Determinants of Trading Volume in Karachi Stock Market

Musawwar Zahoor[1], Muhammad Bilal Saeed[2], Shujahat Haider Hashmi[1*]

[1]*Capital University of Science and Technology, Islamabad*
[2]*FAST University Islamabad*

Abstract. This study aimed to investigate the determinants of trading volume. For this purpose a sample of fifty firms listed at KSE had been considered. 50 firms based on capitalization were selected from non-financial sector covering a time period from 2005 to 2014. Descriptive statistics, Variance inflation factor, and panel data estimation model have been employed for the purpose of analysis. The findings revealed that determinants have significant effect on trading volume. It has been observed that abnormal return, volatility (systematic & residual risk), size, institutional holding, dividend yield, positive returns, and negative returns have positive effect on trading volume, while institutional holding has no effect on trading volume.

1   Introduction

Trading volume is known to be an important factor in stock market because it activates or deactivates the movement of stock price. Stock market fluctuation and trading volume are influenced by the flow of information; the more accurate and timely information available to investors, more accurately they can make decision about particular stock/security trading in market. Investor's reaction to news can lead to increase in trading volume (Mubarik and Javid, 2009). Technical analysts make their trading decision by examining prior year volume and price data, to determine trends and predict future behavior of stock market. They state that volume should move with trends, such that if price is increasing, volume should move in upward trend and vice-versa. Analysts use various tools and techniques to identify trends and patterns which can aid in predictions of future market movements (Reilly and Brown, 2002).

There are four reasons to study price-volume relationship; firstly it tells us about the structure of financial market, secondly it is important for event studies, thirdly it is an essential part of speculation and last but not the least, it also provides insight into future markets (Karpoff, 1987). Volatility can be systematic or unsystematic. Systematic risk is also known as market risk and it is affected by factors like fiscal budget, market sentiments, etc., through which prices of stock are pushed up or down in different times, whereas, the other type of risk is unsystematic or company-related factors, such as competition from inside and outside of the country, financing pattern change, man-

agement change, etc. This type of risk can be eliminated, whereas, former type of risk cannot be eliminated through diversification. Fluctuation rate depends upon the relationship of stock with the entire market. By use of this information investors asses the management efficiency and set strategies, such as either buy/sell or hold stock and readjust their portfolios (Bundoo, 2000).

Earlier studies demonstrated that the Institutional ownership is also a measure of heterogeneity and that individual investor engage in trading practices different from institutional investors (Chan and Lakonishok, 1995; Tripathy, 2011). There are some reasons that individual investors engage in trading practices different from institutional investors. First one is that Institutional investors, as compared to individuals generally hold larger shares and the other one is, that in a stock Institutional investors when initiate a new position they act as momentum traders, but when they terminate or re-balance their portfolio, they follow contrarian approach. Nofsinger and Sias (1999) also documented that the trading behavior of institutional and individual investors respond differently to the release of macro-economic and specific news.

According to the study of Lo and Wang (2000), with the growth of mutual fund industry and large institutional investors, it is difficult to invest in smaller cap stocks because they have corporate control and liquidity issues. Large cap stocks have more active trading as compared to small cap stocks, because large cap firms have diverse ownership and great information asymmetry, which can lead to more active trading. Capital gains and dividends are taxed differently, traders buy stock before its ex dividend date and sell it into market shortly

---

*Corresponding author.
Email: shujahat@cust.edu.pk

after, thereby resulting in an increase in trading activity in market. Green (1980) and Koski and Scruggs (1998) observed trading volume during ex-dividend days and found that there is an evidence of tax-induced clientele effect.

Theory of market microstructure states that how specific trading mechanism affects the price formation process. It applies to the exchange of real or financial assets. Market microstructure relates the behavior of market participants, investors, dealers, etc. Thus microstructure is a critical factor that affects the investment decision as well as investment exit. According to Shefrin and Statman (1985) the disposition effect is an important determinant, which describes about the investors' desires to hold loser stocks and sell stocks that have appreciated and realized gains. The term overconfidence relates to investor's behavior of trading in market, it makes an investor to trade more, less risk averse and generate more trading volume (Gervais and Odean, 2001).

This study is going to contribute towards the prediction of trading behavior/ practices of investors in stock market. This study provides benefit to the shareholders, investors; they can attain benefit in adjusting their portfolio or set investment strategies about particular stock, which are trading in market. It helps manager to actively manage their portfolio of stocks. The focus of our study is to inspect the implication of different characteristics associated with individual level as well as market level. This study is helpful for the Government and regulatory bodies to make such policies to maintain and enhance trading volume by attracting foreign investors to invest in Pakistani market.

In developing countries like Pakistan, where the environment is highly volatile and politically instable, this could have an impact on whole system of country. Usually, Investors are looking for higher return and lower risk on an investment. Higher returns & lower risk encourage investors to make trading decisions, lead to increase in inflow of capital. But in a volatile environment investors are less interested in making investment decision about particular stock or security trading in market. Trading volume and its determinants are well researched areas in developed countries, but the problem is that very little literature is available regarding Pakistan market to explore this relationship. So this study aims to focus on examining the determinants of trading volume and tries to fill this gap.

2 Literature Review

Many researchers have conducted researches on the relationship between trading volume and its determinants from different view point in different cultures, some of which have findings that are valuable for this present study. A limited review of the different efforts

of research regarding relationship between trading volume and its determinants are cited here-in-after;

2.1 Abnormal Return and Trading Volume

Wang (1993, 1994) stated that turnover should be negatively related to the liquidity premium. He developed a model in which he examined the nature of investor's heterogeneity and behavior of volume in relation to changes in price. It was observed that the information heterogeneity may lead to either high trading or low trading volume. Another study which was examined by, Lo and Wang (2000) found different results in relation to abnormal return and volume; they stated that during some period there exists positive relationship between volume and returns; whereas, during some other period, a negative relationship between volume and returns exists. Furthermore, Hartian and Sitorus (2015) examined the relationship between liquidity and stock return, by using the data of 10 developed and 16 developing countries. Findings of the study stated that a significant positive relationship between liquidity and stock returns exists in developing countries; whereas, in case of developed countries there exists a significant negative relationship between liquidity and stock return. So the relationship between volume and return may either be positive or negative. On the basis of above mentioned studies we have developed the following hypothesis:

H1. There is a significant relationship between abnormal return and trading volume.

2.2 Risk (Systematic and Residual Risk) and Trading Volume

Lo and Wang (2000) examined the association between trading volume and risk, which was proxied by beta. They found that the impact of beta on measure of trading activity is explained by the differences of opinions among investors. Chen et al. (2001) in their study examined the affiliation between trading volume, stock returns, and volatility. It was observed that there exists a positive relationship between trading volume and volatility of returns. Wang et al. (2005) investigated the affiliation between volume and stock return volatility; postulating that a significant relationship between volume and volatility of returns exists. Mala and Reddy (2007) examined the volatility of stock market in Fiji. It was observed that 7 out of 16 listed firms show volatile traits. Findings of their study suggested that rate of interest has a major impact on volatility of stocks in market. Rehman et al. (2012) investigated the connection between risk-return and trading volume at KSE-100. Their findings indicated that the presence of a significant relationship between risk- return and trading volume. Furthermore, Al Samman and Al-Jafari

(2015) also examined the relationship trading volume and volatility; reporting a significant relationship between the two. Therefore, the following hypothesis was developed:

H2. There is a significant positive relationship between risk and trading volume.

2.3 Size and Trading Volume

Earlier studies demonstrated that the relationship between firm size and turnover can be either positive or negative. Lo and Wang (2000) investigated the affiliation between firm size and turnover. It was found that firm size has negative relationship with turnover during the period of 1962-1971 and a positive relationship after that. (Tripathy, 2011) investigated the association between size and trading volume; and found that there is a negative relationship between firm size and trading volume. Furthermore, Moradi (2015) postulated that there is an insignificant relationship between firm size and stock return, suggesting that from investor point of view, small and big companies are equally trustworthy. As per the aforementioned literature, we have developed the following hypothesis.

H3. There is significant relationship between size and trading volume.

2.4 Institutional Holding and Trading Volume

Earlier studies documented that Institutional ownership is a measure of heterogeneity and further suggested that trading practices of institutional investor is different from individual investors. Chan and Lakonishok (1995) explored the behavior of stock prices and institutional trading; their results indicated that there is a strong relationship between institutional trading and stock returns. The findings suggested that there are some reasons of high trading of institutional investors. Generally, institutional investors hold larger proportion of shares as compared to individual and keep observing firm's activities in market. Second, institutional investors in a stock when they initiate a new position, act as momentum trader in market, and when terminate their position or re-balance their portfolio they follow contrarian approach in stock market. Nofsinger and Sias (1999) examined the trading behavior of investors and found that there is a positive relationship between institutional investors and turnover. Investors (institutional as well as individual) behave differently in response to release of macro-economic or specific news. Institutional investors can manage their portfolio better than individual investors. Tkac (1999) explored the trading volume with respect to individual trading activity as well as market wide trading. His study findings suggested that there is a positive relationship between institutional ownership and turnover. The study findings further indicated that institutional investors have more active strategies than an individual investor in market. As per above mentioned studies we have developed the following hypothesis.

H4. There is a significant positive relationship between institutional holding and trading volume.

2.5 Dividend Yield and Trading Volume

Green (1980) investigated the stock price behavior around ex-dividend days; postulating that there is a significant positive relationship between trading volume and dividend yield. Findings of his study suggested that there exists tax-induced clientele effect. Koski and Scruggs (1998) also examined the affiliation between trading volume and dividend yield at New York Stock Exchange. Evidence of significant abnormal trading volume by securities dealers exist around ex-dividend days which is positively related to dividend yield. Graham and Kumar (2006) examined the trading activity of households and individuals; they found that there is a significant positive relationship between trading volume and dividend yield. Furthermore, the traders buy shares before ex-dividend day and sell it shortly after, thereby increasing the trading activity in market. Felixson and Liljeblom (2008) examined the trading activity of investors around ex-dividend day; it was observed that there exists a tax induced clientele effect. Chen et al. (2013) investigated ex-dividend price behavior and investors trading. Result of the study showed that a significant positive relationship between ex-dividend day and trading volume exists. The results further suggested that different tax rate is an important factor, which affects share price and investor behavior in market. Furthermore, Majanga (2015) also found significant positive association between dividend and stock price. On the basis of above mentioned studies we have developed the following hypothesis.

H5. There is a significant positive relationship between dividend yield and trading volume.

2.6 Positive/Negative returns and Trading Volume

In literature it is widely documented that the relationship between trading volume and stock returns might be asymmetric, which could arise due to disposition effect and investor overconfidence. Statman et al. (1999) examined the investor overconfidence, disposition effect and trading volume, and found that individual stock turnover is positively related to lagged security returns (disposition effect) and lagged market returns (overconfidence hypothesis). Statman et al.

(2006) investigated the turnover of individual security and lagged market returns. It was found that there exist a significant positive relationship between turnover of individual security or stock returns (disposition effect) and lagged market returns (overconfidence hypothesis). Prosad et al. (2013) investigated the two behavioral models overconfidence and disposition effect, in Indian market. The results of their study suggested that the biases, overconfidence and disposition effect prevail in market. Tariq and Ullah (2013) investigated the investor overconfidence of stock market in Pakistan. They found that a significant relationship between return and volume of trading securities. Overall, above-mention studies validate the existence of significant relationship between returns and trading volume, so based on earlier literature we have developed the following hypothesis:

H6. There is a significant relationship between asymmetric effect and trading volume.

3   Research Methodology

The sample size in this study consists of 50-High Capitalized Non-Financial firms, selected from 10 different Sectors for the period of 10 years, i.e. 2005 to 2014. The data were obtained from the various sources such as Business Recorder and companies Annual reports. The sample includes only non-financial firms functioning in Pakistan from different industries such as, Automobile Assembler, Automobile Parts, Cement, Fertilizer, Food & Personal Care Products, Glass & Ceramics, Oil and Gas, Pharmaceutical, Sugar, and Textile. In this research the variable decomposition has been followed by study of Kumar et al. (2009) for the prediction of Determinants of Trading Volume. Trading volume is used as dependent variable. For the purpose of measurement, we take average of natural log of turnover each day.

The specific form of the econometric model that is as follows:

$$TV_{it} = \alpha + \beta_1 AR_{it} + \beta_2 SR_{it} + \beta_3 RR_{it} + \beta_4 SZ_{it} + \beta_5 DY_{it} + \beta_6 INST_{it} + \beta_7 PRET_{it} + \beta_8 NRET_{it} + \epsilon_{it}$$

where,

AR = Abnormal return is used as independent variable. For measurement purpose alpha is used as proxy of this variable.

Abnormal Return = Ri - Rf = α + β [Rm- Rf]

SR = Systematic risk beta (β) is used as proxy of variable and RR: Residual risk ($6e^2$) is used as proxy of variable. SZ: Size is used as independent variable. For measurement of size, we take average of natural log of market capitalization each day.
DY: Dividend Yield is used as independent variable. For measurement of dividend yield we use following

formula which is given below;
Dividend Yield= Cash dividend per share Market price of share

INST: Institutional Holding, is used as independent variable. Institutional Holding refers to the sum of percentage of common shares held by institutional investors, including insurance companies, mutual funds, banks, investment firms, government firms and other large scale financial institutions out of total capital share of the firm

PRET/ NRET: Positive Return, Negative Return

In literature it is widely documented that the relationship between trading volume and stock returns might be asymmetric. In order to check asymmetric effect that could rise due to disposition effect and investor overconfidence, we used positive returns and negative returns by following the study of Kumar et al. (2009); Statman et al. (1999). The current study used OLS, Panel data technique for the analysis of the results.

4   Results and Discussion

This section includes Descriptive statistics, Variance inflation factor, and Regression Analysis. Descriptive statistics shows (mean value, minimum value, maximum value and std. deviation), Variance inflation factor is used to test the problem of multicollinearity and Regression analysis using panel data analysis. Results of the following given below;

As per Table (1), the results show that the average trading volume of high capitalized firm listed in Pakistan is 10.47 thousands (converted to log) and average volatility in trading volume is 3.63. The mean value of firm size is higher 22.3020 and lower value in case of negative returns -0.10463. While, in case of std. deviation institutional ownership shows higher value 3.836345 and lower value of residual risk 0.00714.

In order to check the multicollinearity problem in our data we used variance inflation factor. Table (2) indicates that explanatory variables are independent in nature. The value of VIF test ranging from 1.039179 to 4.818465, which is tolerable limit. So the problem of multicollinearity does not exist.

4.1   Regression Analyses

Panel data analysis includes common effect model, fixed effect model and random effect model. Likelihood Ratio test is applied to find out which model is appropriate; common or fixed model.

As per results shown in Table (3), the probability of cross section is significant, which means that the appropriate model is fixed effect model, as the probability

Table 1: Descriptive Statistics

Variables	Mean	Maximum	Minimum	Std. Deviation
TV	10.47285	17.71267	2.922265	3.638996
DY	0.041015	0.1123	0.0084	0.018316
AR	-0.04697	0.091912	-0.09911	0.03834
INST	15.50307	23.5	8.22	3.836345
SR	0.378911	2.12	-1.15	0.431176
RR	0.024436	0.049991	0.01099	0.00714
PRET	0.049776	0.099234	0.010187	0.01997
NRET	-0.10463	-0.025554	-0.27447	0.071992
SZ	22.30203	28	17.4507	1.918706
Observations	500	500	500	500
Cross sections	50	50	50	50

value is less than 5% significant level. Now to choose the appropriate model between fixed and random effect model, the study perform the Hausman test as given below.

Similarly, it is clear that the value of the probability is significant and less than the 5% significant level, indicating that the best appropriate model is fixed effect model. Hence, this study is considering fixed effect model as their final model to be analyzed, which can be discussed below.

Table (5) shows that the adjusted R-square of fixed effect model is 0.73, which means that 73% variation in dependent variable is explained by independent variables. The coefficient of constant is 0.16, which means that the average trading volume of high capitalized listed companies is 16%. The variable abnormal return has negative and significant relationship with trading volume, indicating that one unit change in abnormal return result in 10.18 unit change in trading volume of the companies.

5 Discussion

The results of the study are consistent with Wang (1993), who stated that turnover should be negatively related to liquidity premium. Further, as per Lo and Wang (2000); Wang (1994), the information heterogeneity may lead to either high trading or low trading volume. In literature, it is widely discussed that volatility has two types, i.e., systematic and unsystematic risk. The variable of systematic risk has positive and significant relationship with trading volume, indicating that

one unit change in systematic risk result in 1.07 unit change in trading volume of the companies. The variable of un-systematic risk has positive and significant relationship with trading volume, indicating that one unit change in residual risk result in 36 unit change in trading volume of the companies. Results of the current study are consistent with the findings of Al Samman and Al-Jafari (2015); Chen et al. (2001); Lo and Wang (2000); Mala and Reddy (2007); Rehman et al. (2012); Wang et al. (2005).

These studies found positive and significant effect on trading volume. The variable size has positive and significant relationship with trading volume, indicating that one unit change in size result in 0.44 unit change in trading volume of the companies. Earlier studies demonstrated that the relationship between firm size and turnover can be either positive or negative. Our results are further consistent with Lo and Wang (2000), i.e. larger firms have more diverse ownership and greater information asymmetry, which will lead to more active trading in market. Whereas, inconsistent with the study of Tripathy (2011), Moradi (2015), which stated that the variable institutional holding has insignificant relationship with trading volume. Furthermore, our findings differ with the results of Chan and Lakonishok (1995); Kumar et al. (2009); Nofsinger and Sias (1999); Tripathy (2011), i.e. The variable dividend yield has positive and significant relationship with trading volume, indicating that one unit change in dividend yield result in 16.67 unit change in trading volume; whereas, the findings of Chen et al. (2013); Felixson and Liljeblom (2008); Graham and Kumar (2006); Green (1980); Koski and Scruggs (1998) have further been validated as these

Table 2: Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
DY	56.18226	6.339044	1.052221
AR	58.40866	12.0005	4.793277
INST	0.001451	20.6942	1.191839
NRET	4.202227	3.789172	1.215899
PRET	46.67321	7.507956	1.039179
RR	377.7381	13.69276	1.075072
SR	0.464247	8.547042	4.818465
SZ	0.006387	179.0069	1.312598

Table 3: Likelihood Ratio Test: (F test)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	16.36773	(-49,442)	0.000
Cross-section Chi-square	517.3962	49	0.000

studies found positive and significant effect on trading volume. Furthermore, results of the current study suggest the presence of tax induced clientele effect in market. The variable of positive return has positive and significant relationship with trading volume, indicating that one unit change in positive return result in 15.91 unit change in trading volume. And negative return has positive and significant relationship with trading volume, indicating that one unit change in negative return result in 4.046 unit change in trading volume of the companies. Our findings are further validated by Kumar et al. (2009); Prosad et al. (2013); Statman et al. (1999); Tariq and Ullah (2013), as they found significant effect on trading volume.

6 Conclusion

This research study explored the relationship between trading volume and its determinants of the fifty (50) high capitalized non-financial firms, which are listed at KSE-100 index in Pakistan. Descriptive statistics is used to get snap shot of data, it includes, mean, median, standard deviation, minimum and maximum. VIF test is used to test the problem of multicollinearity. Furthermore, we apply panel regression models, in which fixed effect model is selected as final model. The study used trading volume as dependent variable, and Abnormal return, Dividend yield, Institutional holding, Systematic risk, Residual risk, Positive return, Negative return and Size as independent variables.

The variable Abnormal return has negative and significant relationship with trading volume, indicating that low liquidity of stocks have lower turnover in Pakistani market. Dividend yield has positive and significant relationship with trading volume, meaning that announcement of dividends in Pakistani market lead to increase trading activity. Further, institutional ownership has insignificant relationship with trading volume, indicating that in Pakistani market individual investors are more active than institutional investors. Whereas, volatility has positive and significant relationship with volume, stating that both market and company related factors are affecting investor's behavior in market. Moreover, firm size has positive relationship with volume, indicating that in Pakistan lager firms are

Table 4: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	68.020858	8	0.000

Table 5: Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.16003	3.388543	0.047227	0.9624
AR	-10.1808	5.236604	-1.944161	0.0525
DY	16.67051	6.151176	2.710135	0.007
INST	-0.034508	0.035144	-0.981908	0.3267
SR	1.072415	0.471652	2.273741	0.0235
RR	35.97781	13.4291	2.679094	0.0077
PRET	15.9134	8.265532	1.925273	0.0548
NRET	4.046745	1.61014	2.513288	0.0123
SZ	0.4358	0.14171	3.075296	0.0022
Adjusted R-squared		0.733595		
F-statistic		25.10685		
Prob (F-statistic)		0.000		

more preferred by investors in market. Furthermore, both behavioral factors overconfidence and disposition effect prevail in Pakistani stock market.

6.1 Recommendations

Government and regulatory bodies should make certain polices to attract and retain foreign as well as local investors to invest in Pakistan, by examining factors which are affecting investors trading decisions in market. Investors should diversify portfolio by investing in more than one stock, as well as invest in large firms which are providing more stable returns in the form of dividends.

6.2 Future Research Directions

The current study chose only those companies which are listed at KSE and excluded every other company. There is no doubt that KSE is biggest stock exchange and is a representative for Pakistani market, however if more stock exchanges are to be included in the study, the result would definitely be more generalize-able in Pakistan. Moreover, the current study did not use the data of financial companies, so in future a comparable study can be conducted where at one end a sample of financial companies can be taken and at other end non-financial companies can be used. This study used only a sample of fifty companies, which can be extended to large sample of companies, in order to generalize the study results. Furthermore, market re-

form of Pakistani stock market, which is merger of three stock exchanges (KSE, LSE, and ISE) into Pakistan stock exchange, can be studied. Another suggestion for future investigation could be to test more observations of the long term and short term variations in trading volume separately.

References

Al Samman, H. and Al-Jafari, M. K. (2015). Trading volume and stock returns volatility: Evidence from industrial firms of oman. *Asian Social Science*, 11(24):139.

Bundoo, S. (2000). The mauritius stock exchange: Sectoral analysis, risk and return. *University of Mauritius Research Journal*, 3(1):81–103.

Chan, L. K. and Lakonishok, J. (1995). The behavior of stock prices around institutional trades. *The Journal of Finance*, 50(4):1147–1174.

Chen, G.-m., Firth, M., and Rui, O. M. (2001). The dynamic relation between stock returns, trading volume, and volatility. *Financial Review*, 36(3):153–174.

Chen, H.-L., Chow, E. H., and Shiu, C.-Y. (2013). Ex-dividend prices and investor trades: Evidence from taiwan. *Pacific-Basin Finance Journal*, 24:39–65.

Felixson, K. and Liljeblom, E. (2008). Evidence of ex-dividend trading by investor tax category. *The European Journal of Finance*, 14(1):1–21.

Gervais, S. and Odean, T. (2001). Learning to be overconfident. *Review of Financial studies*, 14(1):1–27.

Graham, J. R. and Kumar, A. (2006). Do dividend clienteles exist? evidence on dividend preferences of retail investors. *The Journal of Finance*, 61(3):1305–1336.

Green, J. (1980). Taxation and the ex-dividend day behavior of common stock returns. *NBER Working paper*, 496.

Hartian, K. R. and Sitorus, R. E. (2015). Liquidity and returns: Evidences from stock indexes around the world. *Asian Economic and Financial Review*, 5(1):33.

Karpoff, J. M. (1987). The relation between price changes and trading volume: A survey. *Journal of Financial and quantitative Analysis*, 22(01):109–126.

Koski, J. L. and Scruggs, J. T. (1998). Who trades around the ex-dividend day? evidence from nyse audit file data. *Financial Management*, pages 58–72.

Kumar, B., Singh, P., and Pandey, A. (2009). The dynamic relationship between price and trading volume: Evidence from indian stock market.

Lo, A. W. and Wang, J. (2000). Trading volume: definitions, data analysis, and implications of portfolio theory. *Review of Financial Studies*, 13(2):257–300.

Majanga, B. B. (2015). The dividend effect on stock price-an empirical analysis of malawi listed companies. *Browser Download This Paper*.

Mala, R. and Reddy, M. (2007). Measuring stock market volatility in an emerging economy. *International Research Journal of Finance and Economics*, 8(5):53–71.

Moradi, N. (2015). The relationship between liquidity risk and stock returns. *Jurnal UMP Social Sciences and Technology Management Vol*, 3(3).

Mubarik, F. and Javid, A. Y. (2009). Relationship between stock return, trading volume and volatility: Evidence from pakistani stock market.

Nofsinger, J. R. and Sias, R. W. (1999). Herding and feedback trading by institutional and individual investors. *The Journal of finance*, 54(6):2263–2295.

Prosad, J., Kapoor, S., and Sengupta, J. (2013). Impact of overconfidence and the disposition effect on trading volume: An empirical investigation of indian equity market. *International Journal of Research in Management and Technology*, 3(4):109–116.

Rehman, A. U., Muhammad, B., Shah, A. S. Z., and Mushtaq, R. (2012). The empirical relationship between risk-return and trading volume in karachi stock exchange. *Journal of Risk and Diversification*, 4:36–43.

Reilly, F. K. and Brown, K. C. (2002). *Investment analysis and portfolio management*. .

Shefrin, H. and Statman, M. (1985). The disposition to sell winners too early and ride losers too long: Theory and evidence. *The Journal of finance*, 40(3):777–790.

Statman, M., Thorley, S., and Vorkink, K. (1999). Investor overconfidence and trading volume. *Review of Financial Studies*, 19(4):1531–1565.

Statman, M., Thorley, S., and Vorkink, K. (2006). Investor overconfidence and trading volume. *Review of Financial Studies*, 19(4):1531–1565.

Tariq, B. and Ullah, N. (2013). Investor overconfidence and stock returns: Evidence from pakistan. *IOSR Journal of Business and Management 8 (1)*, pages 77–84.

Tkac, P. A. (1999). A trading volume benchmark: Theory and evidence. *Journal of Financial and Quantitative Analysis*, 34(01):89–114.

Tripathy, N. (2011). The relation between price changes and trading volume: A study in indian stock market. *Interdisciplinary Journal of Research in Business*, 1(7):81–95.

Wang, J. (1993). A model of intertemporal asset prices under asymmetric information. *The Review of Economic Studies*, 60(2):249–282.

Wang, J. (1994). A model of competitive stock trading volume. *Journal of political Economy*, 102(1):127–168.

Wang, P., Wang, P., and Liu, A. (2005). Stock return volatility and trading volume: Evidence from the chinese stock market. *Journal of Chinese Economic and Business Studies*, 3(1):39–54.