

## **Demutualization and Stock Market Performance: A Comparative Analysis of Karachi Stock Exchange (KSE)**

Anjum Ihsan<sup>\*</sup>, Aamir Nadeem<sup>†</sup>, Mustafa Afeef<sup>‡</sup> and Maqsood Haider<sup>§</sup>

### **Abstract**

*This study aims to compare the stock market performance of Karachi Stock Exchange (KSE) in terms of daily stock returns of KSE 100 Index, trading volume, market capitalization and traded value. For this purpose, correlation analysis and paired samples t-test were used to analyze the secondary stock market data. The results indicated an insignificant increase in stock returns with a significant increase in trading volume and traded value in the post demutualization period. There also was a significant decrease in market capitalization. Overall, the results are in line with other studies except for market capitalization. This calls for further researches for better investigation and understanding of this specific variable and its implications. Apart from market capitalization, however, this study highlights improvement after demutualization of KSE considering the selected variables.*

**Keywords:** Demutualization, Karachi Stock Exchange, stock returns, trading volume, traded value, market capitalization

### **Introduction**

The stock market performance in general is considered one of the important variables used to assess the economic development. Efforts are directed to facilitate trading in stock exchanges. Demutualization is a recent popular phenomenon exercised to serve the interests of various stakeholders through provision of improved facilities. Demutualization of exchange is the process wherein a stock exchange is converted into a company limited by shares with the purpose to transfer decision making rights from existing members of the exchange to the shareholders after demutualization with ultimate aim to make it public and listed (Hammad *et al.*, 2015). A mutual exchange is owned by its members (brokers) and

---

<sup>\*</sup> Dr. Anjum Ihsan, Assistant Professor, Department of Management Sciences, Islamia College Peshawar. Email: [anjumihsan@icp.edu.pk](mailto:anjumihsan@icp.edu.pk)

<sup>†</sup> Dr. Aamir Nadeem, Department of Management Science, City University of Science & Information Technology, Peshawar.

<sup>‡</sup> Dr. Mustafa Afeef, Assistant Professor, Department of Management Sciences, Islamia College Peshawar

<sup>§</sup> Dr. Maqsood Haider, Assistant Professor, Department of Management Sciences, FATA University, Peshawar

is nonprofit organization having monopoly over the trading whereas in demutualized stock exchange ownership is divided between outsiders and members to bring about a mechanism of transparency and accountability pertaining to the trading rights (Islam and Hossain, 2015). The outsiders in demutualized exchange bring more efficiency than the members of cooperative exchange under the setting of mutual exchange (Hart and Moore, 1996). Besides, the mutual exchanges restrict access of general public in trading because of having control in the hands of brokers (Akhtar, 2002). There are different reasons for demutualization of exchanges highlighted by the researchers. Harvey (2007) highlighted changes in business environment (like demanding change in business models in the face of globalization and competition) and regulatory environment as the forces behind demutualization of exchanges. Tahir and Sial (2014) documented that at the start of 1990, most stock exchanges of the world initiated the steps towards demutualization owing to acquire the advanced technology and changes in trading in the stock markets. Similarly, the enhanced role of information technology in stock trading, cross border listing and different trading systems have put question mark on the physical location of exchanges (Wahid *et al.*, 2017) calling for alternate governance mechanism accompanied with changes in ownership structure of exchanges in the form of demutualization. In this view, the Stockholm Stock Exchange was first one which was demutualized in 1993 (Hammad, *et al.*, 2015) followed by a number of other exchanges across different countries.

In Pakistan, in line with reforms in the capital market, Stock Exchanges (Corporatization, Demutualization and Integration) Act 2012 was enacted which was commenced with effect from May 7, 2012 that paved the way, and provided guidelines, for demutualization of exchanges. In this view, stock exchanges in Pakistan were demutualized by their conversion into a public limited company. In this regard, paid-up capital was issued among the members of respective stock exchanges where every member received equal equity shares and a Trading Right Entitlement Certificate. The exchanges were issued re-registration certificates on August 27, 2012. The word “guarantee” from the names of exchanges stands omitted and the exchanges were named as Karachi Stock Exchange Limited, Lahore Stock Exchange Limited and Islamabad Stock Exchange Limited. As per the scheme of demutualization, paid-up capital of the exchanges was equally allotted to the initial shareholders, who were previously members of the exchanges. These initial shareholders were allowed to retain up to 40 percent shares whereas 60 percent stake was to be retained by the exchange(s) with the aim that up to 40 percent shares of this reserved stake may be allotted later on to the

strategic investor(s) and financial institutions while the remaining 20 percent shares shall be issued to general public all the way through the process of Initial Public Offering (IPO). In order to deal with the conflict of interest after the demutualization, a Regulatory Affairs Committee was formed by the board of exchange(s) to ensure separation of regulatory functions of exchange(s) from the commercial functions and provide a check in this regard. Moreover, the three stock exchanges of the country namely Karachi Stock Exchange (KSE), Lahore Stock Exchange (LSE) and Islamabad Stock Exchange (ISE) were demutualized with effect from 27<sup>th</sup> August, 2012 and later on January 11, 2016 were merged into the Pakistan Stock Exchange (PSX).

Various studies have been conducted assessing the relationship between demutualization and stock exchanges' performance in terms of liquidity (Treptow, 2006; Ahmad *et al.*, 2015), trading revenue (Abdel-Hafez, 2015), operative performance with respect to efficiency (Serifsoy, 2008), financial performance and stock market growth (Wahid *et al.*, 2018), listed companies, number of transactions, market capitalization, capital raised, share trading value and share turnover (Morsy and Rwegasira, 2010) and stock market index returns (Mrzygłód & Nowak, 2013).

In Pakistan, different studies are undertaken on the demutualization of stock exchanges such as Ahmed *et al.*, (2011) who have identified benefits and challenges of demutualization process. Similarly, Uppal (2009) reviewed approach to stock exchange development in Pakistan through the demutualization process while identifying organizational flexibility, good governance, exchanges merger to consolidate the liquidity in a single market and improved economic efficiency as potential benefits of demutualization. He also argued that there are underlying issues associated with demutualization like conflict of interest under new demutualized structure of ownership affecting the regulatory framework and monopolistic excess as outcome of exchange consolidation which can also decrease the effectiveness of regulatory measures. Hence, it was recommended that the demutualization process needs to be carried out considering a balanced approach while relying on advantages and overcoming the disadvantages. Masood (2017) also studied the effects of amalgamation / merger of Pakistan three stock exchanges into a single exchange, Pakistan Stock Exchange (PSX) in the aftermath of demutualization of country's exchanges. She noted foreseeable pros and cons of PSX merger calling for better management of demutualization process for the sake of desired effects. However, her study relied only on analysis of qualitative secondary data and did not take into consideration the exact

pre and post effects of demutualization using the relevant variables. Hence, so far no specific study has been conducted to examine the pre and post demutualization effects using the pertinent variables. In this regard, this study aims to compare the pre and post demutualization stock market performance. Due to the availability of data only the Karachi Stock Exchange (KSE) was selected for this comparative study and stock market performance in pre and post periods were assessed in terms of daily stock returns of KSE 100 Index, trading volume, market capitalization and traded value.

### **Literature Review**

The existing literature is mixed regarding the positive and negative effects of demutualization of stock exchanges with underlying arguments. Nyangara and Musikavanhu (2014) conducted a study on 50 stock exchanges covering the period from 1990 to 2011. Their results indicated that demutualized stock exchanges have tendency towards better performance in terms of market capitalization, market liquidity and companies' listings. They also noted that as regards automation, overall the demutualization improves stock market performance over a long period that is in contradiction with most of other studies which document that automation favorably affects the stock market performance independent of any time period.

Abdel-Hafez (2015) compared the pre and post revenues of demutualized stock exchanges from 1997 to 2012 and noted that demutualization positively affects the revenues of stock exchanges in terms of trading volume, order flows and trading commissions. However, their results also indicated that demutualization has no direct effect on market data fees, listing fees and membership fees.

Mrzyglód and Nowak (2013) documented that one of the possible results of demutualization is the Initial Public Offering (IPO). In this view they investigated the reaction of financial market on the IPO of Warsaw Stock Exchange (Poland) which was done in line with demutualization of Stockholm Exchange. They used event study methodology and analyzed the WIG20 index performance which is an index of 20 companies of Warsaw Stock Exchange. Their results illustrated that generally the financial market reaction was positive, overall WIG20 index returns were positive particularly in the short periods. However, it was found that the market immediately discounted the positive reaction for IPO announcement released one month before.

Wahid *et al.*, (2018) investigated the effect of demutualization of exchanges (pre and post demutualization analysis) on stock exchanges' financial performance and stock market performance based on a sample

of exchanges from Asia, Europe and America. Their proxies of financial performance were profitability ratios, liquidity ratios and asset utilization ratios whereas stock index, market capitalization, number of listed companies and number of transactions in equity shares were taken as proxies of stock market growth. They noted improved financial performance for European and Asian stock exchanges after demutualization whereas American stock exchanges showed progression in terms of financial performance. They also observed that overall demutualization of exchanges is productive to enhance financial and stock market performance.

Hassan *et al.*, (2013) examined the performance of three demutualized stock exchanges namely Bursa Malaysia, London Stock Exchange and Hong Kong Stock Exchange. They noted improvement in operating profitability and efficiency along with governance of these exchanges. However, they also identified a number of challenges which may be associated with the demutualization process predominantly managing the conflict of interests and avoiding the hostile takeover.

Ahmad *et al.*, (2015) undertook a study on pre and post demutualization impact of stock exchanges from three regions namely Americas, Asia-Pacific and Europe. They documented that for investors, the demutualization is unfavorable as it does not increase the investors' return from the exchange however, it improves the liquidity which makes it a favorable phenomena for exchange members as an exchange's financial condition can be consolidated through better representation of its liquidity while also maintaining its competitive position along with providing incentives in the exchange for new issuers besides resulting in collaboration with other foreign and local exchanges. However, their study was limited owing to not taking into account the global financial conditions whilst investigating the effect of demutualization on a global or large scale. Also, other pertinent variables impacting the demutualization like managerial and policy specific, structural issues, competitive pressures from other stock exchanges and economic conditions were not taken into account. Aggarwal (2002) also noted the improved tendency in stock price performance of stock exchanges in short period (minimum one year) after they have started to operate as publicly traded companies in the post demutualization period.

Rydzewska (2014) documented that increased efficiency associated with stock exchange demutualization may not result in improved quality of its various functions to the society. Hence, while devising a structural framework for exchanges, the state should develop a system wherein there is public supervision along with reducing the conflict of interests among the specific stakeholder groups.

Otchere (2006) found a tendency on part of the stock exchanges to go for public ownership in the wake of demutualization from the mutual structure considering to compensate for a decline in their revenue and low growth in profitability although such exchanges were found to have high growth in their market activities. In line with argument of stock demutualization, they found improved performance in case of self listed exchanges in comparison to those which were not listed. They argued that improved performance of listed and demutualized exchange may be related to perusing the profit objective after demutualization. Besides, change in ownership structure after demutualization may not be a stimulus of better exchange performance, rather forces of market discipline can exert pressure for such a desired performance.

Krishnamurti *et al.*, (2003) conducted a study on Indian stock market. They contrasted the performance of National Stock Exchange (demutualized exchange) with Bombay Stock Exchange (mutual exchange). These exchanges had similar systems of trading, were trading the identical shares and followed the same business (trading) hours. They noted that the National Stock Exchange (NSE) showed increased performance in terms of improved quality than the Bombay Stock Exchange (BSE). This enhanced performance was partially attributed to the good governance, use of latest technology and government support. In this view, the application of latest technology enabled the NSE to overcome barriers to the entry in stock brokers industry with consequent effect to provide the brokerage services at reduced cost.

Morsy and Rwegasira (2010) conducted a study on a sample of stock exchanges which were demutualized over a period of 1993 to 2004. These exchanges were members of World Federation of Exchanges. Their results indicated that there was significant improvement in the exchanges' performance in the post demutualization period than the pre demutualization period as selected performance market measures were improved including (i). Number of listed companies (ii). Number of transactions (iii). Domestic market capitalization (iv). Capital raised by the domestic companies (v). Total share trading value (vi). Turnover velocity of domestic shares and (vii). Value of bonds listed.

Al Mamun and Akter (2013) identified global competition and technological advancement as the key drivers of demutualization. Moreover, in demutualized setup with due regard for transparency in governance, the conflict of interests may be overcome associated with mutual structure where members may exploit the regulatory power for their own interests which can also discourage the foreign investment. A demutualized exchange may also enhance the investors' participation like institutional investors along with retail investors have the

opportunity to become the exchange members. Besides, being guided by the profit motive and having the transparent governance coupled with strict regulation, the demutualized exchange has better prospects to raise capital at attractive terms by offering the latest financial products. However, they also argued that there are some challenges to demutualization including the transformation from mutual structure into de-mutual structure owing to assessment of value of ownership right of a member and in alignment of management and shareholders' interests, potential conflict of interest by separation of regulatory and operational authority, profit pressure and facing competition from other listed companies with chances of takeover or acquisition under the demutualized structure.

Aggarwal and Dahiya (2006) argued for significant improvement in first day returns of stocks of exchanges when they are listed after demutualization. The same improvement was seen in increase in the seat prices of stock exchange member(s) accompanied with the demutualization announcement. Moreover, as regards the long-term performance of publicly listed stock exchanges in contrast to performance of comparable stock market index, overall an increase in returns was noticed. They also assessed the operating performance of these exchanges using the relevant measures like Return on Equity (ROE), Return on Assets (ROA) and Operating Margin; in this aspect on the whole improved operating performance was noted. Also, one of the noticeable features of these exchanges was nearly no reliance on debt financing along with their relative stable cash flows which could pave a way for a dividend policy to maintain efficiency and increase the exchanges value. In the same view, the lowest dividend payout by the exchanges may highlight their preference to exploit growth opportunities.

Tahir and Sial (2014) undertook a pre and post demutualization study on member stock exchanges of the World Federation of Exchanges. Their results depicted significant improvement in the performance of demutualized stock exchanges as measured through liquidity (short term and long term), profitability and earning capacity.

### **Data and Methodology**

This study is descriptive and comparative to examine the pre and post demutualization performance of Karachi Stock Exchange (KSE) in terms of selected variables. The data used is secondary and time series representing the time period before 27<sup>th</sup> August, 2012 (when KSE was demutualized) and after demutualization until January 11, 2016 when

KSE was merged into Pakistan Stock Exchange (PSX). The unit of analysis is KSE and the targeted variables include the following:

#### *Daily Returns of KSE 100 Index*

Following (Hammad et al., 2015 and Mrzyglod and Nowak, 2013), the actual daily returns of KSE 100 Index are calculated using the following formula:

$$Y_t = \ln \frac{P_t}{P_{t-1}}$$

Where;

$Y_t$  = Daily Returns of KSE Index

$\ln$  = Natural Logarithm

$P_t$  = Closing Price of KSE 100 Index at day t

$P_{t-1}$  = Closing Price of KSE 100 Index at day<sub>t-1</sub>

#### *Trading Volume*

Trading volume represents the number of shares which are transacted daily in the stock exchange. It is the number of shares sold and bought between sellers and buyers in a stock exchange. It can also be used as a proxy of trading activity as when trading volume is high there will be more trading activity and vice versa. Trading volume also shows the market liquidity at a given point of time and highlights the overall worth of a stock market as high volume in any direction, upward or downward price movement depicts the significant market move and hence in turn may show the good or bad performance of a stock exchange.

#### *Market Capitalization*

Market capitalization is computed by multiplying the number of issued shares of companies listed on KSE with their prices (market values) at a given time (Sial *et al.*, 2014). According to Chisholm (2002) market capitalization shows whether a stock exchange is large in size and strong. It also indicates the magnitude and strength of a stock market (Wahid *et al.*, 2018).

#### *Trading Value*

Trading value indicates the market price of shares at which shares of a company trade at a given time period. For a stock market it is the aggregate market value at which shares of all listed companies are traded on daily basis. It shows the magnitude of market transaction of a stock exchange (Wahid *et al.*, 2017). This value is calculated by multiplying the daily trading volume with the share prices.

### *Test Statistic*

Paired Samples t-test was conducted to compare the pre and post demutualization daily stock returns of KSE 100 Index, trading volume, market capitalization and traded value. The below given assumptions of Paired Samples t-test (Pallant, 2013) were tested.

1. The dependent variables should be continuous (interval or ratio scale).
2. The observations must be independent of each other, i.e., each observation must not be influenced by any other observation.
3. The dependent variable needs to be normally distributed.
4. There should be no outliers/extreme values in the dependent variables.

As regards these assumptions, the dependent variables were continuous; observations were also independent and were not influenced by each other. There were also no outliers in the data. The dependent variable, however, as per the applied test, was not sufficiently normally distributed. Nonetheless, according to Pallant (2013), for samples exceeding 30, the violation of normality assumption should not be a major concern to affect the results; hence for such sample, in spite of violation of normality assumption, the results will be robust.

### **Results and Discussion**

Stock returns have improved after demutualization as the mean value increased from Time 1, i.e., before demutualization of KSE ( $M = 0.00074$ ,  $SD = 0.00970$ ) to Time 2, i.e., after demutualization of KSE ( $M = 0.00081$ ,  $SD = 0.00999$ ). However, the increase was not statistically significant [ $t(676) = -0.131$ ,  $p = 0.896$  (two-tailed)]. These results are similar to Ahmad *et al.*, (2015) who also found insignificant results pertaining to post demutualization returns of stock exchanges arguing that demutualization is not a favorable change considering the investor's perspective. The results are also in line with Hammad *et al.*, (2015) who also documented insignificant returns for Indian stock market after demutualization recommending that in Pakistan the demutualization of stock exchanges should be managed effectively. The results are however different from Worthington and Higgs (2006) who noted positively skewed values of returns for demutualized exchanges asserting high likelihood of return increases for these exchanges.

The correlation table shows positive correlation between pre and post demutualization trading volume and market capitalization along with negative correlation between before and after demutualization stock returns and traded value. However, all the correlation coefficients are

insignificant except for stock return which has high negative and significant correlation value.

There was a statistically significant increase in trading volume of KSE from Time 1 ( $M = 84.42m$ ,  $SD = 53m$ ) to Time 2 ( $M = 141m$ ,  $SD = 60.96m$ ),  $t(676) = -18.553$ ,  $p < 0.0005$  (two-tailed). The mean increase in trading volume values was 56.49m with a 95% confidence interval ranging from -62.47m to -50.51m. The eta squared statistic (0.337) indicated a large effect size. The results are similar to Abdel-Hafez (2015) who documented that the demutualization process positively affects the trading volume which contributes towards enhancing the exchange value and improves the investors' liquidity position. The results are also in line with Krishnamurti *et al.*, (2003) who noted improvement in trading volume of demutualized exchange owing to provision of superior trading services, technologies, procedures and systems. The high trading volume also provided economies of scale to decrease the brokerage commissions which further provided an edge to the exchange.

There was a statistically significant decrease in market capitalization of shares listed on KSE from Time 1 ( $M = 2,810bn$ ,  $SD = 727.7bn$ ) to Time 2 ( $M = 1,760bn$ ,  $SD = 583.2bn$ ),  $t(676) = 4.619$ ,  $p < 0.0005$  (two-tailed). The mean decrease in market capitalization of shares was 1,042bn with a 95% confidence interval ranging from 599bn to 1,485bn. However, the eta squared statistic (0.03) indicates a small effect size. The results are contradictory to most of the studies like Wahid *et al.*, (2017) who noticed increase in market capitalization after demutualization due to attracting the unlisted companies in line with enlightened shareholders approach and Sial *et al.*, (2015) who highlighted that based on changes in ownership structure, objectives of stock exchanges and governance structure, the demutualization significantly contributes towards increasing the market capitalization. Moreover, other pertinent studies (Islam and Hossain, 2015; Nyangara and Musikavanhu, 2014; Morsy and Rwegasira, 2010; Scullion, 2001; Ahmed *et al.*, 2001; and Karmel, 2002) also have documented improvement in market capitalization in the post demutualization period. Therefore, although the contrasting results of this study may have policy implications but needs to be taken with caution owing to confounding effects of other variables affecting the market capitalization, hence results may require re-validation through undertaking of future researches with large sample size and enhanced time periods.

There was a statistically significant increase in traded value of shares listed on KSE from Time 1 ( $M = 3.8bn$ ,  $SD = 2.22bn$ ) to Time 2 ( $M = 8.07bn$ ,  $SD = 3.38bn$ ),  $t(676) = -27.144$ ,  $p < 0.0005$  (two-tailed).

The mean increase in traded value of shares was 4.27bn with a 95% confidence interval ranging from -4.58bn to -3.96bn. The eta squared statistic (0.52) indicated a large effect size. These results are similar to Nyangara and Musikavanhu (2014) who found that the demutualized exchanges have tendency to better perform in terms of traded value which also positively influence the trading activity. The results are also in line with Wahid *et al.*, (2017) who noted significant increase in the trading value after demutualization arguing that demutualization significantly affects the trading value owing to consistent decision making process pertaining to shares trading after demutualization. This may be due to increase in the investors' confidence on trading in the stock exchanges as highlighted by Hughes (2002) thus contributing towards better trading of shares.

Table 1 Paired Samples Statistics

		Mean	N	Standard Deviation	Standard Error Mean
Pair 1	Pre-Demutualization Returns	.000740	677	.0097054	.0003730
	Post-Demutualization Returns	.000813	677	.0099922	.0003840
Pair 2	Pre-Demutualization Trading Volume	84424545.7	677	5.302E7	2037735.533
	Post-Demutualization Trading Volume	1.41E8	677	6.096E7	2342993.104
Pair 3	Pre-Demutualization Market Capitalization	2.81E12	677	7.277E11	2.797E10
	Post-Demutualization Market Capitalization	1.76E12	677	5.832E12	2.241E11
Pair 4	Pre-Demutualization Traded Value	3.80E9	677	2.220E9	8.530E7
	Post-Demutualization Traded Value	8.07E9	677	3.380E9	1.299E8

Table 2 Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-Demutualization Returns - Post-Demutualization Returns	677	-.077	.044
Pair 2	Pre-Demutualization Trading Volume - Post-Demutualization Trading Volume	677	.039	.313
Pair 3	Pre-Demutualization Market Capitalization - Post-Demutualization Market Capitalization	677	.007	.860
Pair 4	Pre-Demutualization Traded Value - Post-Demutualization Traded Value	677	-.027	.488

Table 3 Paired Samples T-Test

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Demutualization Returns - Post-Demutualization Returns	-.0000728	.0144580	.0005557	-.0011638	.0010182	-.131	676	.896
Pair 2	Pre-Demutualization Trading Volume - Post-Demutualization Trading Volume	-5.649E7	7.922E7	3044807.780	-6.247E7	-5.051E7	-18.553	676	.000
Pair 3	Pre-Demutualization Market Capitalization - Post-Demutualization Market Capitalization	1.042E12	5.872E12	2.257E11	5.992E11	1.485E12	4.619	676	.000
Pair 4	Pre-Demutualization Traded Value - Post-Demutualization Traded Value	-4.270E9	4.093E9	1.573E8	-4.579E9	-3.961E9	-27.144	676	.000

**Conclusion**

This paper intends to study the pre and post demutualization stock market performance of Karachi Stock Exchange (KSE) in terms of daily stock returns of KSE 100 Index, trading volume, market capitalization and traded value. KSE was demutualized in 2012 with the purpose to improve the stock market performance. This study relies on secondary stock market historical data targeting the before and after demutualization period. Descriptive statistics, correlation analysis and paired samples t-test were used to analyze the collected data. The results showed insignificant increase in daily stock returns. However, there was a significant increase noted in trading volume and traded value after demutualization. A significant decrease in market capitalization was also noted. Generally results of study are similar to those of other related studies. However, results pertaining to market capitalization are contradictory to most of the studies highlighting the need for undertaking future researches with pertinent variables to investigate and understand this variable and its associated effects. Other than market capitalization, nonetheless, results of this study overall depict that the stock market performance of Karachi Stock Exchange has improved after its demutualization in terms of trading volume, daily returns and traded value.

## References

- Abdel-Hafez, Mohamed Hesham. (2015). Operating revenue changes in a demutualized stock exchange. *International Journal of Business and Economic Development*, 3(1), pp. 67-77.
- Aggarwal, Reena. (2002). Demutualization and corporate governance of stock exchanges. *Journal of Applied Corporate Finance*, 15(1), pp. 105-113.
- Aggarwal, Reena. and Dahiya, Sandeep. (2006). Demutualization and Public Offerings of Financial Exchanges. *Journal of Applied Corporate Finance*, 18(3), pp. 96-106.
- Ahmad, Nawaz., Salman, Atif. and Qureshi, Jibrán. (2015). Comparative Analysis of Stock Returns Generated from Their Broad Index Performance and Liquidity as per Their Share Turnover Velocity: Pre and Post Demutualization. *Research Journal of Finance and Accounting*, 6(1), pp. 26-39.
- Ahmed, Sarah., Butt, Babar Zaheer. and Rehman, Kashif-Ur. (2011). Demutualization of stock exchanges in Pakistan: Challenges and benefits. *African Journal of Business Management*, 5(2), pp. 448-454.
- Akhtar, Shamshad. (2002). *Demutualization of Asian Stock Exchanges – Critical Issues and Challenges*. In: Shamshad, Akhtar, *Demutualization of Stock Exchanges: Problems, Solutions and Case Studies*, Manila, Philippines: Asian Development Bank., pp. 3-32.
- Al Mamun, Mohammed Abdullah. and Akter, Sharmin. (2013). Benefits and challenges of demutualization: A study on Bangladeshi stock exchanges. *D.U. Journal of Marketing*, 16(1), pp. 193-212.
- Chisholm, Andrew M. (2002). *An Introduction to Capital Markets, Products, Strategies, Participants*. 2<sup>nd</sup> ed. *The Wiley Finance Series*.
- Hammad, Muhammad., Awan, Adil. and Rafiq, Amir. (2015). Demutualization in Developing and Developed Country Stock Exchanges. *The Lahore Journal of Business*, 3(2), pp. 35-58.
- Hart, O. & Moore, J. (1996). The governance of exchanges: Members' cooperatives versus outside ownership. *Oxford Review of Economic Policy*, 12(4), pp. 53–69.
- Harvey, Bo. (2007). Exchange consolidation and models of international securities regulation. *Duke Journal of Comparative & International Law*, 18(151), pp. 151-178.
- Hasan, Md. Bokhtiar., Ahsan, A. F. M. Mainul. and Rahaman, Md. Afzalur. (2013). Is demutualization of Dhaka stock exchange desirable? *International Journal of Management Research and Business Strategy*, 2(3), pp. 1-13.
- Hughes, Pamela S. (2002). Background Information on Demutualization. In: Shamshad, Akhtar, *Demutualization of Stock Exchanges: Problems, Solutions and Case Studies*, Manila, Philippines: Asian Development Bank., pp. 33-47.
- Islam, K. M. Anwarul. and Hossain, Sk. Alamgir. (2015). Demutualization of Dhaka Stock Exchange: Opportunities and Challenges. *International Journal of Finance and Banking Research*, 1(1), pp. 1-11.

- Karmel, Roberta S. (2002). *Turning Seats into Shares: Cause and Implications of Demutualization of Stock and Futures Exchange*, Working Paper (Article), Brooklyn Law School
- Krishnamurti, Chandrasekhar., Sequeira, John. M. and Fangjian, FU. (2003). Stock exchange governance and market quality. *Journal of Banking & Finance*, 27, pp. 1859-1878.
- Masood, Fazeelat. (2017). Pakistan Stock Exchange Merger: A Prudent Move or an Imprudent Impulse. *International Journal of Education and Human Developments*, 3(3), pp. 61-72.
- Morsy, A. and Rwegasira, K. (2010). An empirical investigation of the demutualization impact on market performance of stock exchanges. *International Research Journal of Finance and Economics*, 40, pp. 38-58.
- Mrzygłód, Urszula. and Nowak, Sabina. (2013). Stock exchanges go public. The case of Warsaw stock exchange. *Journal of International Studies*, 6(2), pp. 111-123.
- Nyangara, Davis. and Musikavanhu, Tariro P. (2014). An Empirical Analysis of the Impact of Demutualization on Stock Exchange Performance: Lessons for Zimbabwe. *International Journal of Economics & Management Sciences*, 3(1), pp. 1-10.
- Otchere, Isaac. (2006). Stock exchange self-listing and value effects. *Journal of Corporate Finance*, 12(5), pp. 926-953.
- Pallant, Julie. (2013). *SPSS Survival Manual: A step by step guide to data analysis using IBM SPSS*. 5<sup>th</sup> ed. Australia: ALLEN&UNWIN.
- Rydzewska, Alina. (2014). Demutualization of stock exchanges and its social consequences. *Journal of Knowledge Society*, 2(2), pp. 32-38.
- Scullion, M (2001). *The Compaq handbook of world stock, derivative and commodity exchanges chap, demutualisation: The challenges facing global exchanges, Mondo Visione*, pp. 25-32.
- Serifsoy, Baris. (2008). Demutualization, outside ownership, and stock exchange performance: Empirical evidence. *Economics of Governance*, 9(4), pp. 305-339.
- Sial, Abdul Wahid., Tahir, Alyas Qadeer., Zulfiqar, Sehar., Iqbal, Munawar. and Naqvi, Syed Asghar Abbas. (2014). Demutualization of Stock Exchanges and Stock Market Growth: Broader Economic Investigation of Demutualized Exchanges. *Journal of Economics, Finance & Accounting*, 1(4), pp. 285-294.
- Sial, Abdul Wahid., Talib, Nadeem., Ashkanani, Fayqa Abdullah. and Alam , Muhammad Aftab. (2015). Demutualization of Stock Exchanges: A Corporate Blessing in Disguise for Stock Market Growth. *Strategic Change*, 24(4), pp. 389-400.
- Tahir, Ilyas Qadeer. and Sial, Abdulwahid. (2014). Does the demutualization enhance financial performance of the stock exchanges in developing and emerging economy? *British Journal of Business and Management Research*, 1(1), pp. 106-115.

- Treptow, Felix. (2006). *The Economics of Demutualization: An Empirical Analysis of the Securities Exchange Industry*, DUV GABLER EDITION WISSENSCHAFT
- Uppal, Jamshed Y. (2009). Restructuring the stock exchanges in Pakistan: Economic and regulatory policy issues. *Lahore Journal of Policy Studies* 3(1), pp. 3-22.
- Wahid, Abdul., Adil, Iftikhar Hussain., Talib, Nadeem. and Azam, Kamran. (2017). The effects of demutualization on expansion of stock market growth: Evidences from Indian stock market and lesson for Pakistan Stock Exchange (PSX). *Pakistan Business Review*, 19(3), pp. 762-777.
- Wahid, Abdul., Azam, Kamran., Adil, Iftikhar Hussain. and Naqvi, Syed Asghar Abbas. (2018). Spillover effects of Demutualization on stock Exchanges: a regional Comparison. *Pakistan Business Review*, 19(4), pp. 908-927.
- Worthington, A. C. and Higgs, H. (2006). Market risk in demutualised self-listed stock exchanges: An international analysis of selected time-varying betas. *Global Economic Review*, 35(3), pp. 239-257.