

Study on Relationship between Delivery Quantity to Total Quantity traded and Stock returns

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Abstract— This study is done to examine whether the delivery quantity to total quantity traded of a stock affects or is affected by its stock return. The paper investigates the relationship between stock return and delivery quantity traded to total quantity traded for 13 companies in the banking sector of NSE NIFTY. Unit root test was conducted to check stationary of volume and return data and it confirms both delivery quantity traded to total quantity traded and returns series are stationary and granger causality tests were conducted to analyze the relationship and we found that for two of the thirteen companies, stock return is granger causing delivery quantity traded to total quantity traded. It implies market efficient market hypothesis is holds true.

Keywords—Stock return; Delivery Quantity traded; granger causality test

I. INTRODUCTION

Many studies have examined the relationship between daily stock index returns and percentage trading volume changes. But, apart from the volume of shares, the percentage of delivery quantity traded to total quantity traded (percentage delivery quantity traded) is an important data that needs to be analyzed along with the share price. When the share price of the stock goes up alongside with the higher percent of deliverable quantity to traded quantity, it specifies that maximum buyers are expecting the share price to rise. Similarly, when the share price of the stock declines with higher percent of deliverable quantity to traded quantity, it indicates that most of the sellers are expecting the share price to decline. Some stocks tend to rise with a significantly lower per cent of total deliverable quantity to traded quantity per cent which signifies that there is more trader interest in the stock. This is because there is more squaring-off on the same day in the stock implying there is more trader interest in the stock rather than long term investors interest.

NSE, the National Stock Exchange of India is one of the two major stock exchanges in the country. NIFTY 50 is its flagship index that includes 50 topmost companies in NSE in terms of market capitalization. In this paper we try to examine the relationship between stock returns and percentage delivery

quantity traded for companies in the banking sector that are included in the NIFTY 50.

II. LITERATURE REVIEW

The study on relationship between stock return and trading volume is widespread. We have summarized the previous researches related to these issues.

Reference [1] The Efficient Market Hypothesis (EMH) suggests that there is no possibility of predicting the future prices by analyzing the past data or publicly available new information or through a combination of public and private data. Fama also splits the efficiency into three forms such as weak form (where current stock prices depend on historical data), semi-strong form (where current stock prices depend on the information that is publicly available) and strong form (where current stock price depends on both the company's insider information and information that is publicly available)

Reference [2] focused on investigating the dynamic relationship between stock return and trading volume of the Banking sector. Finally they came to a conclusion that there was a significant relationship between trade volume and stock return.

Reference [3] examined and tested the validity of using trading volumes to forecast stock return. And concluded with high stock price returns, when coupled with normal volume that implies greater agreement and less uncertainty in the market.

Reference [4] analyzed that the trading volume signifies the quality or precision of information in movement of past price. They also gave a main implication that only the investors who concentrate on the past trading volume could incur profits and could perform better.

Reference [5] investigated the dynamic relation between stock return and volumes. The study found that variation in the relation between return autocorrelation and volume is related to the extent of informed trading.

Reference [6] examined 50 Indian stocks and took three measures of trading volume namely number of shares traded, number of transaction and value of shares traded are used. By focusing on the contemporaneous relation between trading volume and returns they analyzed the asymmetric behavior of trading volume in response to change in price.

Reference[7] explores the relationship between trading volumes and stock return and b) the relationship on Malaysian market is considered as the weak form of the efficient of hypothesis were the two objectives. Finally they came to a conclusion that there is a strong significant positive relationship that exists and in the meanwhile there also exists a contemporaneous negative relationship between the past period trading volume and stock return.

Reference [8] in their research on stock price and trading volume relationship through Granger causality by using minute data concluded that out of 50 companies, 29 companies showed causality relationship that is bi-directional between stock price and trading volume, 15 companies were found to have uni-directional relationship between the two variables and 6 companies had no causality relationship at all.

Reference [9] in their study on price-volume relationship through Granger Causality test stated that price forecasts are improved by past volume knowledge behavior.

Reference[10] The test of Granger causality is conducted to find out whether one time series data can be used to predict another time series data. The Unit root test is a mathematical test that is used to find out the stationarity of a particular dataset. Stationarity time series implies that the properties of statistics, such as mean, variance and autocorrelation, are all constant over a period of time

Reference[11] studied about the dynamic relationship between trading volume and returns from the stock in Egypt and concluded that there is positive auto correlation in Egyptian exchange

III. METHODOLOGY

The following regression model has been developed to analyses the behavior of percentage delivery quantity traded on stock return. In this study daily stock return and percentage delivery quantity of NSE NIFTY FIFTY banking sector companies are taken for the past 24 months from February 2015 to February 2017. First the data are tested for stationary using unit root test.

Unit root test is used to test whether a time-series variable is non-stationary and possess a unit root. Also it is a feature of a random process that can cause some problems in statistical inference that are involved in time series model. We performed Augmented Dickey Fuller (ADF) test for the stock returns. The null hypothesis is that a unit root is present (data is non-stationary). The null hypothesis was rejected at 5% significance level confirming that the data are stationary. . Unit root test was conducted to check stationary of volume and return data and it confirms both volume and returns series are stationary.

The stationary data was then used for Granger Causality test to find whether one time series data will be useful in forecasting another time series data (i.e. one time series data will cause another time series data). Granger Causality has an assumption that future cannot cause past but the past cause the past or future.

Granger Causality test: It is conducted in order to find out whether one time series data set can predict another time series dataset. Hypotheses for some of the variables are as follows:

$$SR_t = \sum_{i=0}^2 \alpha_i QT_{t-i} + \sum_{j=0}^2 \beta_j SR_{t-j} + \varepsilon_{1t}$$

$$QT_t = \sum_{i=0}^2 \gamma_i SR_{t-i} + \sum_{j=0}^2 \delta_j QT_{t-j} + \varepsilon_{2t}$$

Variable description:

$\alpha_i, \beta_j, \gamma_i, \delta_j$ = coefficients of the model (i.e., the contributions of each lagged observation)

$\varepsilon_{1t}, \varepsilon_{2t}$ = are residuals (prediction errors) for each time series

HYPOTHESIS:

H01a: Bank of India delivery quantity traded (BIDP) does not granger cause its stock return (BISR)

H01b: Bank of India stock return (BISR) does not granger cause its percentage delivery quantity traded (BIDP)

H02a: Canara bank delivery quantity traded (CADP) does not granger cause its stock return (CASR)

H02b: Canara bank stock return (CASR) does not granger cause its percentage delivery quantity traded(CADP)

H03a: Federal bank delivery quantity traded (FDP) does not granger cause its stock return (FSR)

H03b: Federal bank stock return (FSR) does not granger cause its percentage delivery quantity traded (FDP)

H04a: State bank of India delivery quantity traded (SBDP) does not granger cause its stock return (SBSR)

H04b: State bank of India stock return (SBSR) does not granger cause its percentage delivery quantity traded (SBDP)

H05a: Yes Bank delivery quantity traded [YDP] does not granger cause its stock return [YSR]

H05b: Yes Bank stock return [YSR] does not granger cause its percentage delivery quantity traded [YDP]

H06a: Axis Bank delivery quantity [AXDP] traded does not granger cause its stock return [AXSR]

H06b: Axis Bank stock return [AXSR] does not granger cause its percentage delivery quantity traded [AXDP]

H07a: Bank of Baroda delivery quantity [BBDP] traded does not granger cause its stock return [BBSR]

H07b: Bank of Baroda stock return [BBSR] does not granger cause its percentage delivery quantity traded [BBDP]

H08a: ICICI bank delivery quantity traded [ICDP] does not granger cause its stock return [ICSR]

H08b: ICICI Bank stock return [ICSR] does not granger cause its percentage delivery quantity traded [ICDP]

H09a: Indus bank delivery quantity traded [INDP] does not granger cause its stock return [INSR]

H09b: Indus Bank stock return [INSR] does not granger cause its percentage delivery quantity traded [INDP]

H010a: Kotak bank delivery quantity traded [KDP] does not granger cause its stock return [KSR]

H010b: Kotak Bank stock return [KSR] does not granger cause its percentage delivery quantity traded [KDP]

H011a: Punjab national bank delivery quantity traded [PDP] does not granger cause its stock return [PSR]

H011b: Punjab national bank stock return [PSR] does not granger cause its percentage delivery quantity traded [PDP]

H012a: HDFC bank delivery quantity [HDDP] traded does not granger cause its stock return [HDSR]

H012b: HDFC bank stock return [HDSR] does not granger cause its percentage delivery quantity traded [HDDP]

IV . RESULTS AND DISCUSSIONS

Table 1: Result analysis:

Null Hypothesis:	F-Statistic	Probability
BISR does not Granger Cause BIDP	1.15497	0.2830
BIDP does not Granger Cause BISR	1.93608	0.1647
CASR does not Granger Cause CADP	0.23629	0.7896
CADP does not Granger Cause CASR	0.22630	0.7976
FSR does not Granger Cause FDP	1.53994	0.1759
FDP does not Granger Cause FSR	0.98241	0.4279
SBSR does not Granger Cause SBDP	3.37286	0.0348
SBDP does not Granger Cause SBSR	2.48863	0.0836
YSR does not Granger Cause YDP	1.09636	0.3577
YDP does not Granger Cause YSR	0.19067	0.9433
AXSR does not Granger Cause AXDP	1.91414	0.0905
AXDP does not Granger Cause AXSR	0.43883	0.8214
BBSR does not Granger Cause BBDP	1.34401	0.2526
BBDP does not Granger Cause BBSR	1.10129	0.3553
ICSR does not Granger Cause ICDP	0.67763	0.6406
ICDP does not Granger Cause ICSR	0.32314	0.8991
INSR does not Granger Cause INDP	0.29643	0.9552
INDP does not Granger Cause INSR	1.30818	0.2443
KSR does not Granger Cause KDP	2.25014	0.0817
KDP does not Granger Cause KSR	0.10540	0.9569
PSR does not Granger Cause PDP	2.83956	0.0375
PDP does not Granger Cause PSR	0.73224	0.5331
HDSR does not Granger Cause HDDP	1.22623	0.2943
HDDP does not Granger Cause HDSR	2.24268	0.1073

From the granger causality result given in table 1 it is found that the stock return of SBI granger causes delivery quantity traded of SBI and that the stock return of PNB granger causes its delivery quantity traded and remain 11 companies stock return does not granger cause delivery quantity traded. For all the thirteen companies delivery quantity traded does not causes with stock return. . From this we can conclude that market is efficient in weak form. Only when percentage delivery quantity traded to total quantity traded is causing stock returns its possible to make abnormal profit and it implies market is not efficient.

V. CONCLUSION AND LIMITATIONS

Our study found that stock return granger causes percentage delivery traded for two banks in NSE. But we did not find any evidence for percentage delivery traded causing stock return in the sample we studied. We focused on a limited number of companies in the Banking sector. As we considered only those banks which were included in the NIFTY index, our study could not identify the relationship for banks that have comparatively low market capitalization.

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