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# Exploring the Evidence on changes in time varying volatility around bonus and rights issue: a study based on KSE

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## ABSTRACT

**Purpose:** This Purpose of this study examines the volatility in stock prices after announcement of right and bonus issue. This study result showed the increase in volatility after announcement of right and bonus issue.

**Methodology/Sampling:** This study data collected as long-term perspective which showed the historically volatility and fluctuate with the change of time varying volatility after and before announcement of right and bonus issue. The data was collected fifteen days share prices after and before announcement of right and bonus issue for the period of 2010 to 2012 and the statistical test includes ARCH and GARCH.

**Findings:** The results show that the relationship between prior prices to current price volatility the mean changes in volatility. This study result out with the help of techniques which is showed the historically volatility and fluctuations before and after announcement of right and bonus issue. The results taken on three year data of 26 listed company which comes in kse-100 index. There is significance which means increase the volatility after and before announcements of right and bonus issue.

**Practical Implications:** This study explores the implications historical bonus and right issues and their effects on the stock prices. This study is a unique for Pakistani environment and it is helpful for the top management of the company and the investors.

**Keywords:** Volatility, bonus issues, rights issue, GARCH

**Jel Classification: F23, M13**

*The material presented by the author does not necessarily portray the viewpoint of the editors and the management of the Institute of Business & Technology (IBT)

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## 1. Introduction

### Overview

This study consists on volatility in after and before announcement of right and bonus issue of listed companies which are come in KSE -100 indexes. Basically bonus issue provided by directors of company in the end of year proportion of net profit. Bonus issue provided to share holder to their proportion of share holding. Same as right issue is also provided by directors to share holder to their proportion of share holding. Announcements or fresh information, for the capital markets, is synonymous with trade volatility leading to unexpected returns and changes in perception risk. Studies relating to the timing and effects of such announcements and their eventual dissemination have been made by many authors

In this study Theories and research on volatility in bonus and rights issues announcements. In order to better understand how the capital markets react on the announcement of bonus and right issue. The announcements create high fluctuations in stock market after announcement of bonus and right issue.

The results taken on three year data of 26 listed company which comes in kse-100 index. The data collected 15 days prices before and after book closure date of each company. There is significance which means increase the volatility after and before announcements of right and bonus issue. After the computation of S.D I had taken the difference of (post-pre) which shows the figure of fluctuation in prices. The fluctuations results found with the help of SPSS software. Further results showed the increase volatility before and after announcement of right and bonus issue. Historical volatility resulted throughout the Arch/Garch techniques which is most appropriate tool for find out the conditional and unconditional volatility in financial market. . This study result show the significance which means is there is high volatility before and after right and bonus issue announcement.

The data has been collected such as the prices of 26 listed companies which come in KSE-100 Index. Those prices are 15days before and after announcement of Bonus and right issue. There is a positively relationship between prior and current price.

**Problem Statement**

To examine the long term and short term volatility in stock prices after and before the announcement of right and bonus issue and the change in time varying volatility approach.

**Background, Objectives and Significance of the study**

This Purpose of this study examines the volatility in stock prices after announcement of right and bonus issue. This study result showed the increase in volatility after announcement of right and bonus issue. This study data collected as long-term perspective which showed the historically volatility and fluctuate with the change of time varying volatility after and before announcement of right and bonus issue. The data was collected fifteen days share prices after and before announcement of right and bonus issue for the period of 2010 to 2012. The results show that the relationship between prior prices to current price volatility the mean changes in volatility. This study result out with the help of ARCH and GARCH techniques which is showed the historically volatility and fluctuations before and after announcement of right and bonus issue. The results taken on three year data of 26 listed company which comes in kse-100 index. There is significance which means increase the volatility after and before announcements of right and bonus issue.

The technically analysis result out the author use both approaches which is accept the hypothesis. The result showed the cause of increase the volatility and certainly affected by the specific factor of industry (Mariana Mazzucato and Willi Semmler, 1999). In the final findings with the usage of vector auto regression in modeling volatility and shock movement conduction mechanisms among the US and remaining world has identified that shocks of US are quickly transmitted to the whole world (Thavaneswaran, Singh & Appadoo, 2006).

This study is aimed to examine the long term and short term volatility in stock prices after and before the announcement of right and bonus issue and the change in time varying volatility approach.





## 2. Literature Review

Bredin, Gavin and Reilly (2005) analyzed the changes of volatility in stock prices after and before announcements of bonus and right issue in the perspective of short term and long-term. The results of this study had shown the increased volatility after the announcement of Right and bonus issue. After the announcement of right and bonus issue mean have been change both before and after prices and unconditional and persistence volatility have been increased. According to other authors decrease in volatility occur after announcement of seasoned capital issue.

Choi, Wilson and Tourani-Rad (2006) elaborated the methodology of find out the volatility in stock prices after announcement of right and bonus issue. The author compute the S.D of 20 to 100 days after and before announcement of right and bonus issue for find the historical volatility. Further he used the ARCH/GARCH (1, 1) technique for unconditional volatility change with the time varying. Further result had shown the increasing in historical volatility after announcement of right and bonus issue. Variance increased of unconditional and persistence volatility after announcement of right and bonus issue. This theory and evidence prove that announcement of another type of issue and seasoned capital issue has high volatility.

Cheong, Olshansky and Zurbruegg (2011) explained about the limitation of small sample size of right and number of bonus issue in the capital market and defining criteria is very small although bonus and right issue and seasoned capital issue announcement are limited in India. This study suggests the short term impact of announcement of right and bonus issue on company's stock return. He never studied on long term impact and operating performance of companies. He could not study about the relationship between the reaction of stock prices, liquidity and volatility.

Dixit, Yadav and Jain (2010) give the confirmation that after the news announcement regard any type of issues increase the volatility in the Stock market of India although after the news announcement volatility continue in the stock market. As investor point of view the volatility and fluctuation in prices occur after the announcement and result of right and bonus issue. An investor can predict and make the strategy accordingly their investment.

McMillan and Speight (2007) highlights the companies point of view that what they

thinking about the volatility which is created by after announcement of right issue and bonus issue. Company can use the announcement of right and bonus issue as indicator. Companies observed the market sentiment and then release the news for create the hype in the stock market and the purpose of this increase the volatility before the leak out the financial information or news about the bonus and right issue Ponzi (2001) indicates that news announcement encourage to volatility which output in higher opportunity for the speculator and short term investor can take the huge profit. The volatility of change in time varying is the sign of fluctuation in the stock market. During this pattern speculator and risk taker investor making the huge profit and gain a maximum advantage form this opportunity.

Ircar and Papanicolaou (1999) analyzed the volatility after announcement of bonus and right issue without any observation of prior literature. This study achieved the objected through the find out the volatility increase after announcement of right and bonus issue with the help of ARCH and GARCH technique which most appropriate tool for find out the volatility (Malhotra, Thenmozhi, & Kumar, 2013).

Michelfelder and Pandya (2005) has analyzed the inevitability and instability regarding returns of stocks for seven rising markets related to six countries and made comparison with full-grown markets of Japan and U.S. In this regard stock returns having existence of surplus kurtosis, instability clustering and skewness is tested through SGED. The results regarding this paper has shown superior volatility is present in growing markets however decreasing determination of shocks are there in grown-up markets. In the final findings with the usage of vector auto regression in modeling volatility and shock movement conduction mechanisms among the US and remaining world has identified that shocks of US are quickly transmitted to the whole world.

Thavaneswaran, Singh and Appadoo (2006) have proposed and checked risk level of New Zealand by using model regarding a time varying beta market of country. The beta of the country has permitted to differ the same as purpose of different macroeconomic variables having net foreign borrowing of government, bill rate of 90-day, 10-year rate of bill, price of wool, index of weighted trade, price index of manufacturers, retail trade, recent account balance and supply of money. The relative measure between country volatility and variables regarding macroeconomic area has tested through using methodology of multivariate regression between September 1985 and March 2000. The





end results have shown considerable impact related to exchange rate of the US dollar and index of monetary conditions on country beta of New Zealand. There is having huge deal of volatility preceding to following immediately with crash market of stock 1987 has presented by worldly variance of country beta. The beta was faraway less unstable for the period of 1990s. Research boundaries have shown results with the reference of important macro-economic statistics regarding data accessibility that has limited the variable set. On the other hand realistic implications have put light on raising importance of country level risk in the assessment of out of shore investments and also related to valuation of investments in overseas markets specially the suitable cost of capital. Further results have indicated the better approvals that had never been addressed before in New Zealand between beta of country and macro-economic indicators. Mazzucato and Semmler (2002) compares the volatility of stock prices and volatility in market share and what the relationship with the industry life cycle. The study has tied to find out the volatility in market share and specific variable of industry with the help of fundamentally and technically. The author showed the relation with the specific automotive industry of US who have neither a finance theory nor a life cycle to directly create the problem. The technically analysis result out the author use both approaches which is accept the hypothesis. The result showed the cause of increase the volatility and certainly affected by the specific factor of industry.

The study of Liow and Huang (2006) found out the impact over returns in property market affected by the volatility in interest rate. He studied on the specific property market of Asian. He taken long term data of analyzes the level of interest rate, over stock return and volatility in interest rate. The study used the GARCH technique for analyze over return of property stock by monthly. This result shown that the less level of volatility in interest rate and the stock market of property is very sensitive therefore there is less impact of long term and short term interest rate. The whole result shown that doesn't have the specific pattern of changes in the stock market of property. Investor compares to international real estate with financial asset pricing as well as understands that significantly increase real estate price as property stock return (Kim Hiang Liow and Qiong Huang, 2006).

Michelfelder and Pandya (2005) has analyzed the inevitability and instability regarding returns of stocks for seven rising markets related to six countries i.e. and made comparison

with full-grown markets of Japan and U.S. In this regard stock returns having existence of surplus kurtosis, instability clustering and skewness is tested through SGED. The results regarding this paper has shown superior volatility is present in growing markets however decreasing determination of shocks are there in grown-up markets. In the final findings with the usage of vector auto regression in modeling volatility and shock movement conduction mechanisms among the US and remaining world has identified that shocks of US are quickly transmitted to the whole world.

Clifton (2004) has suggested that market opponent has confidential information regarding company asset, their buying and selling activities dipict news in the market.The equilibirium flow is catogorize caused by the nature of prices which is affected be the news.In financial market news has wietage which impact is very large on the financial market and other markets.investigator tied to understand the relationg between news and financial market (Clifton Green, T. 2004).

The work of Holland (2006) has shown the financail markets that couldnot be completely explained through single index models however they have not accounted for multiple indexes or more than two indexes between stocks. Correlation between in currency showed bit larg eigenvalue where the prices of companies make a certainity in market. The author has studied the interactions in the midle of market shares and difficult exchanges through finacial market models of single index and elaborated a financial market model of multi-share.Further the writer has compared the variance of price changes and individuality of volatility with emperical evidences. The results showed positive quantitative hamonic relation with observations (Ponzi, 2001). Holland (2006) has studied the main troubles related to fund managers in selection of stocks full of ambiguity and unawareness and in asset distribution decisions. He has conducted interviews with forty persons manages fund in between October 1997 and January 2000 for methodology and this methodology has shaped the foundation for highlighting general patterns and ideas from corner to corner cases. The seven phase approach was used to separate all the way through and practice the huge amount of case data. The conclusion showed that the case data has discovered the character of personal knowledge plan regarding rational investment and vibrant linkage among these indicators in the significant formation process. In the valuation of company, the case data has given imminant view regarding the arosal of gap in between market value and





value of book and pointed out the particular function of information on rational capital in assesing the company. The activities of fund managing authorities is having pivotal role in dogmatic policy issues regarding inside knowledge, corporate discovery, the corporate supremacy function of instituitions related to finance and control of finncial institutions. The focus of this study is on matters of importnace in progressively more concentrated and worldly FM business.

Debasish (2009) established attention in the result of prospect trade on prices in the fundamental spot marketplace. Sometimes it has been claimed to the beginning of unoriginal trading will destablize the connected spot market and subsequently led to an increse in price instability of spot nearby. Some have presented the different veiws related to opening of potential trading will become stable prices and as a result guide to declining in price instability.

Tsai and Chen (2009) made about the volatility which highlights asymmetric behavior in between price and house movement might report for home market defensiveness. They have used last quarter data regarding house prices of UK from 1955 to 2005 and after that the most appropriate variance and mean equations to calculate approximately uncertain heteroscedasticity related to fluctuating returns of home prices have chosen. For the examination of influential effect of volatility a variable is included in GARCH model. The outcome of test showed that the present instability of housing returns might decrease at the same time lag innovation is unconstructively connected with return of houses. The findings have pointed out that volatilities among up and down movement of house prices are not symmetric. It has been found out that here is suspicious outcome in the housing market of UK throughout the periods of data used. Though autocorrelation and heteoscedasticity in the real estate volatile prices in different articles and amongst those papers some have identified large number of benefits regarding housing markets and hence volatile pattern is shown.

**Hypotheses of the Study**

H1: There is high volatility of stock prices due to announcement of bonus issue.

H2: There is high volatility of stock prices due to announcement of right issue.

## 3. Research Methods

**Methods of Data Collection**

Secondary data will be collected from KSE for the period of 2010 – 2012 of 26 Companies using through ARCH and GARCH techniques.

**Sampling Technique**

This study considers the application of random sampling technique

**Sample size**

A sample of 26 issues of 15 days prices before and after announcement of bonus and right issue have been taken from the website of KSE.

n = Daily data of 26 Companies

t = Three years data 2010 - 2012

**Research Model Developed**

$$\Delta STDEV = STDEV_{post} - STDEV_{pre}$$

Where,

STDEVpre, captures the volatility before the bonus/rights issue announcement, STDEVpost captures the volatility after the bonus/rights issue announcement.

$$\varepsilon_t \sim N(0, h) h_t = \alpha_0 + \alpha_1 \varepsilon_t^2 - 1$$

Here $\varepsilon_{t-1}^2$ is the lagged squared error term. It specifies that the current value of the variance of the errors depend upon previous squared error terms. Since h, is the conditional variance, all of the parameters are constrained to be strictly non-negative.

$$\varepsilon_t \sim N(0, h_t)$$
$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 h_{t-1}$$





Where $h_{t-1}$ represents previous period forecast variance an $\varepsilon_{t-1}^2$ is the lagged (previous period) squared error.

Since, $h_{t-1}$ is the conditional variance, a and b parameters are restricted to be non-negative.

**Statistical Technique**

This study applies ARCH as statistical test for data analysis.

## 4. Results

**Findings and interpretation of the results**

| **Table 1 Average before and after Issue of Shares** | | | |
|---|---|---|---|
| | **Bonus Issue** | | |
| | Before | After | Difference (Post-Pre) |
| Mean | 8.59421715 | 3.6116476 | 4.98255238841894 |
| | | | |
| | **Right Issue** | | |
| | Before | After | Difference (Post-Pre) |
| Mean | 1.91270354 | 9.02781014 | -8.11510659120875 |
| | | | |

The Table 4.1 shows the average of returns before and after the issuance of share. The Bonus share has positive mean difference of 4.98, and that of Right Issue has negative mean difference of 8.115.

In order to measure the volatility the ARCH model has been applied. The results of ARCH model are discussed below:

**Table 2 ARCH Model for Bonus Issue**

Dependent Variable: Bonus Issue
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/19/14 Time: 14:35
Sample: 1 26
Included observations: 26
Convergence achieved after 45 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| BEFORE | 0.353529 | 0.015357 | 23.02046 | 0.0000 |
| C | -0.010965 | 0.121289 | -0.090406 | 0.9280 |
| Variance Equation | | | | |
| C | 0.190816 | 0.040363 | 4.727485 | 0.0000 |
| RESID(-1)^2 | -0.194475 | 0.058780 | -3.308513 | 0.0009 |
| GARCH(-1) | 1.043140 | 0.115202 | 9.054840 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.854914 | Mean dependent var | 3.611665 |
| Adjusted R-squared | 0.848868 | S.D. dependent var | 4.845680 |
| S.E. of regression | 1.883789 | Akaike info criterion | 3.434304 |
| Sum squared resid | 85.16788 | Schwarz criterion | 3.676245 |
| Log likelihood | -39.64595 | Hannan-Quinn criter. | 3.503974 |
| Durbin-Watson stat | 1.314905 | | |

This result shows the relationship between prior price and current price through use ARCH/GARCH and technique. Above the given table shows the figure of GARCH 0.000 which is less than 0.05 its means that this is significance. This result shows the there is volatility in the price of bonus issue before and after announcement. R-square shows the 0.848 is significance in the model. Hence first hypothesis is accepted.





**Table 3 ARCH Model for Right Issue**

Dependent Variable: Right Issue
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/19/14 Time: 15:57
Sample: 1 26
Included observations: 26
Convergence achieved after 48 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| BEFORE | 0.178312 | 0.056388 | 3.162248 | 0.0016 |
| C | 0.391550 | 0.118894 | 3.293273 | 0.0010 |
| Variance Equation | | | | |
| C | -0.014205 | 0.014663 | -0.968719 | 0.3327 |
| RESID(-1)^2 | -0.207021 | 0.315802 | -0.655541 | 0.5121 |
| GARCH(-1) | 1.504928 | 0.427265 | 3.522232 | 0.0004 |

| | | | |
|---|---|---|---|
| R-squared | 0.447728 | Mean dependent var | 0.902781 |
| Adjusted R-squared | 0.416383 | S.D. dependent var | 0.843751 |
| S.E. of regression | 0.746906 | Akaike info criterion | 1.338839 |
| Sum squared resid | 13.38886 | Schwarz criterion | 1.580780 |
| Log likelihood | -12.40490 | Hannan-Quinn criter. | 1.408509 |
| Durbin-Watson stat | 1.661400 | | |

This result shows the relationship between prior price and current price through use ARCH/GARCH and technique. Above the given table shows the figure of GARCH 0.0000 which is less than 0.05 its means that this is significance. RESIDE (-1) $^2$ shows the 0.0180 heteroscedacity in the prices which means is volatility. This result shows the there is volatility in the price of bonus issue before and after announcement. R-

square shows the 0.416.

## 5. Discussions, Conclusion, Policy Implementation and Future Research

### Discussions

As per Base article researcher researched the same variable of and use the same techniques as I applied to in my study but the difference is that I taken twenty six listed companies stock price while base and related article to this study taken the all over sector listed and unlisted and they found that only bonus issue shows the volatility before and after announcement rather than right issue he said that right issue doesn't show the volatility in before and after announcement but I tried to that both bonus and right issue has volatility before and after bonus and right issue announcement. I used the ARCH/GARCH technique for find out the volatility which most appropriate technique for check the volatility. Most of the researcher use that technique in all field such as stock, funds, house prices, and so on.

### Conclusion

This study I was find out the volatility in the stock prices after and before announcements of the right and bonus issue I conclude in this study that there is high volatility in stock prices and the positive impact on stock prices in the market after announcements and declared the bonus and right issue. When companies announce about they will be issue the bonus and right with the percentage at that time market will change the trend if market trend are going to bearish so then he change the trend as going to bullish pattern which is very risky for investor. The study clearly find out this problem due to this study that there is high volatility after announcements of right and bonus issue.

### Implications

In this research during the data collection and selection of companies I felt problem the mostly companies doesn't issue the bonus right issue consistently yearly basis and not all companies. Therefore after trying I would be able to collect twenty six companies of listed which they issue bonus and right issue but still they were not





those companies which they issue consistently three year.

### Future Research

In future the study can be conducted on the All over sector and all other fields such as Real estate prices, Funds industry etc. this study has researched on three year stock prices volatility in the future can be conducted on five to ten year volatility in all other sector.

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