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Comparative Analysis of Stock Returns Generated from Their Broad Index Performance and Liquidity as per Their Share Turnover Velocity: Pre and Post Demutualization

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Abstract
The objective of this paper is to examine the impact of demutualization upon the performance of stock exchanges' in terms of their liquidity as per the share turnover velocity and the returns that are generated from the broad indexes. The impact of demutualization has been examined upon a global basis, regional basis and amongst individual exchanges; the sample size is that of 3 stock exchanges from each region. The three regions from which the exchanges have been selected are the Americas, Asia Pacific and Europe. The model applied in this study was the matched-pair t-test to examine the pre and post demutualization levels of liquidity and returns generated. The results of this study show that demutualization increases the liquidity of the exchanges to a greater degree as compared to improving the returns of the exchanges. Therefore, the conclusions of this study are that demutualization is a not favorable for investors because demutualization does not increase the returns generated in an exchange; the increase in liquidity caused by demutualization makes it favorable for members of the exchange. However, this study does not take into consideration the global financial conditions while assessing the impact of demutualization upon a global scale.
Keywords: Demutualization, stock exchanges, liquidity, share turnover velocity, returns, broad indexes, Americas, Asia-Pacific, Europe, matched-pair t-test, global financial conditions.

1. Introduction

Stock exchanges have been originally operating as "club of brokers" thereby being owned mutually with a limited number of owners. However, since the demutualization of the Stockholm Stock Exchange in 1993, over 50 stock exchanges have been demutualized.

The basic difference of a mutual and a demutualized stock exchange is that of ownership structure, with mutual exchanges having one vote per member and one vote per share, hence the demutualization is the process of going from a privately owned company to a public listed company. The various types of demutualization are full demutualization, a sponsored demutualization and a mutual holding company.

1.1 The Process of Demutualization

Demutualization is the process of converting a non-profit, mutually owned organization to a for-profit, investor-owned corporation. The broker-dealers who are the members of mutually owned exchanges and their owners and consequently the voting rights. In contrast, a demutualized exchange is a limited liability company owned by its shareholders. The process of demutualization takes place in stages and can ultimately take several different forms.

The major factors that ultimately lead to the process of demutualization to take place amongst stock exchanges are the forces of competition from the ATS and ECNs, which began competing with the exchanges as the service providers of trade, signaling and other related activities. The efficiency factor of ATS/ECNs along with the effective matching of the buy and sell orders, at lower prices, greater transparency of the trading process, trader anonymity and extended trading hours. All of the afore-mentioned advantages of the ATS/ECNs placed stiff competition for the exchanges.

However the above mentioned reasons are specifically for one individual exchange. There have been cited other more general reasons. One of them being rationalized governance, investor participation is another major reason for exchanges to become demutualized since it allows both institutional investors and retail investors to become shareholders. Globalization is another factor that has led to the demutualization process to have a stronger footing amongst the stock exchanges. The need for capital investment resources via the IPOs of

companies listed upon the exchange also leads to demutualization.

1.2 Structural issues related to demutualization
1.2.1 Ownership Structure.
1.2.2 Corporate Governance
1.2.3 Trading rights
1.2.4 Risk Management
1.2.5Financial Management
The financial governance also needs to be considered that would address issues such as budgeting matters, day to day finances, asset protection, employee remuneration, investment activities and reserve management.

1.3 Research Statement
The purpose of this research is to compare the returns of the exchanges generated from their broad index performance and liquidity as per the share turnover velocity, pre and post demutualization, in the Americas, Asia-Pacific, and Europe.

1.4 Hypothesis
H_1: Demutualization does not improve the returns of stock exchanges.
H_2: Demutualization does not improve the liquidity of stock exchanges.

2. Literature Review
Serifsoy (2005) used a sample of 28 stock exchanges for the time period 1999 – 2003 to determine the impact of demutualization upon the performance of a stock exchange. The two variables that were used in this research to represent stock exchange performance were the efficiency and productivity of exchanges with different governance structures. The findings of this research determine that demutualized exchanges are technically more efficient than mutually owned. Additionally publicly listed exchanges compared to demutualized exchanges with customer dominated structure do not differ in productivity and deficiency.

Serifsoy & Tyrell (2006) have dealt with two issues regarding stock exchange governance. The conclusions of this research are that the competitive pressures increase the likelihood of demutualization and that outsider owned exchanges have a greater tendency to invest into related business activities.

Mendiola & O'Hara (2003) investigated the performance of stock exchanges being affected by the change in the governance structure. The exchanges performance has been measured via consideration of the accounting data and return performance. The performance of the exchanges with the indexed and other IPS is compared and the impact of economic factors upon the performance of the exchange. The results of this research indicate that the performance of the exchanges tends to improve after the change in governance.

Tang & Linowski (2010) investigated the evolution of the Chinese Stock Market. This paper carries out a qualitative analysis of the reforms of the state owned enterprises on the exchange becoming corporate governance based, with three main stages over the past thirty years. The markets that have been taken as a sample in this research is the stock market the bonds market and the futures market.

Worthington & Higgs (2006) determined the market risks in demutualized self listed exchanges. The sample taken for this research was that of four exchanges, the Australian exchange, Detuche Boris, LSE and Singapore Exchange. The variables taken in this research were the index returns. The model used was the bi-variate MAGARCH model to estimate time varying betas form the time the exchanges became listed till June 2005. The results that over the time period the betas remained relatively stable indicating that demutualization does not increase the risks entailed by the exchange.

Elliot (2002) in this paper has analyzed demutualization from a regulatory perspective. This paper aims to understand the nature of demutualization as to what drives the process of demutualization, what will be the impact of demutualization and its consequences for the exchange being demutualized.

Christianen & Koldertsova (2009) investigate the roles that exchange play at the advent of Demutualization and the exchanges themselves becoming for profit organization. Thus, since, the exchange begins to compete with compete with the companies listed on it; it has a conflict of interest in terms of regulating its competitors.

Ritter & Welch (2002) have determined the nature of the IPO activity, pricing and allocations. This paper investigated why firms go public, why there is under-pricing on the first day; how the underwriter choose first day investors and IPOs perform in the long run. The results of this paper indicate that market conditions are the most important factor in the decision to go public.

Jain & Jain (2010) examine the impact of competition, demutualization and automation upon the financial exchange industry. In this paper the conditions optimal for demutualization are also discussed. The model used in this research involves three players: members, informed investors and uninformed investors. The

results indicate that the main causes of demutualization are the technology driven growth opportunity, product driven growth and increase in market concentration.

Davis (2007) has investigated the demutualization prospects in Australian credit union. The issues discussed in the paper are the reasons for the social consequences, the principle for the design of legislation addressing demutualization and the types of demutualization possible.

Moore & Hart (1996) compared the governance of exchanges by member owner exchanges and the externally owned exchanges. The aim of this paper is to provide with a framework for thinking about the governance of exchanges.

Donegal (2010) has discussed the Cross Border investments while carrying out a case study of the BM&F BOVESPA. The aim of this paper has been to generally analyze the governance structure of BM & BOVESPA and if it provides security to the foreign investor.

Emerging Markets Committee of the International Organization of Securities Commission (2005) examine if there are conditions within exchanges of emerging markets for carrying out demutualization. The issues addressed have been regulatory in nature; that is the assessment of the implication of demutualization upon the relationship of the regulators and the demutualized exchanges. The survey in this paper determined whether exchanges were in the process of demutualization, had considered it, the views of the exchanges regarding the matter.

Morsy & Rwegasira (2010) in this study examined whether Demutualization program led to greater market efficiency. Results indicated that demutualization did not improve the performance of equity and bond markets. Furthermore, it was found that demutualization caused an improvement in only seven of the sixteen markets assessed. This result was found in the total number of listed companies, number of transactions, domestic market capitalization, capital raised by domestic companies, total value of share trading, turnover velocity of domestic shares, and value of bonds listed.

Schmiedel (2002) examines the progressive changes in the productivity of European stock exchange with non-parametric frontier techniques. The main results indicate an overall increase in productivity during the trial period, driven by technological innovation than by efficiency improvements. As per this research technological progress can be seen as a sign of the dynamic nature of the business sector plays together, where intensive commercial use of new technologies and cost-effectiveness of information systems used to limit the costs production.

Schmiedel (2001) explains the technical inefficiency of the stock exchanges in Europe and an empirical analysis of its existence and scope. A single step of stochastic cost frontier is used, the system generates the inefficiency of the values for the exchange of data on a panel is not balanced for each of the major European stock markets in the period 1985-1999 have been determined. European exchanges, improved the ability to effectively manage the production and use of resources.

Lee (2002) makes logical predictions regarding the future trends of exchanges based upon four main themes of information, industry, government and politics. The predictions made about the fore mentioned areas of concern have been supported with explanations as to why the predicted outcomes will result.

Lee (2003) examines the different options to the pressures of competition, globalization and technological change. The document is divided into six sections. In the first are the key factors that identify the survival and development of stock markets in emerging markets soon. The second section addresses the issue of self-sufficient exchanges being developed in isolation. The question of alliances between exchanges is discussed in the third section. In section four, the costs and benefits of the merger between, exchanges in emerging markets is discussed. In the fifth section, some considerations on the advantages and disadvantages about the demutualization of the exchanges. Brief conclusions are in the last section

Contreras (2009) analyzed the benefits of demutualization by analyzing of four exchanges: two from Europe, one in North America and one in Asia. The variables used have been financial indicators, trade volume and changes in ownership. Through this analysis, the conclusion of this research is that demutualization increases revenue, increases cost effectiveness and improve the overall performance of the sample exchanges.

Lai C., Mc Namara J. & Yu Tong (2009) examine the wealth effect of demutualization upon the IPO of companies by analyzing the under-pricing and long-run stock performance post demutualization. Demutualized issuers have greater wealth accumulation. As per this research, higher demutualized underestimation has been understood to be because of an increasing demand for market players, market sentiment and size of offers.

Morsy (2010) in this paper examines the issues regarding the implementation of the demutualization program. As per this research it is important for policy makers implementing the demutualization program to connect it to the nature of the stock exchange, including its existence, the behavior of the exchange and its relationship with the market and external factors.

Aggarwal & Dahiya (2005) have examined the impact of demutualization upon stock exchanges. In this paper it has been discussed that the changes of demutualization are driven by technological, regulatory and industry specific factors; and also have important consequences for both the stock exchanges and market

participants. In was found in this research that demutualized exchanges have improved performances with respect to shareholder returns and operating performance.

Classen, Lee & Zechner (2003) examined in this paper the future of the stock exchanges in the EU accession countries. This report analyzes the role of macroeconomic variables, financial reform and other factors that would affect the stock markets. The document consists of four sections. The first provides an overview of stock market development in EUACs. In the next section, the degree of internationalization of equity markets and the evolution of stock markets in the EUAC is analyzed. In the third section, a number of strategic options that stock exchanges in the EUAC could continue have been considered. Brief conclusions are in the last section.

Altaf & Cospromac (2009) have examined the impact of ownership structure upon the stock exchange's performance by comparing the London Stock Exchange and the Hong Kong Stock Exchange. The use of simple descriptive statistics has been carried out and the results have been in alignment with the researches of Aggarwal (2006), Mendiola and O'Hara (2003) and Hartand Moore (1996).

Ritter & Welch (2002) in this research examined why firms go public. This study concludes that many IPO phenomena are not stationary. The long-term performance of IPOs is particularly sensitive to the choice of the trial period.

Krishna Murti et.al (2003) examined the impact of organizational structures upon stock exchanges by comparing two very similar exchanges in India the National stock exchange and the Bombay stock exchange. The two stock exchanges have different ownership structures. The results of this research indicate that the NSE provides a better quality market than the Bombay Stock Exchange.

3. Methodology

3.1 Data

The data will be secondary in nature. The data that will be taken into consideration will be on a monthly basis for two years pre and post the demutualization of the exchanges, the variables will be:

i. Returns generated using the Logarithmic returns as per the formula $r_{log}= \ln(V_f/V_i)$, the values used to calculate the returns are the stock exchanges' broad index performance: Broad indexes are, in general, market capitalization-weighted, including a large sample of listed domestic companies, as the all-share or composite indexes. They are generally recalculated to adjust to capital operations and to modifications in the company composition of the index. The index can be market capitalization-weighted or free float based.

ii. Stock exchanges' share turnover velocity: The turnover velocity is the ratio between the Electronic Order Book (EOB) turnover of domestic shares and their market capitalization. The value is annualized by multiplying the monthly average by 12, according to the following formula:

$$\frac{\text{Monthly EOB Domestic Share Turnover}}{\text{Month-end Domestic Market Capitalization}} *12$$

Only domestic shares are used in order to be consistent. This variable is used to assess the level of liquidity of stock exchanges.

Source: http://www.world-exchanges.org/statistics/statistics-definitions

3.2 Data Collection

The data will be gathered from the World Federation of exchanges and the websites of the chosen stock exchanges.

3.3 Sample

Three stock exchanges from each region will form the sample. The number of readings taken will be 24 reading prior demutualization and 24 readings post demutualization.

#	**Region**	#	**Stock Exchange**	**Date of Demutualization**
1.	Americas	i.	BM&FBVESPA	08-05-2008
		ii.	Mexican Exchange	18-12-2001
		iii.	NASDAQ QMX	01-01-2000
2.	Asia –Pacific	i	Australian Stock Exchange	14-10-1998
		ii	Bombay Stock Exchange	19-08-2005
		iii	Tokyo Stock Exchange Group	01-11-2001
3.	Europe	i	Borsa Italiana	02-01-1998
		ii	Deutsche Borse	05-02-2001
		Iii	London Stock Exchange	01-06-2000

3.4 Sampling Technique
The technique for selecting the stock exchanges to be used will be convenient sampling.

3.5 Model
The matched-pair t-test will be used to compare the pre and post demutualization data of the stock exchanges.

4. Results and Discussions

4.1 Returns
4.1.1 All Regions
4.1.1.1 Paired Samples Statistics

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Rt_Pre_All_Share	-.008361	215	.2694611	.0183771
	Rt_Post_All_Share	-.011853	215	.5663470	.0386245

The mean of the returns generated from all of the exchanges combined in the pre-demutualization stage is greater at -0.008361 than the mean of the exchanges from the post demutualization stage at -0.11853.
4.1.1.2 Paired Sample Correlations

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Rt_Pre_All_Share & Rt_Post_All_Share	215	.340	.000

There is 34% interdependence between pre and post demutualization stock returns for all the exchanges of the sample taken as combined which is significant at 5% as sig value is less than 0.05.
4.1.1.3 Paired Samples Test

Paired Samples Test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Rt_Pre_All_Share - Rt_Post_All_Share	.0034915	.5381543	.0367018	-.0688519	.0758348	.095	214	.924

The average returns of the post demutualization period for all the exchanges of the sample combined are insignificant at a level of 5% with a sig value of 0.924 being greater than 0.05. Hence, we fail to reject the null hypothesis: H_1 that demutualization does not improve the returns of the exchanges.
4.1.2 Continents
4.1.2.1 Paired Samples Statistics

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Return_Pre_US	-.031607	71	.3190346	.0378624
	Return_Post_US	-.049389	71	.6927112	.0822097
Pair 2	Return_Pre_Asia	-.011223	71	.1085971	.0128881
	Return_Post_Asia	-.013769	71	.2127878	.0252533
Pair 3	Return_Pre_Eu	-.005808	71	.1835804	.0217870
	Return_Post_Eu	-.018830	71	.5737679	.0680937

The means of the returns generated from the exchanges in each continent that is the Americas, Asia and Europe in the pre-demutualization stage are greater at -0.031607, -0.011223 and -0.05808 respectively than the means of the exchanges from the post demutualization stage at -0.049389, -0.013769 and -0.018830 respectively.

4.1.2.2 Paired Sample Correlations

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Return_Pre_US & Return_Post_US	71	.040	.740
Pair 2	Return_Pre_Asia & Return_Post_Asia	71	.671	.000
Pair 3	Return_Pre_Eu & Return_Post_Eu	71	.413	.000

There is 67.1% and 41.3% interdependence between pre and post demutualization stock returns for the Asian and European exchanges respectively, significant at 5% as the sig values are less than 0.05.

However, for the exchanges in the Americas the correlation is insignificant at 5% as the sig value of 0.740 are higher than 0.05.

4.1.2.3 Paired Samples Test

Paired Samples Test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Return_Pre_US - Return_Post_US	.0177817	.7509509	.0891215	-.1599655	.1955288	.200	70	.842
Pair 2	Return_Pre_Asia - Return_Post_Asia	.0025460	.1615006	.0191666	-.0356806	.0407726	.133	70	.895
Pair 3	Return_Pre_Eu - Return_Post_Eu	.0130223	.5253414	.0623466	-.1113240	.1373685	.209	70	.835

The average returns of the post demutualization period for the exchanges in the Americas, Asia and Europe are insignificant at a level of 5% with sig values of 0.842, 0.895 and 0.835 being greater than 0.05. Hence, for all the continents we fail to reject the null hypothesis:H_1 that demutualization does not improve the returns of the exchanges.

4.1.3 Individual exchanges

4.1.3.1 Paired Samples Statistics

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Rt_Pre_Bra	.024782	23	.0663558	.0138361
	Rt_Post_Bra	-.001338	23	.0913858	.0190553
Pair 2	Rt_Pre_Mex	-.008730	23	.0844567	.0176104
	Rt_Post_Mex	-.171287	23	.8585743	.1790251
Pair 3	Rt_Pre_NDQ	.040063	23	.0878442	.0183168
	Rt_Post_NDQ	-.030576	23	.1341259	.0279672
Pair 4	Rt_Pre_Aus	.004174	23	.0426537	.0088939
	Rt_Post_Aus	.006275	23	.0299894	.0062532
Pair 5	Rt_Pre_Bom	.026792	23	.0719818	.0150092
	Rt_Post_Bom	.022801	23	.0646317	.0134766
Pair 6	Rt_Pre_Tok	-.019041	23	.0514324	.0107244
	Rt_Post_Tok	-.000368	23	.0466513	.0097275
Pair 7	Rt_Pre_BorsITA	.023104	23	.0692336	.0144362
	Rt_Post_BorITA	.015368	23	.0841175	.0175397
Pair 8	Rt_Pre_Ger	.013058	23	.0652812	.0136121
	Rt_Post_Ger	-.142772	23	.5185870	.1081329
Pair 9	Rt_Pre_Lon	.003760	23	.0480378	.0100166
	Rt_Post_Lon	-.009402	23	.0373243	.0077827

The mean returns of the pre demutualization stage for all the exchanges except the Australian Exchange are greater than the mean returns of the post demutualization stage.

4.1.3.2 Paired Sample Correlations

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Rt_Pre_Bra & Rt_Post_Bra	23	.236	.278
Pair 2	Rt_Pre_Mex & Rt_Post_Mex	23	.003	.988
Pair 3	Rt_Pre_NDQ & Rt_Post_NDQ	23	.145	.509
Pair 4	Rt_Pre_Aus & Rt_Post_Aus	23	-.251	.248
Pair 5	Rt_Pre_Bom & Rt_Post_Bom	23	.172	.433
Pair 6	Rt_Pre_Tok & Rt_Post_Tok	23	-.087	.694
Pair 7	Rt_Pre_BorsITA & Rt_Post_BorITA	23	.002	.995
Pair 8	Rt_Pre_Ger & Rt_Post_Ger	23	.060	.787
Pair 9	Rt_Pre_Lon & Rt_Post_Lon	23	.151	.491

The correlation for all the exchanges are insignificant since the sig values are greater than 0.05.

4.1.3.3 Paired Samples Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Rt_Pre_Bra - Rt_Post_Bra	.0261197	.0994504	.0207368	-.0168859	.0691252	1.260	22	.221
Pair 2	Rt_Pre_Mex - Rt_Post_Mex	.1625564	.8624342	.1798300	-.2103881	.5355009	.904	22	.376
Pair 3	Rt_Pre_NDQ - Rt_Post_NDQ	.0706387	.1492983	.0311309	.0060773	.1352001	2.269	22	.033
Pair 4	Rt_Pre_Aus - Rt_Post_Aus	-.0021014	.0579713	.0120878	-.0271701	.0229672	-.174	22	.864
Pair 5	Rt_Pre_Bom - Rt_Post_Bom	.0039902	.0880936	.0183688	-.0341043	.0420848	.217	22	.830
Pair 6	Rt_Pre_Tok - Rt_Post_Tok	-.0186738	.0723687	.0150899	-.0499684	.0126207	-1.238	22	.229
Pair 7	Rt_Pre_BorsITA - Rt_Post_BorITA	.0077359	.1088646	.0226998	-.0393407	.0548125	.341	22	.736
Pair 8	Rt_Pre_Ger - Rt_Post_Ger	.1558298	.5188037	.1081781	-.0685178	.3801773	1.440	22	.164
Pair 9	Rt_Pre_Lon - Rt_Post_Lon	.0131618	.0562015	.0117188	-.0111416	.0374651	1.123	22	.273

The average returns of the post demutualization period are significant only for the NASDAQ exchange at a level of 5% with a sig value of 0.033 being lesser than 0.05. Hence, we reject the null hypothesis: H_1 that demutualization does not improve the returns of the exchanges.

For all the other exchanges on an individual basis the average returns are insignificant at a level of 5%.

4.2 Share turnover velocity
4.2.1 All Regions
4.2.1.1 Paired Samples Statistics

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	All Regions Share Turnover Pre Demutualization	.828744	216	.8316683	.0565879
	All Regions Share Turnover Post Demutualization	1.002972	216	.9652970	.0656801

The mean of the share turnover velocity generated from all of the exchanges combined in the pre-demutualization stage is smaller at 0.828744 than the mean of the exchanges from the post demutualization stage

at 1.002972.

4.2.1.2 Paired Sample Correlations

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	All Regions Share Turnover Pre Demutualization & All Regions Share Turnover Post Demutualization	216	.905	.000

There is 90.5% interdependence between pre and post demutualization share turnover velocity for all the exchanges of the sample taken as combined which is significant at 5% as sig value is less than 0.05.

4.2.1.3 Paired Samples Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	All Regions Share Turnvover Pre Demutualization - All Regions Share Turnover Post Demutualization	-.1742285	.4124855	.0280661	-.2295484	-.1189086	-6.208	215	.000

The average share turnover velocity of the post demutualization period for all the exchanges of the sample combined is significant at a level of 5% with a sig value of 0.000 being lesser than 0.05. Hence, we reject the null hypothesis: H_2 that demutualization does not improve the liquidity of the exchanges.

4.2.2 Continents

4.2.2.1 Paired Samples Statistics

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Americas Share Turnover Pre Demutualization	1.278091	72	1.2465963	.1469128
	Americas Share Turnover Post Demutualization	1.510399	72	1.4962112	.1763302
Pair 2	Asia Share Turnover Pre Demutualization	.494233	72	.1363694	.0160713
	Asia Share Turnover Post Demutualization	.534168	72	.2139628	.0252158
Pair 3	Europe Share Turnover Pre Demutualization	.713907	72	.4362309	.0514103
	Europe Share Turnover Post Demutualization	.964350	72	.2274225	.0268020

The mean of the share turnover velocity generated from the exchanges for each continent from the Americas, Asia and Europe combined in the pre-demutualization stage is smaller at 1.278091, 0.494233 and 0.713907 respectively than the mean of the exchanges from the post demutualization stage at 1.510399, 0.534168 and 0.964350.

4.2.2.2 Paired Sample Correlations

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Americas Share Turnover Pre Demutualization & Americas Share Turnover Post Demutualization	72	.940	.000
Pair 2	Asia Share Turnover Pre Demutualization &Asia Share Turnover Post Demutualization	72	.409	.000
Pair 3	Europe Share Turnover Pre Demutualization & Europe Share Turnover Post Demutualization	72	.407	.000

There is 94%, 40.9%and 40.7% interdependence between pre and post demutualization share turnover velocity for the Americas, Asian and European exchanges respectively, significant at 5% as the sig values are less than 0.05.

4.2.2.3 Paired Samples Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Americas Share Turnover Pre Demutualization - Americas Share Turnover Post Demutualization	-.2323077	.5345875	.0630017	-.3579296	-.1066858	-3.687	71	.000
Pair 2	Asia Share Turnover Pre Demutualization - Asia Share Turnover Post Demutualization	-.0399350	.2012704	.0237199	-.0872313	.0073612	-1.684	71	.097
Pair 3	Europe Share Turnover Pre Demutualization - Europe Share Turnover Post Demutualization	-.2504428	.4016618	.0473363	-.3448287	-.1560569	-5.291	71	.000

The average share turnover velocity of the post demutualization period for the exchanges in the Americas and Europe is significant at a level of 5% with the sig values of 0.000 being lesser than 0.05. Hence, we reject the null hypothesis: H_2 that demutualization does not improve the liquidity of the exchanges.

However, for the stock exchanges in Asia the average share turnover velocity of the post demutualization period is insignificant at a level of 5% with a sig value of 0.097 being greater than 0.05. Therefore we fail to reject the null hypothesis: H_2 for the Asian exchanges for the demutualization not improving the liquidity of the exchanges.

4.2.3 Individual Exchanges

4.2.3.1 Paired Samples Statistics

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Brazil Share Turnover Pre Demutualization	.539902	24	.0872398	.0178077
	Brazil Share Turnover Post Demutualization	.680878	24	.0995131	.0203130
Pair 2	Mexico Share Turnover Pre Demutualization	.316375	24	.0345072	.0070437
	Mexico Share Turnover Post Demutualization	.270905	24	.0701416	.0143176
Pair 3	NASDAQ Share Turnover Pre Demutualization	2.977998	24	.4891721	.0998518
	NASDAQ Share Turnover Post Demutualization	3.579414	24	.3281412	.0669815
Pair 4	Australia Share Turnover Pre Demutualization	.474890	24	.1789352	.0365250
	Australia Share Turnover Post Demutualization	.536925	24	.0386249	.0078843
Pair 5	Bombay Share Turnover Pre Demutualization	.428502	24	.1085315	.0221539
	Bombay Share Turnover Post Demutualization	.313384	24	.0606547	.0123811
Pair 6	Tokyo Share Turnover Pre Demutualization	.579307	24	.0340438	.0069492
	Tokyo Share Turnover Post Demutualization	.752195	24	.1888776	.0385545
Pair 7	Borsa Italia Share Turnover Pre Demutualization	.363497	24	.3642923	.0743609
	Borsa Italia Share Turnover Post Demutualization	.976815	24	.2365588	.0482874
Pair 8	Germany Share Turnover Pre Demutualization	1.228042	24	.1262459	.0257698
	Germany Share Turnover Post Demutualization	1.171299	24	.0557239	.0113746
Pair 9	London Share Turnover Pre Demutualization	.550181	24	.0828744	.0169167
	London Share Turnover Post Demutualization	.744935	24	.0742115	.0151484

The means of share turnover velocity of the pre demutualization stage are greater for the following exchanges:-

- Mexican Exchange
- Australian Stock Exchange
- Bombay Stock Exchange
- Deutsche Borse

And lower for the following exchanges:-

- BM & FBVESPA
- NASDAQ OMX
- Tokyo Stock Exchange
- Borsa Italiana
- London Stock Exchange

4.2.3.2 Paired Sample Correlations

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Brazil Share Turnover Pre Demutualization & Brazil Share Turnover Post Demutualization	24	-.287	.174
Pair 2	Mexico Share Turnover Pre Demutualization & Mexico Share Turnover Post Demutualization	24	-.254	.231
Pair 3	NASDAQ Share Turnover Pre Demutualization & NASDAQ Share Turnover Post Demutualization	24	-.854	.000
Pair 4	Australia Share Turnover Pre Demutualization & Australia Share Turnover Post Demutualization	24	.348	.095
Pair 5	Bombay Share Turnover Pre Demutualization & Bombay Share Turnover Post Demutualization	24	.349	.095
Pair 6	Tokyo Share Turnover Pre Demutualization & Tokyo Share Turnover Post Demutualization	24	-.359	.085
Pair 7	Borsa Italia Share Turnover Pre Demutualization & Borsa Italia Share Turnover Post Demutualization	24	-.224	.292
Pair 8	Germany Share Turnover Pre Demutualization & Germany Share Turnover Post Demutualization	24	-.308	.143
Pair 9	London Share Turnover Pre Demutualization & London Share Turnover Post Demutualization	24	.337	.107

The interdependence for the all the exchanges pre and post demutualization share turnover is insignificant at a level of 5%. Except for the NASDAQ for which the interdependence is of -85.4% which is significant at a level

of 5% with the sig value lesser than 0.05.

4.2.3.3 Paired Samples Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Brazil Share Turnover Pre Demutualization - Brazil Share Turnover Post Demutualization	-.1409767	.1499938	.0306174	-.2043136	-.0776399	-4.604	23	.000
Pair 2	Mexico Share Turnover Pre Demutualization - Mexico Share Turnover Post Demutualization	.0454699	.0856730	.0174879	.0092934	.0816465	2.600	23	.016
Pair 3	NASDAQ Share Turnvover Pre Demutualization - NASDAQ Share Turnover Post Demutualization	-.6014163	.7880229	.1608545	-.9341692	-.2686634	-3.739	23	.001
Pair 4	Australia Share Turnover Pre Demutualization - Australia Share Turnover Post Demutualization	-.0620351	.1694020	.0345790	-.1335673	.0094971	-1.794	23	.086
Pair 5	Bombay Share Turnover Pre Demutualization - Bombay Share Turnover Post Demutualization	.1151181	.1042370	.0212773	.0711027	.1591336	5.410	23	.000
Pair 6	Tokyo Share Turnover Pre Demutualization - Tokyo Share Turnover Post Demutualization	-.1728882	.2035878	.0415572	-.2588558	-.0869206	-4.160	23	.000
Pair 7	Borsa Italia Share Turnover Pre Demutualization - Borsa Italia Share Turnover Post Demutualization	-.6133177	.4767760	.0973215	-.8146426	-.4119929	-6.302	23	.000
Pair 8	Germany Share Turnover Pre Demutualization - Germany Share Turnover Post Demutualization	.0567432	.1528913	.0312088	-.0078171	.1213036	1.818	23	.082
Pair 9	London Share Turnover Pre Demutualization - London Share Turnover Post Demutualization	-.1947540	.0907143	.0185170	-.2330592	-.1564487	-10.518	23	.000

The average share turnover velocity of the post demutualization period is significant for all the exchanges except for the Australian Stock Exchange at level of 5%. Therefore we reject the null hypothesis: H_2 that demutualization does not improve the liquidity of the stock exchanges for all exchanges except for the Australian Stock Exchange.

5. Conclusion

The impact of demutualization upon the performance of the stock exchanges as per two measures, that is the returns generated from the broad index performance and liquidity as represented by the share turnover velocity, varies for both variables, for regions and exchanges. For the returns generated, the significance of demutualization's impact can be seen as follows:

Returns		
	Significant	**Insignificant**
1		All exchanges combined
2		Americas
3		Asia
4		Europe
5		BM&FBVESPA
6		Mexican Exchange
7	NASDAQ QMX	
8		Australian Stock Exchange
9		Bombay Stock Exchange
10		Tokyo Stock Exchange Group
11		Borsa Italiana
12		Deutsche Borse
13		London Stock Exchange

The impact of demutualization for share turnover velocity can be seen as follows:

Share turnover velocity		
	Significant	**Insignificant**
1	All exchanges combined	
2	Americas	
3		Asia
4	Europe	
5	BM&FBVESPA	
6	Mexican Exchange	
7	NASDAQ QMX	
8		Australian Stock Exchange
9	Bombay Stock Exchange	
10	Tokyo Stock Exchange Group	
11	Borsa Italiana	
12	Deutsche Borse	
13	London Stock Exchange	

Thus, it can be seen that demutualization improves the liquidity of the exchanges to a greater degree rather than the returns generated. Hence, demutualization from the perspective of the investor is not a beneficial change when considering the returns being generated. However, members of the exchanges might benefit from the improvement in the liquidity levels of the exchanges, since some degree of consolidation of the exchanges' own financial condition can be represented by increasing liquidity, keeping it competitive and providing an incentive for new issuers in the exchange, additionally possibly inviting collaboration with other exchanges local or foreign.

6. Limitations of the study

The study will not be standardized with respect to the chosen time period of the financial world, thus the impact of global financial activity is one key variable of demutualization that has not been taken into consideration. Additionally other variables that can influence the impact of demutualization such as the managerial, policy and structural issues, economical conditions and competitive pressures of other exchanges, have not been taken into consideration.

7. Recommendations

Upon the basis of the findings of this research it can be suggested that demutualization if carried out can impact the performance of the exchange within certain respects. Hence, demutualization in Pakistan should be carried out; however, it should proceed with caution taking into consideration other variables such as the policy matters for exchange governance, conditions of the financial sectors and the economic conditions of the country, that have not been taken into consideration in this research.

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