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Evaluating volatility of markets parallel to the money market on return of the capital market banking industry

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ABSTRACT

In this study, we attempt to investigate the effect of volatility or turbulence of parallel markets of gold, currency and oil on stock bank shares. The existing relationships between financial markets indicate the process of information transmission between financial markets, and these markets are, in a way, regarded as each other's competitors. In this research, the impressibility of stock banks by parallel markets of currency and gold, as well as the oil market as an independent influential market, have been individually evaluated. To do so, the vector autoregression (VAR) analysis and the conditional multivariate generalized autoregressive conditional heteroskedasticity (MGARCH) model have been used. Research data have been collected and evaluated from the beginning of June 2012 to the end of September 2017. The research method is of the correlation type and research categorizations regarding method, nature and direction are considered descriptive, applicable and post-event, respectively. Results of the present study confirm a significant relationship between impressibility of stock banks and parallel markets of currency, gold and oil. According to hypotheses of this research, the impressibility of stock bank shares in the capital market, from parallel markets, has the potential of forecasting using the multivariate GARCH model.

Keywords:

impressibility of financial markets, multivariate GARCH model, parallel markets

1. Introduction

Intermarket relationships have been emphasized on for several decades by theoreticians and researchers of various fields. These relationships indicate the fact that volatilities of a market affect other markets. In other words, financial variables within assets and markets are transferred to each other throughout time, therefore, identifying the mechanisms of transmission is of importance for the management of asset portfolios, since having knowledge on the effects of this transmission is very beneficial in the selection of asset portfolios and reduction of its risks (Keshavarz-Haddad, Ebrahimi and Abdi, 2011). In fact, analyzing the transitivity of volatility amongst markets has been very applicably emphasized on for decades by theoreticians and researchers of various fields. The complex atmosphere of financial and economic markets and the close relationship between these markets, as well as the critical need for forecasting future financial and economic scenarios, has prompted researchers of the financial field to take effective and frontward steps in achieving the goals of financial and economic systems by discovering and analyzing these intermarket relationships (Nikoomaram, Poorzamani and Dehghan, 2014).

In other words, by advancement of the globalization process, not only financial markets of developed countries, but also financial markets of developing countries have been connected to each other. This encourages investors and companies to increase their profits by transactional trade. This process basically transfers money from lower-return markets to higher-return markets. Since the markets are connected to each other, this fact can be suggestive of an equivalent linear relation between financial markets. When financial markets move alongside each other, it leads to transmission between markets. In turbulent circumstances, compared to a still and stable state, markets show more common movement and transmission, and if no significant common movement exists, the connection between markets may only be indicative of correlation between the two economies (Seyyed Hosseini and Ebrahimi, 2013).

Considering that financial markets are connected to each other, the information created in a market can influence other markets. Research conducted in this field has explained the impacts of volatilities through financial contagion. Financial contagion is a shock created in a section, induced by other sections. Since the subjects of transitivity and spillover effect of markets parallel to the capital market have been evaluated through various research, the goal of this study is to specifically investigate the transmission of these volatilities from markets parallel to the capital market to stock bank shares. Therefore, the present study follows previous research regarding transitivity of volatility with the hope of achieving more accurate results in the banking industry and helping financial managers regarding management of this industry. In other words, we investigate the rate of which shares of stock exchange banks are influenced by markets parallel to the capital market, such as currency, gold and oil markets.

2. Theoretical basics and literature review

Regarding the literature related to correlation of financial markets, it must be acknowledged that these literature are, to a large degree, of the empirical nature. In fact, the main foundation of theoretical literature for this section has been isolated since the 1960s, addressing the investment portfolio diversity and integration of international financial markets. Some studies have tended to focus on specific and turbulent periods. This type of orientation has been shaped by studies such as that of Longin and Solnik (1995), which have shown that interactions between financial markets during periods of high volatility tend to increase and, more simply put, great shocks in a market tend to spread more rapidly.

The majority of this empirical literature is based on econometrics and statistical methods which have been used for measuring returns and multivariate volatilities. The tools used in these studies are categorized as follows: linear regressions, quantile regressions, vector autoregression, GARCH or similar templates, which include cointegration methods.

Regarding financial correlation and particularly financial crisis, the selected article of the International Conference of Global Financial Crisis (ICGFC, 2009) is citable from Dr. Fereydoun Rahnama Roudposhti.

When volatilities of one market spread to other markets, different channels of communication are expected to create this transmission. Karolyi (1995) mentions the importance of clarification of the transmission source and believes that identifying the transmission source tremendously helps in adopting a

policy which reduces susceptibility to transmission, and will increase the efficiency of risk management for asset portfolios. Some studies have tended to focus on specific and high-volatility periods. This type of orientation has been formed by studies such as Longin and Solnik (1995), which have shown that the interactions among financial markets in high-volatility periods tend to increase or, more simply stated, great shocks in a market tend to spread more quickly.

Studies reveal that information related to financial variables spread to each other over time in the capital market. With the expansion of communication systems and the increased dependence of financial markets on each other, this topic has become more significant. The mechanisms of contagion between returns and the volatility of different assets are important for various reasons. Firstly, the contagion mechanisms give us information regarding market return. Contagion between equity returns are indicative of the presence of a profitable transaction strategy, and if the profit of this transaction strategy exceeds its operating costs, it potentially presents evidence of market return. Secondly, contagion mechanisms are important for management of asset portfolios, since possessing information on the effect of return contagion is very useful for choosing a stock portfolio and reducing its risks. Thirdly, information regarding contagion of asset volatility is useful in forecasting volatility; hence, asset contagion volatility is applicable for matters such as option pricing, stock portfolio optimization, value at risk, and risk management.

One of the reasons presented for autocorrelation of returns is that when new information enters the market, all investors do not react quickly to the news. Therefore, the new information will slowly transfer to prices and this phenomenon results in positive autocorrelation of returns (Boudoukh et al. 1994). This phenomenon is in contrast with the idea of market return, because according to this theory, a financial market is efficient when all current information is reflected in the price of assets. Fargher and Weigand (1998) observed that the lead-lag effect has declined in recent years. They explained their findings through the topics of market return optimization and enhanced news dissemination. Furthermore, the most common explanation for asset volatility is related to information flow rate, extracted from the efficient market hypothesis, according to which, the price volatility is directly dependent on information flow rate in the market.

Many study results on volatility of stock market indicate that the volatility of one stock is greatly dependent on turbulence of other stocks, as well as previous volatility of the same stock, meaning that high volatility in price of one stock is followed by high volatility in other stocks and vice versa; the following section includes several research conducted on this topic. Keshavarz-Haddad and Samadi (2009) also estimated the volatility present in stock index return via GARCH- family modelling and using 1467 daily observations, and showed that the optimum model for estimating and forecasting volatility of normal distribution and t-student distribution has been obtained. Also, by comparing accuracy of methods in estimating value at risk, they revealed that the FIGARCH model, at a 2.5% confidence level, has the best efficiency among the GARCH models.

In a research investigating contagion volatility in markets parallel to the capital market on stock industries (export and import-oriented), Nikoomaram, Poorzamani and Dehghan (2015) evaluated the transitivity of stock industries, individually for export and import-oriented industries, from parallel markets of currency and gold. Results of this study confirm the transitivity effect of export-oriented stock industries from the currency parallel market; however, this contagion by the gold parallel market was not confirmed, also, the transitivity effect of import-oriented industries from the parallel markets of currency and gold was not confirmed.

Karimi, Heidarian and Dehghan-Jabbarabadi (2018) attempted to evaluate the spillover effects between the oil market and Tehran stock markets using multivariate GARCH models, with regard to separate periods of before sanction, after sanction and after JCPA (Barjam) as multiple scales. In this study, the data of OPEC crude oil prices and total stock market index during the period of November 2008 to January 2018 have been used weekly. Results showed that the spillover effects between markets during different time periods and with regard to economic-political events are variable and can be one-directional, two-directional or non-existent, such that during the first period (before sanctions on oil) were one-directional from the oil market to the stock market, during the second period (the sanction period) were two-directional in short-term and one-directional in long-

term from the oil market to the stock market, and finally, during the third period (after JCPA) were one-directional from the oil market to the stock market. These results clearly indicate the dependence of Iran's economy on oil and its impacts on various financial markets, including the stock market.

Furthermore, many international studies have been conducted regarding this topic. Worthington and Higgs (2004) evaluated the transmission of equity returns and volatility among stock markets of Eastern Asian countries, using the multivariate GARCH model. To do so, they used weekly data of three advanced markets (Hong Kong, Japan and Singapore) and six emerging markets (Korea, Indonesia, Malaysia, Philippines, Taiwan and Thailand) for the duration of 1988-2000. Their results also showed high correlation between markets, as well as different impressibilities of emerging markets by more developed markets. Lafuente and Ruiz (2004) also investigated the relationships between the return and volatility of Spanish sector indices and technology sector indices during the period of April 2000 to May 2001. Results indicating the positive effects of volatility from the technology sector to other sectors using the generalized autoregressive conditional heteroskedasticity (GARCH) method showed that the highest impressibility had occurred in the financial section.

Basher and Sadorsky (2006) also investigated the relation between risk of oil price and returns of emerging stock markets using a multi-factor model and considering conditional and unconditional risk factors, which is focused on market risk including multiple sources of CAMP risk of the multi-factor model which is in contrast with the model. The results of Basher and Sadorsky indicate a significant unconditional and negative relationship between market beta and returns of emerging stock markets. In contrast to this, oil price risk is positive and statistically significant at a 90% confidence level for most models. Results show that for monthly and daily data, there is a significant and positive relationship between market betas and returns in developing markets, and there is a significant and negative relationship between market returns and betas in declining markets.

Karunanayake, Valadkhani and Obrien (2010) investigated the affectability of returns and their volatility in stock markets of four countries, i.e. Australia, America, England and Singapore, on each other using the multivariate GARCH model. To do so, weekly data of stock indices for the period of January 1992 to December 2008 and the vectorial and diagonal GARCH model were used. Their results showed the one-directional effects of returns from America and England's stock markets to markets of Singapore and Australia, and confirmed common volatilities in the four markets. Moon and Yu (2010) also aimed to investigate short-term spillover effects of return and daily volatility of stock between stock markets of America and China, and achieved evidence showing spillover effects of volatility from American stock market to Chinese stock market.

In another study conducted by Goldsmith and Yorulmazer (2010) in England with the objective of investigating the spillover effect on liquidity, execution of bank policies and settlement of bank debts during the period of 2007-2009, results showed that execution of bank policies and news related to inefficiency of the policies directly influences England's banking policies and leads to reduction of stock prices in the country's stock market. Results have also shown that the effects were a logical response of investors to news of the market sector about the liability of banks.

Liu et al. (2017) also investigated the effects of average developments and volatility changes between oil and stock markets in dimensions of time and frequency. They used WTI oil price, S&P500 index (United States of America), and MICEX index (Russia) during the period of January 2003 to December 2014, and the wavelet-based GARCH-BEKK method. In this study, time periods are divided into three periods, i.e. before crisis, crisis period, and after crisis. Results show that spillover effects, with regard to strength and direction, are variant on wavelet scales. The relationship between oil price and stock market of the US is variant in short-term and attenuated in long-term, while the same relation with Russia's stock market depends on multiple time scales.

The initial evidence of return forecasting was finding the characteristic of returning to average stock return. The characteristic of returning to average states that equity returns partly tend to return to their averages; meaning that during some periods, stock return deviates from its original value, but tends to return to its average value. This average value is determined according to investors' expected return and

based on principle factors (Ray, 2002). It can be shown that if a series of temporal returns follow a stationary autoregressive moving-average model, the estimated return of future periods will be convergent. In financial literature, this characteristic is called "return to average" (Tsay, 2002).

3. Research methodology

Nowadays, especially with the development of information systems and increasing trend of financial market relationships, it has been proven that the volatility of asset prices transfers to other assets, as well as to other financial markets. This results in the dependency of assets and various financial markets to each other. This matter has complicated the forecasting of financial markets. Therefore, nowadays multivariate models used for modeling dynamic returns have developed extensively. Using multivariate time series models has two advantages; firstly, it is very effective in identifying the interseries relationships, secondly, it increases forecasting accuracy. For example, if the previous values of one series affect another series, it is better to use multivariate models. In general, multivariate GARCH models have developed extensively in the recent years. In multivariate GARCH models, the number of parameters drastically increases with the increase of model dimensions, and also the variance matrix is required to be positive definite.

In this research, the correlation analysis methods, vector autoregression, and the generalized autoregressive conditional heteroskedasticity (GARCH) model have been used. In this study, we intend to answer the question of whether return changes in a market are connected to return changes in another market. To do so, return changes for all investigated markets were subjected to regression analysis. It is noteworthy that data analyzed at this stage included daily return of the currency market (free dollar rate), gold (Bahar-e Azadi coin) and also the daily return of stock bank indices.

In 1990, Engle presented a new method for parameter determination. His original idea was that simultaneous changes in stock returns are due to a limited number of general variables, known as factors. The factor model (FA) can be defined as a specific form of the BEKK model.

Considering this, it was attempted to find the answer of whether return changes in a bank are related to return changes in other banks, or return changes in a bank are regressed by return changes in other banks; it is noteworthy that the data analyzed at this stage included daily and weekly returns of the currency market (dollar), the gold market (Bahar-e Azadi coin), and banks (total index, market transaction turnover and finally the number and volume of transactions). The banks were designed using residuals of the initial model and eventually, the test of significance and presence of conditional return variances of other competitor markets compared to changes in the banks were conducted. In other words, by conducting the final stage of research, the assumption of transitivity effect between banks accepted in the stock market and competitor markets has been tested.

Raw data of this research include the daily and/or weekly numeral values of bank stock prices, the volume and number of transactions of these banks, and transaction turnover, as well as daily prices of Bahar-e Azadi coin and dollar. At the initial stage, the values of daily and weekly returns (as arithmetic and point averages), as well as standardized data with the goal of market equalization, were calculated. In other words, after collecting daily data from dollar and gold markets and stock banks, and standardization of these data, the researcher used multivariate GARCH models, and specifically the BAC model, to estimate and test the models according to different scenarios. Furthermore, the statistical analysis of the present research was conducted using the EViews software.

4. Research hypotheses

Hypotheses of this research include:

1) Return volatility in the gold market is influential on the return of stock bank shares in the capital market.
2) Return volatility in the currency market is influential on the return of stock bank shares in the capital market.
3) Return volatility in the oil market is influential on the return of stock bank shares in the capital market.

5. Research findings

Table 1 shows unit-root test results for the data. The **Dickey–Fuller and Phillips–Perron tests have been used** to investigate the stationarity of variables.

Table 1. Statistics of Dickey–Fuller and Ljung–Box tests

Description			Stock index return of stock banks						Price return of individual markets	
		Day	Ansar	Mellat	Saderat	Tejarat	Parsian	Sina	Gold	Currency
Stationarity tests	ADF statistics	25.01-	9.951-	22.11-	26.071-	23.87-	24.6-	21.42-	10.483-	**12.37-**
	Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
	PP statistics	24.91-	16.70-	28.29-	26.18-	23.79-	24.45-	22.44-	17.18-	**16.21-**
	Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
Ljung–Box test for returns	Q(12) statistics	437.79	358.81	426.58	540.89	532.67	516.59	486.11	437.79	**358.82**
	Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
Ljung–Box test for square returns	Q(12) statistisc	45.662	39.855	48.021	51.168	46.358	45.972	45.727	45.681	**39.851**
	Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**

As the results of Dickey–Fuller and Phillips–Perron tests in Table 1 show, all variables are stationary at a 1% confidence level. The **Dickey–Fuller test is a** criteria for stationarity evaluation of a time series. Also, the Ljung–Box test statistics in the above table show that the null hypothesis has not been disproved for all series, which is the result of autocorrelation.

The Ljung–Box test has been used to test the existence or non-existence of correlation between residuals of the research models; test results are depicted in Table 2. Ljung–Box test results indicate disproval of the null hypothesis, and therefore the non-existent correlation between residuals for all models.

Table 2. Ljung–Box test results; evaluation of correlation existence or non-existence between model residuals

Description	Investigated banks						
	Day	Ansar	Mellat	Saderat	Tejarat	Parsian	Sina
Q(1)	426.58	540.87	532.76	516.57	486.09	437.87	**358.81**
prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
Q(12)	48.024	51.186	46.358	45.973	45.741	45.668	**39.851**
Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**

In this study, the MGARCH-in-mean model was used for effectiveness evaluation of various markets on stock banks which have been accepted in stock exchange. Since in this research, the impact of risks on returns will also be investigated, the effects of conditional variances will also be investigated in the interaction equation. Therefore, a multivariate GARCH-in-mean model is used with the general matrix form as follows:

$$\begin{bmatrix} \mathbf{Re}_t \\ \mathbf{GOLD}_t \\ \mathbf{EXC}_t \end{bmatrix} = \begin{bmatrix} C(10) \\ C(20) \\ C(30) \end{bmatrix} + \begin{bmatrix} C(11) & C(12) & C(13) & C(14) \\ C(21) & C(22) & C(23) & C(24) \\ C(31) & C(32) & C(33) & C(34) \end{bmatrix} \times \begin{bmatrix} Re_{t-1} \\ \mathbf{GOLD}_{t-1} \\ \mathbf{EXC}_{t-1} \\ \mathbf{oil}_{t-1} \end{bmatrix} + \begin{bmatrix} C(15) & C(16) & C(17) & C(18) \\ C(25) & C(26) & C(27) & C(28) \\ C(35) & C(36) & C(37) & C(38) \end{bmatrix} \times \begin{bmatrix} \mathbf{ReV}_{t-1} \\ \mathbf{GV}_{t-1} \\ \mathbf{EXV}_{t-1} \\ \mathbf{OILV}_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1,t} \\ \varepsilon_{2,t} \\ \varepsilon_{3,t} \end{bmatrix}$$

The $\alpha = [\,C(10), C(20), (30)]^T$ vector indicates the intercept. As observed in this equation, the three stock markets, i.e. stock banks, gold and currency, have been considered functions of the disruption values for these markets, oil price, and disruption volatility of these markets (conditional variance of the previous period).

Three equations simultaneously estimated in this model are as follows:

Re = C(10) + C(11)*Re(-1) + C(12)*GOLD(-1) + C(13)*EXC(-1)+c(14)*oil(-1)+ C(15)* ReV(-1) + C(16)* GoldV (-1)+c(17)* EXV (-1)+c(18)*oilv(-1)

GOLD =C(20) + C(21)*Re(-1) + C(22)*GOLD(-1) + C(23)*EXC(-1)+c(24)*oil(-1)+ C(25)*ReV (-1) + C(26)* GoldV (-1)+c(27)* EXV (-1)+c(28)*oilv(-1)

EXC = C(30) + C(31)*Re(-1) + C(32)*GOLD(-1) + C(33)*EXC(-1)+c(34)*oil(-1)+ C(35)* ReV (-1) + C(36)*GoldV(-1)+c(37)* EXV (-1)+c(38)*oilv(-1)

The three *C(12)*, *C(13)* and *C(14)* parameters show the mean effects of gold, currency and oil, respectively. For example, *C(12)* shows impressibility of stock market return for banks accepted in stock exchange, from the disruption value of gold return. Also, *C(16)*, *C(17)* and *C(18)* show the volatility effects of gold, currency and oil, respectively, on stock market return of banks accepted in stock exchange. The estimation results of this model are depicted in Table 3.

Table 3. Investigating the effects of gold, oil and currency market returns on stock market return of stock banks

Title	Coefficient	Std. Error	z-Statistic	Prob.
× C(10)	0.003088	0.004155	2.020374	0.4316
× C(11)	0.417426	0.004068	-6.125426	0.0000
× C(12)	0.004758	0.053651	0.714822	0.9108
✓ **C(13)**	**0.039499**	**0.069336**	**2.070251**	**0.0463**
✓ **C(14)**	**0.028561**	**0.023538**	**2.556169**	**0.0367**
× C(15)	-2.332996	9.223215	-0.487171	0.8197
× C(16)	-0.132959	0.270873	-0.722867	0.6509
✓ **C(17)**	**1.019427**	**0.645530**	**2.586459**	**0.0303**
✓ **C(18)**	**-0.135287**	**0.527319**	**-2.934898**	**0.0367**
× C(20)	0.004257	0.002937	1.754232	0.0993
× C(21)	-0.068174	0.051584	-0.707209	0.4285
× C(22)	0.062904	0.085539	-0.704707	0.0557
× C(23)	-0.019234	0.035006	1.424110	0.6854
× C(24)	-0.014826	0.012163	-1.075691	0.1785
× C(25)	-0.517286	1.800069	-0.393479	0.7660
× C(26)	0.307114	0.323442	1.077344	0.3472
× C(27)	-9.500053	6.805365	-1.455500	0.1495
× C(28)	3.650764	0.225858	-0.947414	0.6695
× C(30)	0.011112	0.004152	2.730417	0.0024
× C(31)	-0.025073	0.063705	-1.482750	0.6926
× C(32)	-0.012974	0.063641	-0.285593	0.8658
× C(33)	-0.079190	0.077070	-0.008274	0.1922
× C(34)	-0.016442	0.025112	-0.580860	0.4948
× C(35)	-1.165612	1.333968	-0.968856	0.3951
× C(36)	-0.413920	0.916671	-0.179024	0.6159
× C(37)	-12.32917	8.017412	-1.461221	0.1301
× C(38)	0.865442	0.457799	-0.009925	0.8943

1) Considering the significance of the *C(13)* coefficient at a 5% confidence level, the hypothesis of stock market return impressibility for banks accepted in stock exchange, from currency return, is confirmed for the target period. Indeed, it must be noted that due to the smallness of this coefficient (0.04) compared to the *C(11)* coefficient, (which shows stock market return impressibility for banks accepted in stock exchange, from its inside factors) it must be stated that this impressibility is much less than the expected value. This may be due to the

different effectiveness of currency rate on various industries.

2) Considering the significance of the *C(14)* coefficient at a 5% confidence level, the hypothesis of stock market return impressibility for banks accepted in stock exchange, from oil return, is confirmed for the target period. In this case, it must also be noted that due to the smallness of this coefficient (0.03) compared to the *C(13)* coefficient, (which shows stock market return impressibility for banks accepted in stock exchange, from the currency market) it must be stated that this impressibility is even less than impressibility from the currency market. The main reason for impressibility of stock market return for banks accepted in stock exchange, from the oil market, is due to the impressibility of capital market petroleum companies from global oil prices, which causes the profit margin of these companies and, subsequently, the stock price and value of these companies to increase. This indicial increase places stock market of banks accepted in stock exchange in a phase of growth and ascension and, with a disruption after the increase of oil prices, will lead to the advancement of this market.
3) Considering the significance of the *C(17)* coefficient at a 5% confidence level, the hypothesis of stock market return impressibility for banks accepted in stock exchange, from volatility of currency return, is confirmed for the target period. This indicates the positive effect of volatility in the currency market, on stock market of banks accepted in stock exchange.
4) Also, considering the significance of the *C(18)* coefficient at a 5% confidence level, the hypothesis of stock market return impressibility for banks accepted in stock exchange, from volatility of oil return, is confirmed for the target period, which indicates the positive effect of volatility in the oil market, on stock market of banks accepted in stock exchange.

The research hypotheses results are depicted in Table 4.

The table above shows daily data results for return volatility of markets parallel to the capital market, categorized by capital market indices. As inferred from the above table, research hypotheses have been accepted at an appropriate level of significance; however, as stated in the previous sections, the representative and index covering the capital market, is the stock return index.

Table 4. Statistical test results for main research hypotheses

Description		Independent variable		Dependent variable		Statistical test results
research hypotheses	Independent variable	Dependent variable	Model coefficients	Level of significance (sig)	Coefficient value of model	Statistical test results
1	Gold market return	Capital market return	C(12)	09/0	023/0-	✓ Conservation of research hypothesis
2	Currency market return	Return	C(13)	0014/0	046/0	✓ Conservation of research hypothesis
3	Oil market return	Return	C(14)	0367/0	028/0	✓ Conservation of research hypothesis

6. Results and Conclusion

This research has investigated the effect of currency, gold and oil parallel market returns on capital market stock banks. In general, daily and weekly data results of the present research confirm the significant relationship of stock bank shares with currency, gold and oil parallel markets. In other words, the main research hypotheses based on the impressibility of stock bank shares in the capital market, from parallel markets, are conserved from a return standpoint. These findings are consistent with the research of Nikoomaram, Poorzamani and Dehghan (2014), Li (2007), Al-Fayoumi et al. (2009), and Moon and Yu (2010), and corroborate previous research. In other words, conducted studies indicate that, throughout time, information related to financial variables in the asset market transition to each other. With the development of communication systems and increased

dependence of financial markets on each other, this matter has become of greater significance. Contagion mechanisms between returns and volatility of different assets are important for several reasons. Firstly, contagion mechanisms provide information on market return. Contagion between equity returns is indicative of a profitable transactional strategy, and if the profit of this transactional strategy is higher than its operational costs, potentially, it presents evidence of non-return in the market. Secondly, contagion mechanisms are key in management of asset portfolios, since possessing information on the effects of return contagion is very useful in selecting the asset portfolio and reducing its risks. Thirdly, information regarding the contagion of asset volatility is useful in forecasting volatilities, therefore, contagion of asset volatility is applicable in matters such as option pricing, stock portfolio optimization, value at risk, and risk management.

Considering the extensive and applicable subject of the present research, future researchers are recommended to evaluate the effect of stock index return of stock banks on the total stock market index; given that the present research presents future researchers with the rate and process of return contagion volatility for individual banks. Also, it is suggested that the impressibility of stock banks in the capital market, from markets parallel to the capital market, be separately investigated and evaluated.

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