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Stock Return and Trading Volume Relation in Nepalese Stock Market: An ARDL Approach

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Abstract
The relationship between stock returns and trading volume observed in this research is based on 149 monthly data (mid-July 2005 to mid-December 2017) of NEPSE index. The relationship between stock returns and trading volume is examined using Autoregressive Distributed Lag approach. The research investigated the long-run and short-run relationship between trading volume and stock returns. The study detected significantly positive relationship between trading volume and stock returns in both long as well as short run. Therefore, the research concludes that impact of stock returns on trading volume is significant in Nepalese Stock Market, indicates that market participants use volume as an introduction of stock returns. From investment perspective, the relationship between trading volume and stock returns is of great importance to individuals who invest in share market instruments.
Keywords: Trading volume, stock returns, ARDL approach

1 INTRODUCTION

Price and volume are two important components of every kind of economic equilibrium and these components are jointly determined by the same share market dynamics. Therefore, it is generally believed that these two components should have very close and straightforward relationship. Stock price and trading volume are two statistics that are routinely released in the media to report on the status of the financial markets and are closely observed by investors. Hence, market participants believe that intrinsic knowledge of price changes and trading volume will enhance their understanding of the market dynamics and thus their financial success. Due to some undesirable stochastic properties of stock price, especially non-stationarity, most studies concentrated on stock returns rather than prices. Stock returns and trading volume are two major pillars, around which entire stock market revolves. While return can be interpreted as the evaluation of new information, volume is an indicator to which, the investors disagree about this information. This will be the case if some investors interpret some bits of information as good news while other find it to be bad news. Therefore, price changes indicate the average reaction of investors to news. As it happens with stock returns, trading volume and its changes mainly reflect the available sets of relevant information perceived by market. Stock price are noisy which can't convey all information to market dynamic of stock returns. Karpoff (1987) recorded four reasons why the price-volume relationship is important: Firstly, the price-volume relationship provides insight into the structure of financial markets, Second, It is important for event studies that use a combination of price and volume data from which to draw inferences. Third, it is critical to the debate over the empirical distribution of speculative markets, and finally, Price-volume relationships have significant implications for research into futures markets. The author argued on two sets of hypotheses that explain the information arrival process in financial markets, the mixture of distributions hypothesis and the sequential information arrival hypothesis. The study created the conclusions of early research into four empirical propositions:

- The correlation between volume and positive price changes is positive
- The correlation between volume and negative price changes is negative
- Tests using data on volume and the absolute value of price changes will yield positive correlations and heteroskedasticity error terms.
- Tests using data on volume and price changes per se will yield positive correlations.

Gallant, Rossi and Tauchen (1992) argue that more can be learned about the market by studying the joint dynamics of stock prices and trading volume than focusing only on the one-way dynamics of stock prices.

Literature found that there are positive relationship between stock returns and trading volume in most of studies conducted in developed countries (Llorente, Michaely, Saar and Wang, 2002). There were few studies have been conducted in the context of Nepalese Stock Market (Shrestha, 2011). These studies do not employ ARDL approach to find relationship between stock returns and trading volume. The ARDL cointegration technique is used in determining the long run relationship between series with different order of integration (Pesaran and Shin, 1999, and Pesaran et al. 2001). The ARDL result gives the short-run dynamics and long run relationship of the considered variables. The research attempts empirically to access the link between trading volume and stock returns using ARDL approach.

This objective of this study is to empirically examine the long-run as well as short-run relation between trading volume and stock returns for Nepalese Stock Market using ARDL procedure.

The rest of the paper is organized as follows: the next section discusses brief survey of empirical research

on relationship between trading volume and stock returns. The third section highlights the methodology of the present research. This is followed by discussions on the results of the study in the fourth section. Section 5 concludes the research work.

2 REVIEW OF LITERATURE

This section summarizes some empirical studies on the relationship between trading volume and stock returns. Majority of studies concluded positive relationship between stock returns and trading volume. The table 1 provides summary of the major empirical studies.

Table 1: Major studies on relationship between trading volume (TV) & returns (RET)

Author	Assets	Data period	Data interval	RET and TV
Granger and Morgenstern (1963)	NYSE, USA	1939-1961	Weekly	No relation
Godfrey, Granger and Morgenstern (1964)	Stock Market aggregates	1959-1962	Transactions, daily, weekly	No relation
Ying (1966)	S&P 500 index, NYSE, USA	1957-1962	Daily	Positive relation
Crouch (1970)	DJIA, S&P500, NYSE USA	1963-1967	Daily, hourly	Positive relation
Clark (1973)	Cotton futures, USA	1945-1958	Daily	Positive relation
Epps (1975)	20 NYSE bonds	Jan. 1971	transactions	Positive relation
Morgan (1976)	17 NYSE stock	1947-1968	Daily, monthly	Positive relation
Cornell (1981)	18-futures contracts of US exchange	1971-1979	Daily	Positive relation
James and Edmister (1983)	NYSE and AMEX	1975-1981	Daily	No relation
Tauchen and Pitts (1983)	T-bills futures contract of CME	1976-1979	Daily	Positive relation
Wood, McInish, and Ord (1985)	NYSE, USA	1971/9-1972/2,1982	minute-to-minute	Positive relation
French and Roll (1986)	NYSE and AMEX	1963-1982	Hourly	Positive relation
Grammatikos and Saunders (1986)	5-countries foreign currency futures contracts	1979-1983	Daily	Positive relation
French, schwert and Stambaugh (1987)	S&P composite portfolio of NYSE	1928-1984	Daily	Positive relation
Richardson, Sefcik and Thompson (1987)	106 common stocks	1973-1982	Weekly	Positive relation
Jain & Joh (1988)	S&P 500 stock index	1/1979-12/1983	Hourly	Positive relation
Amihud & Mendelson (1991)	Tokyo Stock Exchange	Apr. to Nov., 1987	Daily	Positive relation
Mohamad and Nassir (1995)	KLSE	1985-1992	Daily	Positive relation
Moosa and Al-Loughani (1995)	4 emerging Asian Markets	1986-1993	Monthly	Positive relation
Brailsford (1996)	Australian Stock Market	1989-1993	Daily	Positive relation
Chordia and Swaminathan (2000)	CRSP NYSE/AMEX stock	1963-1996	Daily and Weekly	Positive relation
Llorente, Michaely, Saar and Wang (2002)	NYSE and AMEX	1993-1998	Daily	Positive relation
Karmakar (2007)	CNX Nifty	1990-2004	Daily	Positive insignificant relation
DeMedeiros and VanDoornik (2008)	Brazilian stock market (Bovespa)	2000-2005	Daily	low positive relation
Puri and Philippatos (2008)	Interest rate futures (ECU (IC), Japanese bond (IJ), Short Sterling (IL), and Euro Deutschemark (IU)) Currency futures (British Pound (BP), Japanese yen (JY), and Canadiandollar (CD))	1994-1996	15-min Interval	no relation
Al-Saad and Moosa (2008)	36 individual stocks of Kuwait Stock exchange	1995-2002	Daily	no relation
Pathirawasam (2008)	266 stocks of Colombo stock exchange	2000-2008	Monthly	Positive relation
Mubarik and Javid (2009)	Pakistan stock market	1998-2008	Daily	Positive relation
Ning and Wirjanto (2009)	6 East Asian equity markets	1983-2007	Daily	Positive relation
Dumitriu, Stefanescu and Nistor (2011)	Bucharest Stock Exchange	2002-2011	Daily	positive relation
Habib (2011)	26 individual stocks of Egyptian Securities exchange	1998-2005	Daily	no relation
Mehrabanpoor, Bahador and Jandaghi (2011)	Tehran Stock Exchange	2003-2009	Monthly	Positive relation
Ugwu, Sule and Emerole (2011)	10 firms of Nigerian Banking sector	2004-2007	Daily	no relation
Chen (2012)	S&P 500 price index	1973-2008	Monthly	negative for bear market and positive for bull market
El-Ansary and Atuea (2012)	26 companies of Egyptian stock market	2001-2010	Daily	Positive relation
Abdeldayem and Mahmoud (2013)	167 stocks of Egyptian Stock exchange	2006-2011	Daily	Positive relation
Abdullahi, Kouhy and Muhammad (2014)	West Texas Intermediate and Brent Crude oil futures markets	2008-2011	Daily	no relation
Hussain, Jamil, Javed and Ahmed (2014)	Karachi Stock Exchange	2012-2014	Daily	Positive relation
Habibou (2016)	8 African Stock Market	2004/2-2012/11	Daily	Positive relation

Source: Authors' compilation

In nutshell, on the basis of above-mentioned studies it can be stated that the significant efforts have been made at the international level to evaluate trading volume and stock return, whereas in Nepal, the relationship between stock returns and trading volume using OLS approach has been investigated in Nepalese stock market during 2001 to 2009 by Shrestha (2011) and found significantly positive relationship between these two variables. The relationship between stock returns and trading volume using ARDL approach has not been

investigated in Nepalese Stock Market. Therefore, the current study is an attempt to fill this gap and sheds light on the relation between trading volume and stock returns of Nepalese Stock Market. This paper examines the long-run as well as short-run relationship between stock returns and trading volume in the context of Nepalese Stock Market and the research work contributes to the literature of stock market study of the Nepalese Stock Market.

3 DATA AND METHODOLOGY

This section describes the methodology followed to test the relationship between stock returns and trading volume in Nepalese Stock Market: (i) nature and sources of data, (ii) selection of enterprises, (iii) the variables, and (iv) methods of analysis and (v) the limitations of the study.

3.1 Nature and Sources of Data

The relationship between trading volume and stock returns are examined based on trading volume and stock price data series obtained from published monthly trading report of Nepal Stock Market. The stock market data related to maximum price, minimum price, opening price, average price, closing price, and amount of trading volume collected from annual trading report of Security Exchange Board of Nepal (SEBON) and, official website of Nepal stock exchange (NEPSE). The data set used in this study comprises monthly closing prices, maximum price, minimum price and traded amount in NEPSE. The study period covers 12 years, ranging from mid-July 2005 to mid-December 2017 thereby making 149 months. The monthly stock price and trading volume data set are available since mid-July 2005 onward. Both series are expressed in the local currency.

3.2 Selection of enterprises

The study uses overall market index of Nepalese Stock Market. The study also considers sector wise data of Nepalese Stock Market.

3.3 Variables specification

The study considers monthly trading volume series and the stock return series to examine the relationship between trading volume and stock returns.

Stock returns: The study considered changes in monthly price index as stock returns. A monthly price index change is calculated using the natural log of the ratio of a stock's price index (P) from the current month (t) to the previous month (t-1) as:

$$R_t = \text{monthly stock returns} = \text{Ln}\left(\frac{P_t}{P_{t-1}}\right) \times 100,\ t=1,2,\ldots,149$$

Where, P_t represents the closing price index for the period t; t is the time in months. P_{t-1} is the closing price index for the period of t-1; Ln (.) is the natural logarithm operator. All returns are expressed in percentage and are not adjusted for dividends.

Trading volume: This study uses the total value traded of the shares as the measure of trading volume because it takes into account of the relative market value of shares. Trading volume and stock returns series should be in the same form: since the return is using percentage form, trading volume should be in the percentage form too. Thus, following Pisedtasalasai and Gunasekarage, 2007, the form of trading volume has been formulated as follows.

$$V_t = \text{monthly trading volume} = \ln\left(\frac{V_t}{V_{t-1}}\right) \times 100,\ t=1,2,\ldots,149$$

This form of trading volume was also used by Osei-Wusu (2011) to analyze the relationship between return, volume and volatility in the Ghana Stock Market.

3.4 Methods of analysis

The primary objective of the research is to examine the long-run as well as short-run integrating relationship between trading volume and stock returns in Nepalese Stock Market. Based on the review of previous empirical studies, the study examined the relationship between trading volume and stock returns, this study specifies the following form of model for estimation:

$$\boldsymbol{V_t = f(R_t)} \qquad \textbf{(1)}$$

To empirically analyze the above functional form, the ARDL model specification is used to show the long-run relationships and dynamic interactions between trading volume and stock returns using ARDL bound test in Nepalese Stock Market. This method is adopted for this study for three reasons. Firstly, compared to other multivariate cointegration methods (i.e. Johansen and Juselius (1990), the bounds test is a simple technique because it allows the cointegration relationship to be estimated by ordinary least square method once the lag order of the model is identified. Secondly, adopting the bound testing approach means that pretest such as unit root is not required. That is the regressor can either I (0), purely I (1) or mutually cointegrated. Thirdly, the long-run and short-run parameters of the models can be simultaneously estimated. Therefore, Autoregressive

Distributed Lag bound test proposed by Pesaran et al. (2001) has been used to show the relationship between trading volume and stock returns in NEPSE from mid-July, 2005 to mid-December 2017.

The ARDL model specifications of the functional relationship between trading volume and stock returns is:

$$\Delta V_t = c + \gamma_0 V_{t-1} + \gamma_1 R_{t-1} + \sum_{t=1}^{k} b_1 \Delta V_{t-i} + \sum_{t=1}^{k} b_2 \Delta R_{t-i} + \varepsilon_t \quad (2)$$

Where, V_t and R_t are stationary trading volume and stock returns respectively, k is lag length for the unrestricted Error-correction model (UECM) and ε_t is a white noise disturbance error term.

The first step in the ARDL approach is to estimate Equation (2) using the ordinary least square (OLS).The second is to trace the presence of cointegration by restricting the coefficients of lagged level variables estimated in equation (1) to be equal to zero. The null hypothesis is that there is no cointegration (H_0: γ_0=γ_1=0) against the alternative hypothesis of there is cointegration (H_A: $\gamma_0 \neq \gamma_1 \neq 0$).

Accordingly, the computed F-statistic derived from the Wald test is then compared to the non-standard critical bounds values reported by Pesaran et al. (2001). If the computed F-statistic exceeds the critical upper bounds value, then the null hypothesis of no cointegration is rejected. If the computed F-statistic falls below the critical lower bounds value, then the alternative hypothesis of there is cointegration is accepted. However, in a situation where the computed F-statistic falls between the critical lower and upper bounds values, the order of integration of the variables under consideration is needed or else, meaningful conclusion cannot be reached about cointegration status.

Once cointegration relationship is established, the next step is to estimate the long-run coefficients using the ARDL approach and the short-run dynamic parameters using the error correction model and also selecting the orders of the model using the Akaike Information Criteria (AIC). The error correction model helps to capture the speed of adjustment among the variables affecting trading volume and stock returns. The co-integrating long-run relationship was estimated using the specification below:

$$V_t = c + \gamma_0 V_{t-1} + \gamma_1 R_{t-1} + \varepsilon_t \quad (3)$$

The short-run dynamic model is specified thus:

$$\Delta V_t = c + \sum_{t=1}^{k} b_1 \Delta V_{t-i} + \sum_{t=1}^{k} b_2 \Delta R_{t-i} + b_3 ECT_{t-i} + \varepsilon_t \quad (4)$$

Where: ECT_{t-i}= the error correction term lagged for one period and b_3= the coefficient for measuring speed of adjustment in equation (4).

3.4.1 Unit root Test

Unit root test has a crucial importance in the time series analysis to choose the techniques and procedures for further analysis and modeling of time series. The presence of unit root shows the time series is non-stationary. A series with unit root suffers spurious results in regression analysis. For this purpose, the study uses the well-known Dickey-Fuller or the Augmented Dickey-Fuller (ADF) test (Dickey and Fuller, 1981), Phillips-Perron (PP) unit roots and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test of stationary are employed. Two variants of this model are estimated: (i) one that includes only a constant term (α) as the deterministic regressor and (ii) the other that includes both constant (α) and time trend (t) terms as deterministic regressor. ADF unit root test is sensitive towards the lag length included in the regression equation. So, the lag lengths have chosen based on Akaike Information Criterion (AIC). The respective models estimated took the following form:

ADF Test (with constant) Model: $\Delta y_t = \alpha_0 + \gamma y_{t-1} + \sum_{i=1}^{\rho} \beta_i \Delta y_{t-i} + \varepsilon_t$ **(5)**

PP Test (with constant) Model: $\Delta Y_{t-1} = \alpha_0 + \gamma_1 y_{t-1} + \varepsilon_t$ **(6)**

KPSS Test (with constant) Model: $y_t = \alpha_0 + \mu_t + \varepsilon_t$ **(7)**

3.5 Limitations of the study

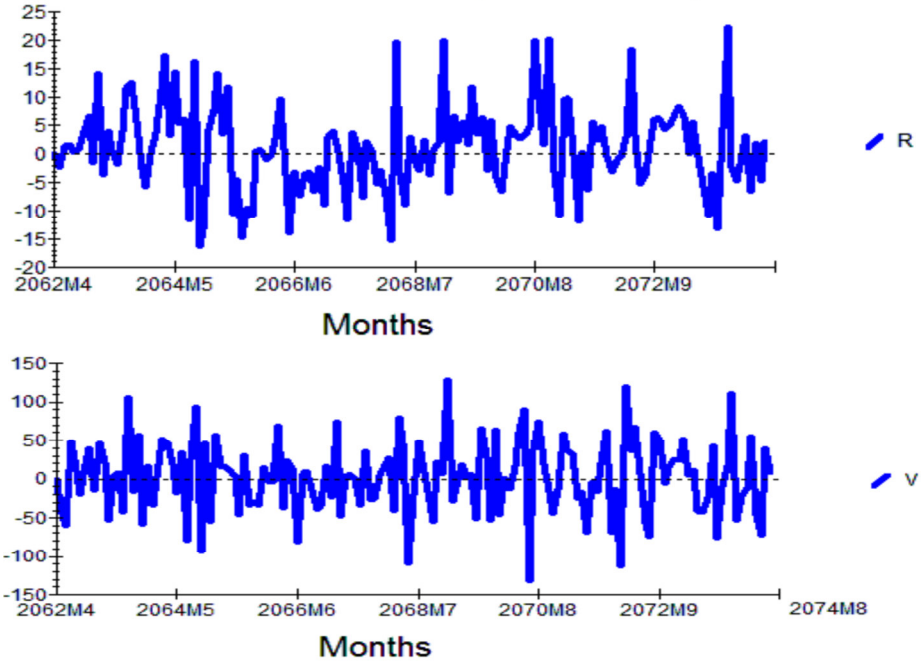
There are a large number of non-listed companies contributing to the dynamics of Nepalese economy; they are not included in the study due to data problems. The results relating to relation between stock returns and trading volume in this study based on ARDL using available monthly stock returns and trading volume data series of Nepalese Stock Market.

4 RESULTS and DISCUSSIONS

4.1 Descriptive statistics

Figure 1 shows the graphic display of NEPSE stock returns as well as NEPSE trading volume for the period of mid-july 2005 to mid-december 2017. It can be seen from Figure 1 that NEPSE stock return and trading volume series seem stationary because both series move around it mean value.

Figure 1: NEPSE Stock return Vs Trading Volume (Mid-July 2005 to Mid-December 2017)



Source: Authors' calculation using Microfit 4.0 software

Table 2 displays descriptive statistics and correlation analysis for the stock returns and trading volume series. The analysis shows that mean value of monthly stock returns is 1.09% with standard deviation of 7.69%, positive skewness, and excess kurtosis. Jarque-Bera statistic of stock returns suggests normality of stock returns. The descriptive statistics for trading volume shows that mean value is 2.43% with standard deviation of 47.48%. Skewness is negative, excess kurtosis and Jarque-Bera statistic of trading volume suggest normality of trading volume data. Table 2 also shows positive and significant correlation between trading volume and stock returns.

Table 2: Descriptive statistics and correlation analysis

Descriptive statistic	R	V	Normality test	R	V
Mean	1.0964	2.4352	Doornik-Hansen test	3.3272	0.5358
Std. Dev.	7.6982	47.4819	Shaprio-Wilk W test	0.9778	0.9961
Skewness	0.3347	-0.0202	Lilliefors test	0.0836***	0.0426
Kurtosis	3.3742	3.1018	Jarquw-Bera test	3.6263	0.0739
Corr (R,V)	0.3547 (0.000)				

Source: Authors' calculation using eviews 9 software and Gretl software

The Jarque–Bera test is a goodness-of-fit test of whether sample data have the skewness and kurtosis matching a normal distribution. The test results cannot be rejected the null hypothesis that stock return and trading volume data series are come from a normal distribution. Similarly, the Shapiro–Wilk test tests the null hypothesis that a sample came from a normally distributed population. The test statistics of stock returns and trading volume series suggests the null hypothesis cannot be rejected, there is evidence that the data came from a normally distributed population cannot be rejected; in other words, the data are normally distributed. The Doornik-Hansen test for normality also shows similar result as it cannot rejected null hypothesis.

4.2 Unit root Test

Table 3 presents the results of unit root test for NEPSE stock returns and trading volume using ADF, PP and KPSS approach. Unit roots test is particularly important for the trading volume since any test of correlation between trading volume and stock returns. As table 3 shows, the both series do not contain the unit roots at level [I(0)] and first differences[I(1)].

Table 3: Unit Root Test Results

Variable	Lag	ADF	PP	KPSS
R: I(0)	0	-10.5640***	-10.6019***	0.1471
I(1)	10	-6.7674***	-55.6597***	0.0474
V: I(0)	3	-8.6051***	-19.9415***	0.1166
I(1)	12	-7.1956***	-77.3805***	0.2441

Source: Authors' calculation using eviews 9 software

4.3 ARDL Model

Table 4 presents the results of ARDL model for relationship between trading volume and stock returns for NEPSE monthly data series. The model selected by AIC is ARDL (4, 1). All coefficients are statistically significant at 1% level of significance. The coefficient of stock returns shows significantly positive which confirms the positive relationship between trading volume and stock returns. It also passes all the diagnostic tests against serial correlation (Durbin Watson test and Breusch-Godfrey test) and heteroscedasticity (White Heteroskedasticity Test). The Ramsey RESET test also suggests that the model is well specified.

Table 4: Autoregressive Distributed Lag Model Results

ARDL (4, 1) selected based on Akaike Information Criterion

****

Dependent variable is V

145 observations used for estimation from 2062M8 to 2074M8

****

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
V (-1)	-.55216	.079874	-6.9129[.000]
V (-2)	-.36054	.075765	-4.7587[.000]
V (-3)	-.31048	.072382	-4.2895[.000]
V (-4)	-.16788	.071495	-2.3481[.020]
R	2.5155	.41136	6.1152[.000]
R (-1)	1.9780	.46065	4.2940[.000]

****

R-Squared	.38563	R-Bar-Squared	.36354
S.E. of Regression	37.8293	F-stat. F (5, 139)	17.4500[.000]
Mean of Dependent Variable	2.8299	S.D. of Dependent Variable	47.4178
Residual Sum of Squares	198916.6	Equation Log-likelihood	-729.4794
Akaike Info. Criterion	-735.4794	Schwarz Bayesian Criterion	-744.4096
DW-statistic	2.0852		

Diagnostic Tests

****

* Test Statistics	LM Version	F Version
A: Serial Correlation	CHSQ (12) = 14.4127[.275]	F (12, 127) = 1.1681[.313]
B: Functional Form	CHSQ (1) =2.4343[.119]	F (1, 138) = 2.3563[.127]
C: Heteroscedasticity	CHSQ (1) =.53118[.466]	F (1, 143) = .52578[.470]

****

A: Lagrange multiplier test of residual serial correlation;
B: Ramsey's RESET test using the square of the fitted values;
C: Based on the regression of squared residuals on squared fitted values.
Source: Authors' calculation using Microfit 4.0 software

4.4 ARDL bound test

Table 5 presents the results of the bound test for equation (2).

5: ARDL Bound test Results

K (lag length)	1
Computed F-Statistic	78.06896
1% critical bound Value I(0) I(1)	 6.84 7.84
5% critical bound Value I(0) I(1)	 4.94 5.73
10% critical bound Value I(0) I(1)	 4.04 4.78

Source: Authors' calculation using eviews 9 software

As table 3 shows, the computed F-statistics is 78.07 which is exceeds the upper bounds critical value of 7.84 at 1% level of significance. Hence, this implies that trading volume and stock returns are co-integrated.

After verified the variables are co-integrating each other, the study estimates equation (3) to show the long

run relationship between trading volume and stock returns.

Table 6: ARDL long run relationship Results

ARDL (4,1) selected based on Akaike Information Criterion

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Dependent variable is V

145 observations used for estimation from 2062M8 to 2074M8

****

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
R	1.8793	.24268	7.7441[.000]

****

Source: Authors' calculation using Microfit 4.0 software

The result of the long - run relationship between trading volume and stock return in table 6 reveals that the estimated coefficient of stock returns has a positive and significant impact on trading volume.

Table 7: ARDL Error correction Model Results

ARDL (4, 1) selected based on Akaike Information Criterion

****

Dependent variable is dV

145 observations used for estimation from 2062 M8 to 2074M8

****

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
dV1	.83890	.15878	5.2834[.000]
dV2	.47836	.11592	4.1266[.000]
dV3	.16788	.071495	2.3481[.020]
dR	2.5155	.41136	6.1152[.000]
ecm(-1)	-2.3911	.20540	-11.6408[.000]

****

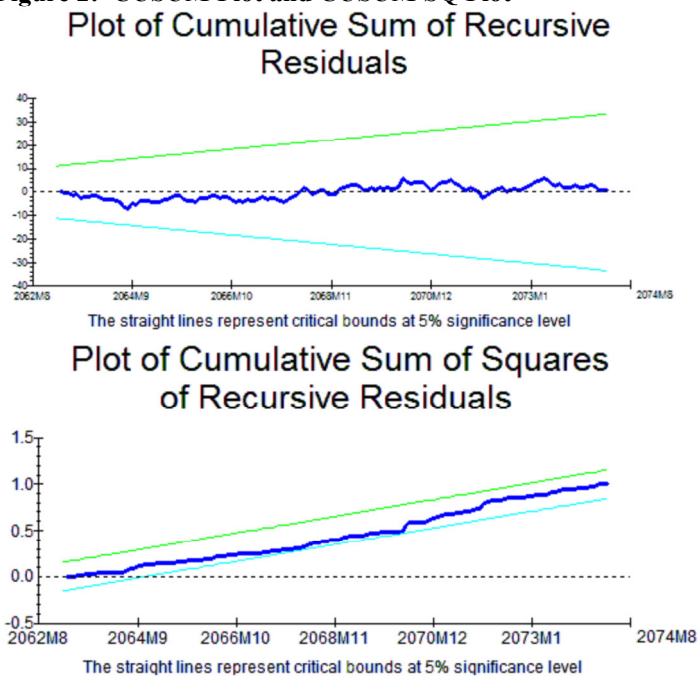
R-Squared	.74912	R-Bar-Squared	.74009
S.E. of Regression	37.8293	F-stat. F(4, 140)	103.7605[.000]
Mean of Dependent Variable	-.27774	S.D. of Dependent Variable	74.2025
Residual Sum of Squares	198916.6	Equation Log-likelihood	-729.4794
Akaike Info. Criterion	-735.4794	Schwarz Bayesian Criterion	-744.4096
DW-statistic	2.0852		

Source: Authors' calculation using Microfit 4.0 software

The result of above table7 displays that the error correction coefficient estimated at -2.3911(0.000) is statistically significant, has correct sign and suggests a moderate speed of convergence to equilibrium. This implies that there is a long run causal relationship between trading volume and stock returns. The result also shows that at a significance level of 1%, a change in one period lagged value of trading volume has a positive and statistically significant effect on changes in stock returns. This means that the stock returns of a previous month, has a positive influence on the changes noticed in trading volume in the current month. Although, the one period lagged value of trading volume is positive, but it is statistically insignificant.

It is necessary to check for the stability of the stock return function. This is because of the importance of the stability of the stock return function for investor to know when to invest and the major factors affecting their portfolio investment. Therefore it necessary to test whether the estimated stock return ARDL equation has shifted over time. As can be observed from Figure 2, the CUSUM and CUSUMSQ parameter stability tests indicate that the parameters are stable during the sample period (2005-2017). The results indicate the absence of any instability of the coefficients because the plot of the CUSUM and CUSUMSQ statistic fall inside the critical bands of the 5% confidence interval of parameter stability.

Figure 2: CUSUM Plot and CUSUM SQ Plot



Source: Authors' calculation using Microfit 4.0 software

5 Conclusion

The primary objective of this study was to test the relationship between trading volume and stock returns in Nepalese Stock Market for the period of mid-July 2005 to mid-December 2017 using monthly data series. This study adopted the ARDL bounds testing co-integration approach to investigate the long run and short run dynamics between trading volume and stock returns. The results show that there is a co-integration relationship between trading volume and stock returns. The results also indicate that stock returns has a positive and significant effect on trading volume. Therefore, the research concludes that impact of stock returns on trading volume is significant in Nepalese Stock Market, indicates that market participants use volume as an introduction of stock returns. From investment perspective, the relationship between trading volume and stock returns is of great importance to individuals who invest in share market instruments and its relationship with price, having important implications on trading, speculation, forecasting and finally on hedging activities.

6 Bibliography

Abdeldayem, M. M., & Mahmoud, M. R. (2013). An examination into the impact of trading motives on the dynamic relationship between stock returns and trading volume: evidence from Egypt. *Global Advanced Research Journal of Management and Business Studies, 2*(4), 206-221.

Abdullahi, S., Kouhy, R., & Muhammad, Z. (2014). Trading volume and return relationship in the crude oil futures markets. *Studies in Economics and Finance, 31*(4), 426-438.

Al-saad, K., & Moosa, I. (2008). Asymmetry in the price–volume relation: evidence based on individual company stocks traded in an emerging stock market. *Applied Financial Economics, 4*(2), 151-155.

Amihud, Y., & Mendelson, H. (1991). Liquidity, Asset Prices and Financial Ploicy. *Financial Analysts Journal, 47*(6), 56-66.

Brailsford, T. J. (1996). The empirical relationship between trading volume, returns and volatility. *Accounting and Finance, 35*, 89-111.

Chen, S. (2012). Revisiting the empirical linkages between stock returns and trading volume. *Journal of Banking & Finance, 36*(6), 1781-1788.

Chordia, T., & Swaminathan, B. (2000). Trading volume and crossautocorrelations in stock returns. *Journal of Finance, 55*, 913-935.

Clark, P. (1973). A subordinated stochastic process model with finite variance for speculative prices. *Econometrica, 41*, 135-155.

Cornell, B. (1981). The Relationship Between Volume and Price Volatility in Futures Markets. (A. Peak, Ed.) *The Journal of Futures Market, 1*(3), 303-316.

Crouch, R. (1970). The volume of transactions and price changes on the New York stock exchange. *Financial Analysis Journal, 26*, 104-109.

DeMedeiros, O., & VanDoornik, B. (2008). The Empirical Relationship between Stock Returns, Return Volatility and Trading Volume in the Brazilian Stock Market. *Brazilian Business Review, 5*(1), 1-17.

Dumitriu, R., Stefanescu, R., & Nistor, C. (2011). *Changes in the dynamic relation between the prices and the trading volume from the bucharest stock exchange.* MPRA Paper No. 41602.

El-Ansary, O., & Atuea, M. (2012). The Effect of Stock Trading Volume on Return in the Egyptian Stock Market. *International Research Journal of Finance and Economics, 100*, 152-167.

Epps, T. W. (1975). Security price changes and transaction volumes: Theory and Evidence. *American Economic Review, 65*, 586-597.

French, K., & Roll, R. (1986). Stock return variances: The arrival of information and the reaction of traders. *Journal of Financial Economics, 17*, 5-26.

Gallant, A., Rossi, P., & Tauchen, G. (1992). Stock prices and volume. Review of Financial Studies, 5, 199-242.

Godfrey, M., Granger, C., & Morgenstern, O. (1964). The Random Walk Hypothesis of Stock Market Behavior. *Kyklos, 17*, 1-30.

Grammatikos, T., & Saunders, A. (1986). Furures Price variability: A Test of Maturity and Volume Effects. *Journal of Business, 50*(2), 319-330.

Granger, C., & Morgenstern, O. (1963). Spectral analysis of New York market prices. *Kyklos International Review of Social Science, 16*(1), 1-27.

Habib, N. (2011). Trade Volume and Returns in Emerging Stock Markets An Empirical Study: The Egyptian Market. *International Journal of Humanities and Social Science, 19*(1), 302-312.

Habibou, W. (2016, March). Dynamics of The Relationship Between Trading Volume, Return And Volatility in African Stock Markets. *PARIPEX - INDIAN JOURNAL OF RESEARCH, 5*(3), 311-316.

Hussain, S., Jamil, H., Javed, M., & Ahmed, W. (2014). Analysis of Relationship between stock return, trading volume and volatility Evidences from the banking sector. *European Journal of Business and Management, 6*(20), 57-61.

Jain, P., & Joh, G. (1988). The dependence between hourly prices and trading volume. *Journal of Financial and Quantitative Analysis, 23*, 269-283.

James, C., & Edmister, R. (1983). The Relation between Common Stock Returns Trading Activities and Market Value. *Journal of Finance, 38*, 1075–1086.

Johansen, S. & Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration-With Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.

Karmakar, M. (2007). Asymmetric Volatility and Risk-Return Relationship in Indian Stock Market. *South Asian Economic Journal, 8*(1), 99-116.

Karpoff, J. (1987). The relation between price changes and trading volume: A survey. Journal of Financial and Quantitative Analysis, 22, 109-126.

Llorente, G., Michaely, R., Saar, G., & Wang, J. (2002). Dynamic Volume-Return Relation of Individual Stocks. Review of Financial Studies, 15, 1005-1047.

Mehrabanpoor, M., Bahador, B. V., & Jandaghi, G. (2011). Stock Exchange Indices and Turnover Value-Evidence from Tehran Stock Exchange. *African Journal of Business Managemen, 5*(3), 783-791.

Mohamad, S., & Nassir, M. (1995). Price Changes and Trading Volume Relationship: Some Preliminary Evidence from the Kuala Lumpur Stock Exchange. *Pertanika Journal of Social Science and Humanities, 3*, 147-154.

Moosa, I. A., & Al – Loughani, N. E. (1995). Testing the price – volume relation in emerging Asian stock markets. *Journal of Asian Economics, 6*, 407-422.

Morgan, I. (1976). Stock prices and heterroskedasticity. *Journal of Business, 49*, 496-508.

Mubarik, F., & Javid, A. (2009). Relationship between stock return, trading volume and volatility: Evidence from Pakistani stock market. *Asia Pacific Journal of Finance and Banking Research, 3*(3), 1-17.

Ning, C., & Wirjanto, T. (2009). Extreme return–volume dependence in East-Asian stock markets: A copula approach. *Finance Research Letters, 6*(4), 202-209.

Osei-Wusu, E. (2011). Relationship between Return, Volume and Volatility in the Ghana Stock Market. *Ph.D. Thesis Submitted to Department of Finance and Statistics, Hanken School of Economics*. Retrieved from http://helda.helsinki.fi/bitstream/handle/10138/28657/osei-wusu.pdf?sequence=4

Pathirawasam, C. (2008). The Relationship between Trading Volume and Stock return. *Journal of Competitiveness, 3*, 41-49.

Pesaran, M. H. & Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. in S Strom, (ed.), Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium, Cambridge: Cambridge U P.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics, 16, 289-326.

Pisedtasalasai, A., & Gunasekarage, A. (2007). Causal and Dynamic Relationships among Stock Returns, Return

Volatility and Trading Volume:Evidence from Emerging markets in South-East Asia. *Asia-Pacific Finan Markets, 14*, 277-297.

Puri, T., & Phillippatos, G. C. (2008). Asymmetric volume – return relation and concentrated trading in LIFFE futures. *European Financial Management, 14*(3), 528-563.

Shrestha, S.R. (2011). Stock returns and trading volume in Nepal. SEBON Journal, V, 79-95.

Tauchen, G., & Pitts, M. (1983). The price variability-volume relationship on speculative markets. *Econometrica, 51*, 31-41.

Ugwu, S., Sule, K., & Emerole, G. (2011). Stock Returns and Trading Volume Relationship of the Nigerian Banking Sector: An Empirical Assessment. *Journal of Social and Development Sciences, 2*(1), 5-13.

Wood, R., McInish, T., & J., O. (1985). An investigation of Transactions Data for NYSE Stocks. *Journal of Finance, 60*, 723-739.

Ying, C. (1966). Stock market prices and volumes of sales. *Econometrica, 34*, 676-685.