect to Turkey's today's equity prices in this equation. Although Turkey has actualized more export rate Germany than the UK, equity market of the UK that is more dominant market than Germany makes the return spillovers to Turkey in equations. These results are in the same directions with Cotter (2004), Kasa (1992). From the another side, despite Turkey has performed most intensive import with China, the UK more dominant than China. But China's equity market is most effective that makes volatility spillovers to all country among these equity market. Generally, in variance equation where negative shocks are more dominant than the positive shocks to all country. One another evidences that Turkey is found a country has lowest volatility persistence, while the China has highest persistence.

Finally, general observations covering all study indicate; the trade relations which took place in Turkey's foreign trade was sustained among the equity markets. According to the results of

this study, it is seen that the study is interpreted according to the results among the share markets. However, in a broader sense, different studies can be carried out in academic studies or studies conducted by institutions authorized by countries, in which it is included in social capital. Thus, I think that it will allow the comparison of the effects of political, cultural and geographical proximity where markets are not only effective in spreading trade between countries.

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