DISCLOSURE OF CONFIDENTIAL FINANCIAL INFORMATION COMMITTED BY MANAGEMENT AND ITS IMPACT ON STOCK RETURNS

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ABSTRACT

Research focused on the divulgation principle, on the transparency of information and on an equal basis between all market dealers, be they shareholders, investors or the public, and its aim was to explain the signal and its meaning, and its features, the confidential or banned information contained in the Iraqi banking environment. This may result in a lack of faith between investors, shareholders and the public between investors, equities and the public. The most significant research leads to recommendations including the drafting of frequent reports on the degree of adherence with internal policy and methodologies for confidentiality and the promotion of employee culture and awareness. The aim of this study is to show that the trade volume and ISX return are dynamic (Iraq Stock Exchange). The daily performance of the ISX and the daily trading volume details was analyzed for this reason between 22.03.1993 and 22.03.2019. The research has developed a long-term relationship between volume and return, and a single-way causality has been achieved between volume and return. In the analysis used to more detail the relationship between the sequence, impulses and techniques for variance decomposition were studied and the shift in index price was concluded to be efficient for the transaction volume.

Keywords: Return, Transaction Volume, VAR Analysis

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 (Hamad, & Ajesh 2021).

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 & 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.

LITERATURE REVIEW

Tauchen & 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); Barik, Patra, Patro, Mohanty & Hamad (2021) 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) 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) 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) 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) 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) emerging markets Toda-Yamamoto Granger used their weekly price and trading volume data using the method of causality.

Keef (2007) 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.

The study (Tripathy 2011), 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).

(Hahn, et al. 2013) 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.

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.

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

Unit Root Tests

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

According 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

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

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

$$Y_t = \beta_t + r_t + u_t$$

$LM = \frac{\sum_{t=1}^{T} S_t^2}{\sigma^2}$Equation ----3
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

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

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:
$R_t = \alpha_o + \alpha_1 V_1 + \alpha_2 V_{t-1} + \alpha_3 R_{t-1} + u_t$;Equation ----5
$V_t = \beta_o + \beta_1 R_1 + \beta_2 R_{t-1} + \beta_3 V_{t-1} + v_t$;Equation ------6

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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.

Johansen Cointegration Test

In this study, Johansen 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

$$Y_t = A_1 Y_{t-1} + \cdots + A_p Y_{t-p} + B X_t + \varepsilon_t$$

Equation-----8

$$\Delta Y_t = \prod Y_{t-1} + \sum_{t=1}^{p-1} T_t \Delta Y_{t-1} + B X_t + \varepsilon_t$$

Var Analysis

In the study, VAR Analysis was used to determine the relationship between transaction volume and yield. 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

$$\Delta Y_t = \beta_o + \sum_{i=1}^{n} \beta_{1t} \Delta Y_{t-1} + \sum_{i=1}^{n} \beta_{2t} \Delta X_{t-1} + u_{t1}$$

Equation -----10

$$\Delta X_t = \beta_4 + \sum_{i=1}^{n} \beta_{\varepsilon t} \Delta X_{t-1} + \sum_{i=1}^{n} \beta_{\varepsilon t} \Delta X_{t-1} + u_{t2}$$

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.

ANALYSIS AND FINDINGS

Unit Root Results

Table 1 and Table 2 show the 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.

Table 1 ADF, 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: MacKinnon 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% indicates the statistical significance level.

Table 2 ADF, PP AND KPSS UNIT ROOT TESTS (LEVEL = I (1))						
	PP Tests		KPSS Tests (LM)		DF-GLS Test	
Variables	Variables	Variables	Variables	Variables	Variables	Variables
Return	-477.290***	-478.002***	0.0499***	0.0465***	-1.2225	1.8722
Transaction Volume	-334.095***	-337.819***	0.1333***	0.0513***	-45.521***	-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.

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

Transaction Volume and Yield Relationship Results

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

Table 3 RESULTS OF THE EQUATION				
	Coefficient	Standard error	t-statistics	Possibility
α_0	0.0158	0.1292	0.1226	0.9024

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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***

Table 4 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: $V_t = 0.7066 + 0.0217R_1 + 0.0181R_{t-1} + 0.7066V_{t-1}$.

Table 5 RESULTS OF THE EQUATİON				
	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***

Table 6 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.

Johansen Cointegration Test Results

| Table7 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

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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.

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 8			
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
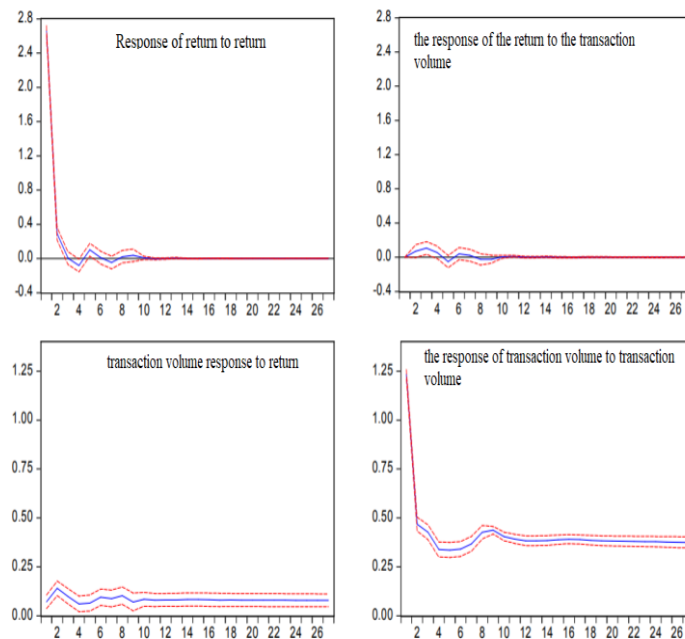
FIGURE 1
IMPACT - RESPONSE ANALYSIS

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

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in Figure 1. According to Figure 1, transaction volume gives a positive response in 26 years 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 react differently 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 in the first 8 years and remains constant in the following years. In terms of transaction volume, it is seen that it has been gradually decreasing for 26 years.

	Table 9 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	0	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	1.75	98.25
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	99.65	0.35	1.687	2.595	97.405
10	2.693	99.65	0.35	1.737	2.68	97.32
11	2.693	99.648	0.352	1.783	2.745	97.255
12	2.693	99.648	0.352	1.825	2.814	97.186
13	2.693	99.648	0.352	1.867	2.878	97.122
14	2.693	99.648	0.352	1.908	2.942	97.058
15	2.693	99.648	0.352	1.949	3.002	96.998
16	2.693	99.648	0.352	1.989	3.048	96.952
17	2.693	99.648	0.352	2.028	3.087	96.913
18	2.693	99.648	0.352	2.066	3.126	96.874
19	2.693	99.648	0.352	2.103	3.162	96.838
20	2.693	99.648	0.352	2.139	3.197	96.803
21	2.693	99.648	0.352	2.174	3.229	96.771
22	2.693	99.648	0.352	2.208	3.259	96.741
23	2.693	99.648	0.352	2.242	3.287	96.713
24	2.693	99.648	0.352	2.275	3.313	96.687
25	2.693	99.648	0.352	2.307	3.337	96.663
26	2.693	99.648	0.352	2.339	3.36	96.64

CONCLUSION

In this study, the relationship between the daily return of the ISX 100 Index and the daily trading volume in the period 26.10.1987 - 12.02.2013 (6602 observations) is analyzed. For this purpose, Johansen cointegration 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. 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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