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Management's Disclosure of Long-term Relationship between Return and Transaction Volume and its Impact on Stock: A Study on Stock Markets of Iraq

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Abstract

The relationship between trading activity and stock returns is the subject of considerable research area in capital market literature. This study has been conducted to determine the dynamic relationship between the daily return of the ISX 100 Index and the trading volume based on 6602 observations taken from the period of 22.03.1993 to 22.03.2019 in the Iraq Stock Exchange applying Johansen cointegration analysis and VAR Analysis. The daily performance of the ISX 100 Index and the daily trading volume details were analyzed. The study has found a long-term relationship between volume and return, and a single-way causality has been achieved between volume and return. In the analysis, the relationship between the sequence, impulses, and techniques for variance decomposition was employed and the shift in index price was concluded to be efficient for the transaction volume. The impact of management's disclosure on the relationship between stock return and its transaction volume on stock prices of Iraq's capital market collates to other stock markets in similar economies like Turkey.

Keywords: Management's Disclosure, Stock Market, Stock Price, Return & Transaction Volume, VAR Analysis

1. Introduction

The relationship between stock returns and transaction volume is one of the most studied topics in finance literature. Trading volume and stock prices are two important financial indicators that show the success of stock markets. Transaction volume affects the prices of financial assets as new information enters the market and also reflects changes in investors' expectations. Many studies have found that high stock market volume is associated with volatility returns.

There are some reasons that make the relationship between stock price and transaction volume important. First, the price-transaction volume relationship shows the structure of financial markets. The second is important for studies using transaction volume and price data. Another allows discussion on the empirical distribution of speculative price changes and provides important implications for futures market research [1].

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The relation between trading activity and stock returns is the subject of considerable research, but the evidences linking the variables are still unclear. The current majority consensus is that price changes is positively linked to trading volume, but the evidence relating trading volume to price changes is mixed (Girard and Biswas, 2007). Since long most of the researchers have focused almost exclusively on the well-developed financial markets whereas the number of studies done in emerging and developing markets is comparably limited like Iraq. In recent years, new equity markets have spawn in Europe, Latin America, Asia, Middle East and Africa. Still, not much is known about how trading volume and stock return behave in the emerging markets. In addition to that, most from the already few studies conducted in emerging markets (such as Choudry (check spelling), 1996; Sabri, 2004; and Michelfelder and Pandya, 2005) contend there are differences in the volume-return link between mature and emerging markets. Therefore, one cannot imply the results found in the developed markets to hold in the emerging markets.

Researchers also ponder on whether improving market efficiency and price discovery has any effect on the relationship between volume and stock returns. With respect to this question, Ciner (2002) investigates the information content of trading volume on Toronto Stock Exchange before and after the market's move towards fully electronic trading that alters the way and speed of which informationis factored into share prices. Results from both the structural and VAR models validate that the predictive power of volume for price variability disappears after full automation of the market. In this sense, the information content borne by trading volume is efficiently priced into the shares after the market automation effort. This provides interesting evidence on how market structural efficiency can affect the predictive power of variables.

The studies by the likes of Chordia and Swaminathan (2000) and Ciner (2002) above clearly are the embodiment of the fact that trading volume does carry information content that can be used to predict future stock returns. As the implication, volume should be one of the variables of concern when making investment decisions, especially in technical analysis. As Mitchell (2010) is stipulating, using volume to analyze stocks (or any assets) can bolster profits and reduce risks. His view is also consistent with Pring (2006) who states that volume can be used to confirm price actions, and usefulin the form of oscillators, on-balance-volume and other techniques.

In one of the first studies on the price-volume relationship, Granger and Morgenstern (1963) could not find a relationship between different index returns and transaction volume in different periods in the USA between 1915 and 1961. Epps and Epps (1976) examined the relationship between stock price changes and trading volume and found a positive causality from trading volume to absolute stock returns. Rogalski (1978) found a positive relationship between monthly price changes and volume. Later, many studies were conducted to determine the existence and direction of the price-volume relationship for the markets of both developed and developing countries.

In this study, a general literature study on the relationship between price changes in stock markets and transaction volume will be given, and the relationship between price and volume will be explained. In the application part of the study, the results are interpreted by including the data and the econometric model used.

2. Literature Review

Tauchen and Pitts (1983) modelled the change in prices and the co-distribution of transaction volume as a mixture of bivariate distributions. In their studies, they found a positive relationship between price changes and volume by using daily data in the United States.

Ali, (2006) [5] using weekly data of the stocks of 29 companies traded on the ISX, found a co-integrated relationship between the stock price and transaction volume between January 8, 1988 and March 29, 1991.

Abdulla, (1995) [2] examined the stock price-volume relationship in the stock markets of Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Venezuela). Using monthly returns between January.1986 and April.1985, it was revealed that the volume affected price changes strongly and positively. At the same time, they found that transaction volume in Latin American markets affects stock returns, but stock returns do not affect volume.

Asaad, (2014) [6] using daily and weekly data between 1963-1996 in the USA, found that high volume portfolios affect the returns of low volume portfolios. They stated that the reason for this was that investors with a low volume portfolio react more slowly to the information entering the market.

Abu-Nassar, (1996) [4] found a positive and simultaneous relationship between return and volume of stocks outside of India in the stock markets of Latin American and Asian countries, as well as a two-way causality between return and volume.

Al-Mahmoud, (2000) [6] analyzed the dynamic relationship between stock returns and transaction volume in 9 major stock markets (USA, Japan, England, France, Canada, Italy, Switzerland, the Netherlands and Hong Kong) using daily data, using the EGARCH method between 1973-2000. In their studies, they found a significant and positive relationship between stocks and their returns and transaction volume. They also found that price changes were the cause of volume changes.

Kaehler, (2014) [12], emerging markets Toda-Yamamoto Granger used their weekly price and trading volume data using the method of causality.

Keef, (2007) [13] analyzed the daily data in Australian stock market between April 24, 1989 and December 31, 1993 with the GARCH method and reached findings that support the asymmetric relationship between price and volume. In the GARCH analysis, they found that the variance decreased when the transaction volume was taken as an exogenous variable according to the conditional variance. In the study, it was determined that the volume-price change slopes calculated for negative returns are smaller than positive returns. While this result shows the asymmetric relationship, this situation; it can be explained that negative price changes are more sensitive to transaction volume than positive price movements.

Granger and Morgenstern (1963) and Karpoff (1987) are some of the popular empirical examinations of the relationship between volume and price, and they have set the stage for many further explorations. In 1963, Granger and Morgenstern’s study find no correlation between absolute price changes and volumes using weekly or daily data for stock market index and individual stocks. Alternatively, Karpoff (1987) tried to find out answers for two old Wall Street maxims namely "It takes volume to move prices." i.e. volume movement causes price changes and "volume is relatively heavy in bull markets and light in bear markets", i.e. price changes cause volume movements. He also proposed that the price-volume relationship is fundamentally different for positive and negative price changes. Another contribution that he made was by underlining four reasons why the study on price-volume relationship is important, which fueled many of the later studies. Afterwards, several theoretical models emerge in an attempt to further explain the return-volume relationship. The most widely cited would be Blume, Easley, and O'Hara (1994) who investigate and develop a model that links trading volume to stock price behavior. In their model, the aggregate supply is fixed, while the demand side changes as traders receive various signals about fundamental values of assets. In their analysis, trading volume indicates the quality or precision of information in past price movements. They suggest that investors who consider some measurement of past volume in their technical analysis can obtain additional profits and perform better than those who only rely on price measures.

Campbell et al. (1993) present a model, which postulates that price changes accompanied by high volume tend to be reversed, while prices change on days with low volume tend to stay in the current direction. Blume et al. (1994) present a model in which traders can learn valuable information about a security by observing both past prices and volume information. Their model assumes that volume provides data on the precision or quality of past movements, thus traders who consider any volume measures into their technical analysis tend to perform better than traders who do not. This finding that volume is valuable information in technical analysis is also supported by Wang (1994), who, using a model based on information asymmetry, shows that volume may provide information about future returns.

The study Tripathy (2011) [17], by means of bidirectional regression, VECM, VAR, IRF and Johansen co-integration tests, analyzed a relation between stock returns and transaction volumes in the Indian stock market. In his study, he stressed that the volume of transactions is related to the growth in return volatility, which is asymmetrical. This correlation illustrates the important effect of new knowledge on price volatility on the market every day. Another reason: investors are more reluctant to take downside risks. Investors are thus responding to negative news quicker. At the same time, a long-term causal association between stock return and transaction volume is determined by Tripathy (2011) [17].

Hahn, et al. (2013) [10] analyzed the relationship between volatility of stock returns and trading volume in Korean stock market using daily data and GJR GARCH and EGARCH methods between January 2000 and December 2010. As a result of the analysis, they found a positive relationship between transaction volume and volatility. They stated that the transaction volume affects the information flow to the market and that the transaction volume also explains the volatility asymmetry.

3. Data and Methodology

In this study, the relationship between the return of the ISX 100 Index and the trading volume in the period 22.03.1993 and 22.03.2019 is analyzed. For this purpose, 6602 observations were obtained from the Central Bank Electronic Data Distribution System. Logarithmic returns of the ISX 100 Index are calculated by using the daily closing prices with the formula below. The transaction volume is also included in the analysis by taking its natural logarithm.

$R_t = ln(P_t - Pt_{t-1}) * 100$

3.1. Unit Root Tests

In time series analysis, before detecting the existence of any relationship between series, their stationarities should be tested. For this purpose, Phillips–Perron test (PP) [15], Kwiatkowski-Phillips-Schmidt-Shin (KPSS) [14] and Elliot et al. (1996) [9] Dickey Fuller Generalized Least Squares (DF-GLS) (ERS) (Dickey Fuller Generalized Least Square) tests were applied [8].

According [15] unit root test, while null hypothesis series are not stationary (there is unit root); the alternative hypothesis is that the series are stationary (no unit root). The corresponding equation is as follows:

Equation---1

$$\Delta Y_t = \alpha_0 + \alpha_1\left(t - \frac{T}{2}\right) + \alpha_2 Y_{t-1}\sum_{i=1}^{m}\Delta Y_{t-1} + \varepsilon_t$$

The LM-statistic value examined in the KPSS test should be compared with the critical values at 1%, 5% and 10% significance levels. If the LM-statistic value is large, it is concluded that the series is not stationary by rejecting the null hypothesis. The hypothesis of the KPSS unit root test is that the time series is stationary. The alternative hypothesis is that the time series is not stationary. The relevant equations are as follows:

Equation ---2

$Y_t = \beta_t + r_t + u_t$

Equation ----3

$$LM = \frac{\sum_{t=1}^{1} S_t^2}{\sigma^2}$$

Where t =1, 2, 3…T

Also in the study, recently, Elliot et al [9]. The DF-GLS (ERS) test developed by (1996) was applied. The DF-GLS (ERS) test is based on the process of de-trending the series, while the null hypothesis is that the series is not stationary (there is unit root); The alternative hypothesis is that the series are stationary (no unit root). The DF-GLS (ERS) test is estimated as follows:

Equation -----4

$$\Delta Y_t^d = \beta_1 Y_{t-1}^d + \sum_{i=1}^{m}\partial_t \Delta Y_{t-1}^d + u_t$$

3.2. Return by Transaction Volume

In this study, based on Tripathy (2011), multivariate models between index return and transaction volume are tested. These models can be shown as follows:

Equation ----5

$R_t = \alpha_0 + \alpha_1 V_1 + \alpha_2 V_{t-1} + \alpha_3 R_{t-1} + u_t$

Equation ------6

$V_t = \beta_0 + \beta_1 R_1 + \beta_2 R_{t-1} + \beta_3 V_{t-1} + v_t$

In the equations, Rt is the return; Vt is the transaction volume; α and β coefficients; u and v show the error terms. As can be understood from the above models, the return equation; It consists of the transaction volume, the transaction volume of the previous period and the return value of the previous period. Likewise, the transaction volume equation consists of the return, the return for the previous period and the transaction volume values for the previous period.

3.3. Johansen Cointegration Test

In this study, Johansen [11] cointegration test was applied to determine the long-term relationship between series. The VAR model, which is the beginning of the Johansen Cointegration test, can be shown as follows:

Equation ----7

$Y_t = A_1 Y_{t-1} + \text{-----} + A_p Y_{t-p} + BX_t + \varepsilon_t$

Equation-----8

$$\Delta Yt = \prod Y_{t-1} + \sum_{t=1}^{p-1} T_t \Delta Y_{t-1} + BX_t + \varepsilon_t$$

3.4. VAR Analysis

In the study, VAR Analysis was used to determine the relationship between transaction volume and yield. The Granger causality test reveals a unidirectional relationship from returns to volume. This is supported by the findings of the VAR test. Trading volume does not carry informational content and cannot predict prices. Returns do impact volume, but the effect is not steady. The results do not provide support for the Sequential Information Arrival Hypothesis (SIAH). The asymmetric information model and the difference of opinion model can provide an explanation for the obtained results. The reason for this is that the relationships in the model can be predicted in multiple ways. For this purpose, in the bivariate VAR equation, every variable is affected by its current and past values. Equations can be represented as follows:

Equation----9

$$\Delta Y_t = \beta_0 + \sum_{i=1}^{n} \beta_{1t} \Delta Y_{t-1} + \sum_{i=1}^{n} \beta_{2t} \Delta X_{t-1} + u_{r1}$$

Equation -----10

$$\Delta X_t = \beta_4 + \sum_{i=1}^{n} \beta_{it} \Delta X_{t-1} + \sum_{i=1}^{n} \beta_{it} \Delta X_{t-1} + u_{r2}$$

Choosing the appropriate lag length is important in determining the VAR model. If the lag length is determined to be a shorter period than it should be, the coefficients lose their statistical significance. If the delay is taken larger than the required length, the variance values are high. In order to establish a correct and reliable model, it is important to determine the lag numbers of the variables. In the study, the Sequential Modified LR Test Statistic (LR), Final Prediction Error (FPE), Akaike (AIC) and Hannan-Quinn (HQ) information criteria were used to determine the length of the delay.

VAR Analysis is divided into basic sections: Granger causality, impulse response analysis and variance decomposition. Granger causality tests are intended to support the results found with the other two analysis tools. In Granger causality test, causality relationship between variables is sought. In variance decomposition, it shows what percentage of the change in the variance of each variable is explained by its own delay and what percentage is explained by the other variables. Impact-response analysis, on the other hand, is observed when one unit of shock is applied to one of the variables, the responses of both itself and other variables to this change. In this way, dynamic relationships between variables are observed.

4. Analysis and Findings

4.1. Unit Root Results

Table 1 and Table 2 show the non-stationarity results for the specified unit root tests. According to the unit root test results, it is revealed that the yield and transaction volume series are stationary and do not contain unit roots. Here, yield and transaction volume correlation has shown proxy measure.

Table 1: DF-GLS, PP and KPSS Unit Root Tests (Level = I (0))

	PP Tests		**KPSS Tests (LM)**		**DF-GLS Test**	
Variables	**Fixed**	**Fixed and Trended**	**Fixed**	**Fixed and Trended**	**Fixed**	**Fixed and Trended**
Return	-69.8166***	-69.8337***	0.4330**	0.6610***	-7.9463***	-8.7811***
Transaction Volume	-7.0444***	-14.4941***	5.1141	1.5065	-0.4483	-1.7663

Note: Mac Kinnon critical values for PP test; in fixed effect respectively -3.4381 at 1%, -2.8648 at 5%, -2.5685 at 10%; it is -3.9693 at 1%, -3.4153 at 5%, -3.1298 at 10%, respectively in constant and trend. For KPSS test; 0.7390 at 1%, 0.4630 at 5%, 0.3470 at 10% respectively in fixed effect; it is 0.2160 at 1%, 0.1460 at 5% and 0.1190 at 10%, respectively in constant and trend. For DF-GLS test, -2.5654 at 1%, 5% at fixed effect, respectively -1.9408, at 10% -1.6166; It is -3.4800 at 1%, -2.8900 at 5%, and -2.5700 at 10%, respectively in constant and trend.

Note: *** 1%, ** 5%, * 10% indicate the statistical significance level.

Table 2: DF-GLS, PP and KPSS Unit Root Tests (Level = I (1))

	PP Tests		**KPSS Tests (LM)**		**DF-GLS Test**	
Variables	**Fixed**	**Fixed and Trended**	**Fixed**	**Fixed and Trended**	**Fixed**	**Fixed and Trended**
Return	-477.290***	-478.002***	0.0499***	0.0465***	-1.2225	1.8722
Transaction Volume	-334.095***	-337.819***	0.1333***	0.0513***	-1.521***	-0.3154

Note: Mac Kinnon critical values for PP test; in fixed effect respectively -3.4381 at 1%, - 2.8648 at 5%, -2.5685 at 10%; in constant and trend respectively -3.9693 at 1%, - 3.4153 at 5%, -3.1298 at 10%. for the test; 0.7390 at 1%, 0.4630 at 5%, 0.3470 at 10% respectively in fixed effect; it is 0.2160 at 1%, 0.1460 at 5% and 0.1190 at 10%, respectively, in constant and trend. For DF-GLS test, at fixed effect, -2.5654 at 1%, - 1.9408 at 5%, -1.6166 at 10%; It is -3.4800 at 1%, -2.8900 at 5%, and -2.5700 at 10%, respectively in constant and trend. Here for PP test, it's shown by the result that, in case of return and transaction volume both results are lower than the expectations in both cases (fixed and fixed & trended). That means if transaction volume decreases it will lead to the decreasing of total return and vice versa. Similarly, the positive relationship between return and transaction volume has been shown through the result of KPSS Test. For DF-GLS test, in case of both fixed and fixed & trended the relationship between return and transaction volume is also positive. That means the results are greater than the expectations.

Note: *** 1%, ** 5%, * 10% indicate the statistical significance level.

4.2. Transaction Volume and Yield Relationship Results

Equation ------11: $\boldsymbol{R_t = \alpha_0 + \alpha_1 V_1 + \alpha_2 V_{t-1} + \alpha_3 R_{t-1} + u_t}$ The results of the equation are as follows: $R_t = 0.0158 + 0.0775\ V_1 - 0.0775\ V_{t-1} + 0.1046\ R_{t-1}$.

	Coefficient	Standard error	t-statistics	Possibility
α_0	0.0158	0.1292	0.1226	0.9024
α_1	0.0775	0.0243	3.1908	0.0014***
α_2	-0.0717	0.0242	8.2025	0.0031***
α_3	0.1049	0.0127	8.2025	0.0000***

Descriptive statistics

R^2	0.0131	F statistics	Possibility
Durbin – Watson	2.0117	Probability (F - statistic)	0.0000

In the return equation, it is seen that all coefficients, except for the constant term, are statistically significant and positive at 1% significance level. There is a negative relationship between the return and the trading volume of the previous day. The small value of R^2 indicates the existence of different variables that affect the return outside the transaction volume.

The results of the equation are as follows: V_t = 0.7066 + 0.0217 R_1 + 0.0181 R_{t-1} + 0.7066 V_{t-1}.

	Coefficient	Standard error	t-statistics	Possibility
β_0	0.7066	0.6784	10.4155	0.0000***
β_1	0.0217	0.0068	3.1908	0.0014***
β_2	0.0181	0.0068	2.6622	0.0078***
β_3	0.7066	0.0678	10.4155	0.0000***

Descriptive statistics

R^2	0.94	F statistics	27520.56
Durbin – Watson	2.82	Probability (F - statistic)	0.0

In the transaction volume equation, all coefficients were found to be significant and positive at 1% significance level. Therefore, it is observed that high transaction volume means high return and also the return of the previous day has an effect on that day's return. The fact that R^2 value is 0.93 indicates that the return is an important variable affecting the transaction volume.

4.3. Johansen Cointegration Test Results

Table 3: Johansen Cointegration Test Results

Testing the Cointegration Hypothesis	Eigenvalues	Track Statistics	0.05 Critical Value	Probable Value	Maximum Eigenvalue	0.05 Critical Value	Probability Value
No*	0.1663	996.4394	12.3209	0.0001	996.1044	11.2248	0.0001
Up to 1	6.12E-05	0.3349	4.1299	0.6252	0.3349	4.1299	0.6252

According to Table 3, it shows that the H0 hypothesis that there is no cointegration between the return and the transaction volume is rejected and there is a cointegration vector between the variables. There is cointegration between these variables, that is, there is a long-term relationship between return and transaction volume.

4.4. VAR Analysis Results

The next analysis for series with long-term relationships between them is the VAR analysis. Determining the lag length of the series in VAR analysis constitutes an important step in establishing an accurate and reliable model. For this purpose, the Sequential Modified LR Test Statistic (LR), Final Prediction Error (FPE), Akaike (AIC) and Hannan-Quinn (HQ) information criteria were used to determine the lag length of the models. According to each criterion, 8 period delay is appropriate, and in the next step, VAR model with 8 period delay is estimated.

In the next step of the study, Granger causality test was applied to the series. According to the Granger causality test, the null hypothesis stating that the return at the 1% significance level is not the cause of the transaction volume is rejected, so it is concluded that the transaction volume of the return with a 1-day delay is the Granger cause (Table 4).

Table 4: Granger Causality Test Results

Zero Hypothesis	Observation	F - Statistics	Possibility
Yield is not Granger cause of transaction volume	6031	9.10504	0.0026 ***
Transaction volume is not Granger reason for the return		0.21616	0.6420

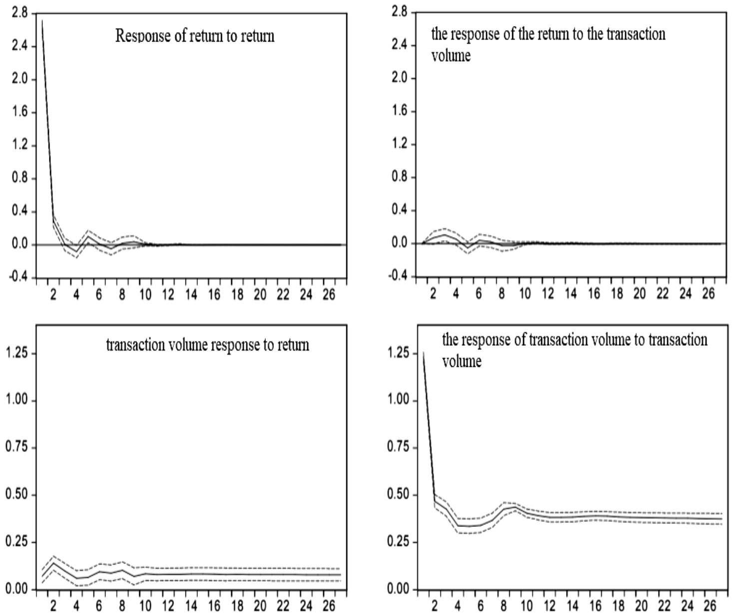

Figure 1: Impact - Response Analysis

In the next step, impulse-response analysis was applied to determine the dynamic relationship in the series with causation. The results of the impulse response analysis are shown in Figure 1. According to Figure 1, transaction volume gives a positive response in 26 years on a daily basis against shock of a standard error in yield. In the face of a standard error shock in transaction volume, it is observed that the return first responds positively, especially in the 5th, 8th and 9th years. Therefore, these different results show that the yield and transaction volume impact positively each other but the magnitude and duration is different to a one-unit shock. Transaction volume shocks do not have a significant impact on returns but are an important indicator for determining future transaction volume. This finding is in parallel with the study of Tripathy (2011).

Variance decomposition shows what percentage of the change in the variance of each variable is explained by its own delay and what percentage is explained by the other variables [16]. According to Table 5, it is seen that the variables of return and transaction volume are mostly affected by their own changes. The yield decreases on a daily basis in the first 8 years and remains constant in the following years on a daily basis. In terms of transaction volume, it is seen that it has been gradually decreasing on a daily basis for 26 years.

Table 5: Variance Decomposition Table

	VARIANCE SEPARATION OF RETURN			*VARIANCE SEPARATION OF THE PROCESSING VOLUME*		
Year	**Standard error**	**Return**	**Transaction Volume**	**Standard error**	**Return**	**Transaction Volume**
1	2.6687	100.000	0.000	1.236	0.328	99.672
2	2.6852	99.933	0.067	1.329	1.393	98.607
3	2.6873	99.776	0.224	1.399	1.750	98.250
4	2.6891	99.735	0.265	1.441	1.827	98.173
5	2.6915	99.697	0.303	1.481	1.918	98.082
6	2.6919	99.674	0.326	1.522	2.198	97.802
7	2.6924	99.667	0.333	1.568	2.381	97.619
8	2.6926	99.658	0.342	1.629	2.602	97.398
9	2.6929	99.650	0.350	1.687	2.595	97.405
10	2.6930	99.650	0.350	1.737	2.680	97.320
11	2.6930	99.648	0.352	1.783	2.745	97.255
12	2.6930	99.648	0.352	1.825	2.814	97.186
13	2.6930	99.648	0.352	1.867	2.878	97.122
14	2.6930	99.648	0.352	1.908	2.942	97.058
15	2.6930	99.648	0.352	1.949	3.002	96.998
16	2.6930	99.648	0.352	1.989	3.048	96.952
17	2.6930	99.648	0.352	2.028	3.087	96.913
18	2.6930	99.648	0.352	2.066	3.126	96.874
19	2.6930	99.648	0.352	2.103	3.162	96.838
20	2.6930	99.648	0.352	2.139	3.197	96.803
21	2.6930	99.648	0.352	2.174	3.229	96.771
22	2.6930	99.648	0.352	2.208	3.259	96.741
23	2.6930	99.648	0.352	2.242	3.287	96.713
24	2.6930	99.648	0.352	2.275	3.313	96.687
25	2.6930	99.648	0.352	2.307	3.337	96.663
26	2.6930	99.648	0.352	2.339	3.360	96.640

5. Conclusion

In this study, the relationship between the daily return of the ISX 100 Index and the yearly trading volume in the period 22.03.1993 - 22.03.2019 (6602 observations) is analyzed. For this purpose, Johansen co-integration analysis and VAR Analysis have been applied to determine the dynamic relationship between series. According to the Johansen integration analysis [11], there is a long-term relationship between return and transaction volume. It has been suggested that as the VECM incorporates the information about the short-run dynamics and establishes a short-term relationship between the stock prices, that's why VAR model has been chosen for testing. According to the Granger causality test, it is concluded that the transaction volume of the return is the Granger cause with a 1-day delay. These results Ali, et al. (2016) and Triphaty

(2011)'s finding that the similarity with the volume of transactions and the exchange of price changes in Turkey have shown that there is unidirectional causality.

According to the study, there is a simultaneous relationship between transaction volume and return, high return means high transaction volume and high transaction volume means high return. Therefore, high return information is perceived as a "sign" for investors and this information is transferred to the market and affects the transaction volume.

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