SPILLOVER EFFECTS OF DEMUTUALIZATION ON STOCK EXCHANGES: A REGIONAL COMPARISON
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Abstract

Demutualization is the process whereby a shareholder enjoys proprietary rights and it is well taken wherever it has been practiced. This study empirically investigates the impact of demutualization on stock market growth. A stratified sample of thirteen stock exchanges comprising five stock exchanges from Asian, five from European, and three from American region were analyzed. Results indicated strategic change in stock exchanges in Asian and European region appears to be more fruitful than American in terms of financial performance, but American stock exchanges seem to be more progressive in terms of stock market performance than Asian and European stock exchanges.

Keywords: Demutualization, Stakeholder theory, Corporate Governance, Stock market performance and financial performance.

JEL Classification: G 100

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Introduction

The business world has become more dynamic, integrated, and responsive to strategic changes consistently with the concept of global village. The business firms are now more prone to change in every field of economic life; otherwise their existence in global and competitive markets could become questionable. Conventionally, stock exchanges were mutual associations or guarantee limited companies (not-for-profit organizations) all over the world. In consequence of globalization, strategic change in operating trends of public listed companies (cross-listing) and reform in the trading system, monopoly of stock exchanges in stock market became futile.

At the start of 1990s, most of the stock exchanges around the world shifted their business from not-for-profit organizations to profit-oriented organizations in order to retain their customers and to achieve maximum fund through an initial public offering for the acquisition of advanced technology. This led to gain optimal level of profits for the market survival in the long run (Tahir and Sial, 2013). After demutualization, stock exchanges have to earn on their own fundamentals. This creates a constant pressure on the exchanges to grow and expand their businesses that will amplify profitability. It works as an inducement to improve liquidity in the market and to introduce new products and services (Aggarwal and Dahiya, 2002). Demutualization is processed, which leads to change in the governance structure of stock exchange for mutual with one vote per member to demutualized firm with one vote per share (Akhtar, 2002). Demutualization is not only change in constitution of stock exchanges, but also continuing business from not-for-profit organizations to profit oriented organizations. This process may be followed by public issuance and listing of the exchanges, with immediate or eventual freely tradable shares. Demutualization of stock exchanges has several benefits as well as challenges; whereas corporate governance is the biggest advantages of demutualization (Aggarwal and Dahiya, 2002). Demutualization in its many forms has become pervasive with a growing demand in emerging market countries (Elliott, 2002).

The demutualization and its impact on financial performance has been investigated in previous researches on both developing (Tahir & Sial, 2013) and developed economies (Isaac & Erin, 2010).
The main objective of the present study is to identify whether demutualization is fruitful in terms of financial performance as well as stock market performance of stock exchanges indifferent regions.

**Objectives of the study**

This study aims at the following main objectives:

1. To find out, significant differences in stock exchanges financial and stock market performance before and after the demutualization.
2. To compare, the financial and stock market performance of stock exchanges across different regions.
3. To explore significant indicators of financial and stock market performance in stock exchanges.

**Literature Review**

The demutualized stock exchanges are those stock exchanges that converted their status from mutual, guarantee limited or member-owned organization to shareholder owned or public limited company. In Akhtar’s (2002) definition, the “demutualization, in the strictest sense, refers to the change in the legal status of the exchange from a mutual association with one vote per member (and possibly consensus-based decision making), into a company limited by shares, with one vote per share (with majority-based decision making)”. The main reasons of the demutualization derived from the globalized market place, which encouraged the cross-border listing of stock exchanges (Tahir and Sial, 2013), rapid advancement of information technology (Akhtar, 2002), and portfolio flows (Abou-Zied, 2005). In another sense, demutualization provides a way to increase the economic and financial resources through issuing shares for acquisition of advance technology and sustainability to business of the stock exchanges.

Demutualization not only provides the financial resources to the stock exchanges, but also reforms the governance structure from one vote per member (mutual association) to one vote per share (public limited companies) (Akhtar, 2002). Similarly after demutualization, decision making power of the stock exchanges shifts
from member of stock exchanges to board of directors of the stock exchanges, who are directly elected by the votes of the shareholders (Akhtar, 2002; Islam and Islam, 2011; Morsy, 2010, Tahir and Sial, 2013). After demutualization, exchanges have to earn on their own financial resources that create a constant pressure on the exchanges to grow and expand their businesses for profitability. It works as a stimulus to improve liquidity in the market and to introduce new products and services (Aggarwal and Dahiya, 2002 and Azzam, 2010).

Aggarwal (2002) indicated that corporate governance is the biggest advantage of demutualization. It can be defined as a set of processes, customs, practices, policies and laws, which directly influence the way an organization works and changes work structure of stock exchanges. The literature supports the argument that demutualization does help an exchange to improve its corporate governance (Fleckner, 2005 and Steil, 2002). Demutualization brings sustainability to stock exchanges by reforming governance in separating ownership rights from trading rights (Fama & Jense, 1983). It also augments the role of non-member stakeholders in stock exchange affairs and implicitly helps in defining the duties of management and board more clearly. Hence, the board of directors is separated from management and does not interfere in portfolio decisions (LSE, 2007). According to Tahir and Sial (2013), demutualization brings about strategic changes and these “strategic changes in corporate governance and ownership are more acceptable in developing and emerging economies than developed economies” (p. 461). Aggarwal (2002) argued that converting member-owned, non-profit organizations into profit-driven investor-owned corporations provides exchanges access to capital that can be used both for investment in new technology and for participation in the ongoing consolidation of the industry. It supports the research hypothesis that demutualization increases the competition level. When there is a healthy competition environment, there will be a healthy growth as well (Elliot, 2002).

Azzam (2010) argued that demutualization improves the performance of exchanges and decreases debt. The demutualization of the stock is fruitful in the term of the rate of return and overall profitability. If the stock exchanges demutualize and go public with initial public offering and set their status as corporation, they will also
avail the benefits of the corporate governance and overall profits (Isaac and Erin, 2010). Morsy & Rwegasira (2010) found that demutualization or commercialization of the stock exchanges is more productive than mutual stock exchanges and listed companies are more productive than the unlisted companies. The reason behind that result is unlisted companies are not more progressive and effective in the corporate governance rules. Demutualization and commercialization improve the performance of stock exchanges and publicly listed exchanges are more profitable than demutualized exchanges, but demutualized exchanges are more profitable than mutual exchanges (Sofia, 2010). Tahir & Sial (2013) studied the motivation for public equity offers from international point of view and argued that exchanges had become demutualized due to raising the capital and competition with peers (Sial et al., 2014).

Steill (2002) argued that the distribution of profits among owners is not the relevant factor of ownership change and leads to merger and acquisition of exchanges and to raising new capital and profitability ratios have significantly increased after demutualization in developed economies and similarly in developing economies (Tahir and Sial, 2013) and trading activities of foreign investors increase after demutualization, which indicates high quality of stock market (Fama & Jense, 1983). It indicates that large and high trading revenue stock exchanges have more pressure to demutualized and self listing lead to high growth of the exchanges.

Analytical Framework

The analytical framework is outlined following the scheme shown in Figure 1.
Theoretical Framework

Figure 1:

Theoretical framework of the study

Demutualization → Regional Analysis

Financial Performance

Shareholder Return

Return on assets

Return on assets (ROA) is the best indicator of shareholders return. It indicates the efficiency of management of company by utilizing its resources at optimal level. It shows that what an organization could do with what it has. It is best and foremost number through which an investor can compare the efficiency of competing companies in the same industry.

\[
ROA = \frac{\text{Net income}}{\text{Total Assets}}
\]

ROA is an indicator of profitability of the company, which indicates how much the company is earning by utilizing its own assets. It shows that how many dollars of earning company get from each dollar of assets which company own.

Return on equity

It measures the efficiency of a firm at generating profits from each unit of shareholder equity. Return on equity (ROE) is another indicator of profitability of the company, which measures how much
return is generated on common stock equity of the company for common equity holders.

\[ \text{ROE} = \frac{\text{Net income}}{\text{Common equity}} \]

**Liquidity Ratios**

A liquidity ratio shows how much quickly company has short-term and long-term assets to pay short-term and long-term liabilities.

**Short-term liquidity**

Short-term liquidity ratio indicates a company’s ability to repay short-term liability out of its short-term resources. It is a ratio indicating how much current assets (cash and assets that are easily convertible into cash) are available in company to fulfill its short-term obligations. The current ratio (CR) is measured through the following formula.

\[ \text{CR} = \frac{\text{Current Assets}}{\text{Current liabilities}} \]

It should be in a normal range. If it is high, it shows that the firm is overcapitalizing, whereas if it is low, then it shows that the firm is overtrading.

**Long-term liquidity**

The equity ratio (ER) is an indicator of the level of control of the company. The ER determines the percentage of total assets that are invested by common equity holders not by the creditors.

\[ \text{ER} = \frac{\text{Shareholders equity}}{\text{Total assets}} \]

Debt to assets ratio (D/A) measures how much the company’s assets are financed by debts. The higher the debt to assets ratio, the greater is the risk of the company’s operation as it faces trouble in his borrowing capacity.

\[ \text{D/A} = \frac{\text{Long-term debt}}{\text{Total assets}} \]
**Asset utilization**

The assets management ratio used to analyze the company sales/revenue generating through utilizing assets. It indicates the ability of the company to transform its assets into revenue. Common examples of asset management ratios are Total Assets Turnover and Fixed Assets Turnover.

Total asset turnover is a ratio that indicates the efficiency of a company for generating revenue by using total assets of the company. This ratio explains the productivity of the company's total assets.

\[
\text{Total Assets Turn Over} = \frac{\text{Revenue}}{\text{Total Assets}}
\]

Fixed assets turnover ratio compares the revenue of the company to its fixed assets. This ratio indicates how much efficiently a company is using its fixed assets for generating income.

\[
\text{Fixed Assets Turn Over} = \frac{\text{Revenue}}{\text{Total fixed assets}}
\]

**Stock Market Performance**

Stock market performance is measured through the set of the followings indicators.

**Stock index**

“Index can be marketed capitalization-weighted or free float based” (Business Dictionary.com, 2010). When the index is a “price index”, it measures the pure change of share prices without taking into consideration returns from dividend payouts. When the index is a “return index”, it measures the total return of investments in the index shares, including reinvested dividends (Andrew, 2002).

**Market Capitalization**

Market capitalization is a term that shows the strength and magnitude of the stock market. The market capitalization indicates how much the stock exchange is large and strong (Andrew, 2002). The
market capitalization is calculated by the total number of issued shares of domestic companies, including their several classes, multiplied by their respective prices at a given time. (Naacke, 2005). The market capitalization is computed using the shares of both domestic and foreign companies.

**Number of listed companies**

The number of listed companies refer to the companies that are listed on the stock exchange and follow rules and regulation of that stock exchange. These listed companies are divided into two categories such as domestic companies and foreign companies.

**No. of transactions in equity shares**

The number of transactions in equity shares represents the definite number of trades that have taken place during the period in stock exchange. It indicates the effectiveness of stock market.

**Methodology**

This study is non-contrived (non-experimental), comparative (before and after demutualization analysis), cross-sectional in one-industry (demutualized stock exchanges) research design. The population of the study is made of 60 stock exchange markets around the world, which are members of the World Federation of Exchanges (WFE). Only 23 out of 60 stock exchanges are demutualized. A stratified sampling technique has been used for the sample selection. Total stock exchanges are categorized as three homogeneous subgroups (strata) such as Asian, Europe-Africa-Middle East, and American stock exchanges. These strata are mutually exclusive in terms of region, control, policies, and internal working conditions. Then systematic sampling (skipping one stock exchange) was used within each stratum for selection of sample.

A proportion of 38.33 per cent (5 stock exchanges) in the sample is from Asia, 38.33 per cent (5 stock exchanges) in the sample is from Europe, and 23 per cent (3 stock exchanges) in sample is from America. As shown in Table 1, the total sample of study is only 13 (56
per cent of the population) stock exchanges out of 23 demutualized stock exchanges.

Table 1:
Summary of sample of the Study

<table>
<thead>
<tr>
<th>Name of the Stock exchange</th>
<th>Year</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bursa Malaysia</td>
<td>2004</td>
<td>Asia – Pacific</td>
</tr>
<tr>
<td>Deutsche Borse</td>
<td>2000</td>
<td>Europe - Africa - Middle East</td>
</tr>
<tr>
<td>Hong Kong Exchanges and Clearing</td>
<td>2000</td>
<td>Asia – Pacific</td>
</tr>
<tr>
<td>Johannesburg Stock Exchange</td>
<td>2005</td>
<td>Europe - Africa - Middle East</td>
</tr>
<tr>
<td>London Stock Exchange Group</td>
<td>2000</td>
<td>Europe - Africa - Middle East</td>
</tr>
<tr>
<td>NASDAQ OMX Group</td>
<td>2008</td>
<td>Americas</td>
</tr>
<tr>
<td>NYSE Euro next</td>
<td>2007</td>
<td>Americas</td>
</tr>
<tr>
<td>Athens Stock Exchange</td>
<td>1999</td>
<td>Europe - Africa - Middle East</td>
</tr>
<tr>
<td>Australian Securities Exchange</td>
<td>1998</td>
<td>Asia – Pacific</td>
</tr>
<tr>
<td>BM&amp;FBOVESPA S.A.</td>
<td>2007</td>
<td>Americas</td>
</tr>
<tr>
<td>BME Spanish Exchanges</td>
<td>2001</td>
<td>Europe - Africa - Middle East</td>
</tr>
<tr>
<td>Philippines Stock Exchange</td>
<td>2001</td>
<td>Asia – Pacific</td>
</tr>
<tr>
<td>Singapore Stock Exchange</td>
<td>1999</td>
<td>Asia – Pacific</td>
</tr>
</tbody>
</table>

The study has employed pre- and post-design procedures to compare performance of stock exchanges before and after demutualization. In order to evaluate performance of demutualized stock exchanges, the mean and median of each variable of financial performance and stock market were calculated for the period of five years before and five years after the demutualization of stock exchanges. As the data were non-normally distributed, a non-parametric test (Wilcoxon Signed Ranks Test) was applied to test the hypothesis and also Paired Sample $t$-test is applied with the assumption of normality of data.

Empirical Findings

Financial Performance
Shareholders Return

In order to test the shareholders return of the demutualized stock exchanges in American, Europe and Asia, the improvement in ROA and ROE were checked. Figure 2 shows a comparison of the total mean score of ROA before demutualization 0.0707, 0.0635 and 0.0421 and after demutualization 0.0225, 0.1625, 0.1128 in American, European and Asian stock exchanges, respectively. In Table 2, the Paired sample $t$-test indicates that there is no significant difference in ROA of
American stock exchanges, but a significant difference can be noted in European and Asian stock exchanges after demutualization. The Wilcoxon test shows that 38 percent, 81 percent & 83 percent of the sample has increased ROA of American, European and Asian stock exchanges, respectively, after demutualization. Hence, European and Asian stock exchanges has significant difference in ROA after demutualization. Figure 2 compares the total mean score of ROE before demutualization 0.1292, 0.1452 and 0.1308 and after demutualization 0.0522, 0.2682 and 0.2001 in American, European, and Asian stock exchanges, respectively. Similarly, the $t$-test reported in Table 2 indicates that ROE has no significant difference in all regions of stock exchanges at any probability level after demutualization. However, the results of Wilcoxon test shows an increase in ROE in 25 percent, 56 percent and 67 per cent of the sample after demutualization of American, European, and American stock exchanges.

**Figures 2:**

*Shareholders return*

![Graph showing shareholder return](image)

**Liquidity**

**Short Term Liquidity**

The current ratio is used as the indicator of short-term liquidity. Figure 3 exhibits comparison of short-term liquidity before demutualization equal to 2.0808, 4.1267 and 3.4899 and after demutualization equal to 1.0084, 2.3104 and 1.7201 in American, European and Asian stock exchanges, respectively. In Table 2, the Paired Sample $t$-test indicates $p$ value less than 0.05 (0.03, 0.03, and 0.04), so the current ratio has a significant difference in stock exchanges
Table 2:
Summary of Financial performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Region</th>
<th>N</th>
<th>Mean (Median)</th>
<th>Mean (Median)</th>
<th>T</th>
<th>Sign</th>
<th>Positive Ranks</th>
<th>Negative Ranks</th>
<th>Z</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Assets</td>
<td>American</td>
<td>15</td>
<td>0.0707 [0.0513]</td>
<td>0.0225 [0.0261]</td>
<td>1.69</td>
<td>0.14</td>
<td>38%</td>
<td>62%</td>
<td>0.26</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>European</td>
<td>25</td>
<td>0.0635 [0.0723]</td>
<td>0.1625 [0.1332]</td>
<td>-2.9</td>
<td>0.01</td>
<td>81%</td>
<td>19%</td>
<td>0.68</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>25</td>
<td>0.0421 [0.0520]</td>
<td>0.1128 [0.0458]</td>
<td>-1.55</td>
<td>0.15</td>
<td>83%</td>
<td>17%</td>
<td>0.64</td>
<td>0.04</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>American</td>
<td>15</td>
<td>0.1292 [0.1342]</td>
<td>0.0522 [0.0726]</td>
<td>1.71</td>
<td>0.13</td>
<td>25%</td>
<td>75%</td>
<td>0.54</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>European</td>
<td>25</td>
<td>0.1452 [0.1440]</td>
<td>0.2682 [0.1743]</td>
<td>-1.6</td>
<td>0.13</td>
<td>56%</td>
<td>44%</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>25</td>
<td>0.1308 [0.1177]</td>
<td>0.2001 [0.1324]</td>
<td>-1.0</td>
<td>0.34</td>
<td>67%</td>
<td>33%</td>
<td>1.26</td>
<td>0.05</td>
</tr>
<tr>
<td>Current Ratio</td>
<td>American</td>
<td>15</td>
<td>2.0808 [1.8129]</td>
<td>1.0084 [1.019]</td>
<td>2.54</td>
<td>0.04</td>
<td>25%</td>
<td>75%</td>
<td>0.96</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>European</td>
<td>25</td>
<td>4.1267 [4.0398]</td>
<td>2.3104 [2.0849]</td>
<td>2.36</td>
<td>0.03</td>
<td>31%</td>
<td>69%</td>
<td>0.61</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>25</td>
<td>3.4899 [1.4248]</td>
<td>1.7201 [1.2530]</td>
<td>2.27</td>
<td>0.04</td>
<td>33%</td>
<td>67%</td>
<td>0.27</td>
<td>0.02</td>
</tr>
<tr>
<td>Equity Ratio</td>
<td>American</td>
<td>15</td>
<td>0.5155 [0.6491]</td>
<td>0.6684 [0.4950]</td>
<td>0.61</td>
<td>0.56</td>
<td>25%</td>
<td>75%</td>
<td>0.56</td>
<td>0.58</td>
</tr>
<tr>
<td></td>
<td>European</td>
<td>25</td>
<td>0.5466 [0.6170]</td>
<td>0.6185 [0.6730]</td>
<td>-0.98</td>
<td>0.34</td>
<td>63%</td>
<td>37%</td>
<td>0.93</td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>25</td>
<td>0.3756 [0.2257]</td>
<td>0.3321 [0.3322]</td>
<td>0.29</td>
<td>0.78</td>
<td>67%</td>
<td>33%</td>
<td>0.76</td>
<td>0.48</td>
</tr>
<tr>
<td>Debt to assets Ratio</td>
<td>American</td>
<td>15</td>
<td>0.3021 [0.1718]</td>
<td>0.287 [0.2991]</td>
<td>0.53</td>
<td>0.50</td>
<td>50%</td>
<td>50%</td>
<td>0.28</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>European</td>
<td>25</td>
<td>0.5218 [0.0840]</td>
<td>0.5523 [0.0759]</td>
<td>2.55</td>
<td>0.02</td>
<td>25%</td>
<td>75%</td>
<td>0.32</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>25</td>
<td>0.3569 [0.0577]</td>
<td>0.0267 [0.0515]</td>
<td>1.96</td>
<td>0.08</td>
<td>58%</td>
<td>42%</td>
<td>0.54</td>
<td>0.58</td>
</tr>
<tr>
<td>Total Assets Turnover</td>
<td>American</td>
<td>15</td>
<td>0.4572 [0.4231]</td>
<td>0.3732 [0.3220]</td>
<td>0.69</td>
<td>0.51</td>
<td>25%</td>
<td>75%</td>
<td>0.84</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>European</td>
<td>25</td>
<td>0.5978 [0.4762]</td>
<td>0.6407 [0.5938]</td>
<td>-2.42</td>
<td>0.03</td>
<td>69%</td>
<td>31%</td>
<td>2.01</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>25</td>
<td>0.7078 [0.0814]</td>
<td>0.4918 [0.1366]</td>
<td>-1.95</td>
<td>0.08</td>
<td>91%</td>
<td>9%</td>
<td>2.58</td>
<td>0.01</td>
</tr>
<tr>
<td>Fixed Assets Turnover</td>
<td>American</td>
<td>15</td>
<td>0.5783 [0.5988]</td>
<td>0.4918 [0.3828]</td>
<td>2.07</td>
<td>0.08</td>
<td>13%</td>
<td>87%</td>
<td>1.82</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>European</td>
<td>25</td>
<td>0.7052 [0.7083]</td>
<td>1.5978 [0.4918]</td>
<td>1.15</td>
<td>0.27</td>
<td>50%</td>
<td>50%</td>
<td>0.59</td>
<td>0.57</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>25</td>
<td>0.5471 [0.5471]</td>
<td>0.8167 [0.7784]</td>
<td>-1.81</td>
<td>0.1</td>
<td>75%</td>
<td>25%</td>
<td>1.64</td>
<td>0.1</td>
</tr>
</tbody>
</table>

of all regions after demutualization. The results of Wilcoxon test also supports that 25 percent, 31 percent, and 33 percent of the sample has increased the current ratio of stock exchanges of American, European, and Asian regions, respectively, after demutualization and this increase is significant at 5 percent level of probability. It shows that management of stock exchanges has improved short term performance of stock exchanges after demutualization. It indicates that demutualization leads toward better short term position of stock exchanges performing smoothly and efficiently in term of short term liquidity.
Figure 3

Short Term Liquidity

![Short Term Liquidity Graph]

Long Term Liquidity

Figure 4 shows the portion of equity capital, before demutualization, equal to 0.5155, 0.5446, and 0.5446 and, after demutualization, equal to 0.466, 0.6185, and 0.3616 in American, European, and Asian stock exchanges, respectively. Table 2 shows that, after demutualization, equity ratio have decreased in American stock exchanges and increased in European and Asian stock exchanges. The Paired Sample t-test indicates that equity ratio has no significant change in pre- and post-periods of demutualization of stock exchanges of all regions. Similarly, Wilcoxon test shows that 25 per cent, 63 percent, and 67 per cent of the sample has increased equity ratio of American, European, and Asian stock exchanges, respectively, after demutualization and this increase is significant only for European and Asian regional stock exchanges.

Figure 4 shows a portion of debt capital is equal to 0.3021, 0.2162, and 0.3569 before demutualization and to 0.287, 0.26, and 0.274 after demutualization in American, European, and Asian stock exchanges, respectively. In Table 2, the Paired Sample t-test indicates that the debt to assets ratio has no significant difference after demutualization of American stock exchanges, but has a significant difference after demutualization of European and Asian stock exchanges. The results of Wilcoxon sign rank test shows that 50 per cent, 25 percent, and 58 per cent of the sample has increased the debt to assets ratio of stock exchanges after demutualization, but this increase is only significant in stock exchanges of European region.
Figures 4:
*Long-term Liquidity*

![Graph showing long-term liquidity](image)

**Asset utilization**

Figure 5 shows that a total assets utilization equal to 0.4572, 0.3978, and 0.1076 before demutualization and to 0.3732, 0.6407 and 0.2491 after demutualization in American, European, and Asian stock exchanges, respectively. In Table 2, the Paired Sample t-test indicates that the total assets turnover has no significant difference after demutualization of American stock exchanges, but has a significant difference after demutualization of European and Asian stock exchanges. The results of Wilcoxon test shows that 25 percent, 69 percent, and 91 percent of the sample has increased total assets turnover of stock exchanges of all regions.

Figure 5 shows fixed assets utilization equal to 0.7983, 2.052, and 0.5471 before demutualization and to 0.4918, 1.5978 and 1.5978 after demutualization in American, European, and Asian stock exchanges, respectively. In Table 2, the Paired Sample t-test shows that total assets turnover has significant difference after demutualization of stock exchanges of the American and Asian regions, but has no significant difference after demutualization of stock exchanges of the European region. The Wilcoxon test indicates that 13 percent, 50 percent, and 75 percent of the sample has increased fixed assets turnover of stock exchanges of American, European, and Asian regions, respectively, after demutualization and this increase in fixed assets turnover is significant in stock exchanges of American and Asian region and insignificant in stock exchanges of European region.

Figures 5:
*Assets Utilization*

![Graph showing assets utilization](image)
Stock Market Performance

Market capitalization

In Table 2, the Paired Sample t-test indicates that market capitalization has significant difference after demutualization of stock exchanges of the American region, but has no significant difference in European and Asian regions. The results of Wilcoxon test show that 100 percent, 81 percent and 58 percent of the sample has increased market capitalization after demutualization of stock exchanges of American, European and Asian region, respectively.

Number of Transactions

For the purpose of examining the progress in capital market growth of the demutualized stock exchanges, the improvement number of transaction is checked. Figure 6 shows the number of transaction equal to 1,103,428, 27,902, and 20,099 before demutualization and to 3,041,821, 34,395, and 24,445 after demutualization in American, European, and Asian stock exchanges, respectively. In Table 3, the Paired Sample t-test indicates that the number of transactions in equity shares has significant difference after demutualization stock exchanges of the American region, but has no significant difference after demutualization of stock exchanges of the European and Asian regions. The results of Wilcoxon test shows that 100 percent, 88 percent, and 67 percent of the sample has increased the number of transactions in equity shares after demutualization of stock exchanges in the American, European, and Asian regions.

Figures 6:

Number of transactions
Table 3:
Summary of Stock market performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Region</th>
<th>N</th>
<th>Mean [Median]</th>
<th>Mean [Median]</th>
<th>T-Test</th>
<th>Wilcoxon Signed Ranks Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Transactions in Equity Shares</td>
<td>America</td>
<td>15</td>
<td>1,103,428 [101,959]</td>
<td>3,041,821 [3055,81]</td>
<td>10.7</td>
<td>100% / 0%</td>
</tr>
<tr>
<td></td>
<td>Europe</td>
<td>25</td>
<td>27,902 [950]</td>
<td>34,395 [2686]</td>
<td>0.67</td>
<td>88% / 12%</td>
</tr>
<tr>
<td></td>
<td>Asia</td>
<td>25</td>
<td>20,949 [19,437]</td>
<td>24,445 [24,214]</td>
<td>0.44</td>
<td>67% / 33%</td>
</tr>
<tr>
<td>No. of Listed companies</td>
<td>America</td>
<td>15</td>
<td>2,718 [2,049]</td>
<td>2,478 [2,422]</td>
<td>2.66</td>
<td>25% / 63%</td>
</tr>
<tr>
<td></td>
<td>Europe</td>
<td>25</td>
<td>1,949 [1,078]</td>
<td>1,078 [1,180]</td>
<td>1.68</td>
<td>19% / 71%</td>
</tr>
<tr>
<td></td>
<td>Asia</td>
<td>25</td>
<td>1,147 [834]</td>
<td>1,417 [1,180]</td>
<td>0.03</td>
<td>100% / 0%</td>
</tr>
<tr>
<td>Stock Index</td>
<td>America</td>
<td>15</td>
<td>6,022 [48,409.0]</td>
<td>6,022 [48,409.0]</td>
<td>0.87</td>
<td>50% / 50%</td>
</tr>
<tr>
<td></td>
<td>Europe</td>
<td>25</td>
<td>10,005 [18,848]</td>
<td>10,005 [18,848]</td>
<td>1.55</td>
<td>31% / 69%</td>
</tr>
<tr>
<td></td>
<td>Asia</td>
<td>25</td>
<td>10,002 [30,268.26]</td>
<td>19,403 [31,202.63]</td>
<td>0.3</td>
<td>67% / 33%</td>
</tr>
<tr>
<td>Market Capitalization</td>
<td>America</td>
<td>15</td>
<td>163,952.75 [164,859.75]</td>
<td>17,28452.6 [180,569.41]</td>
<td>2.62</td>
<td>25% / 75%</td>
</tr>
<tr>
<td></td>
<td>Europe</td>
<td>25</td>
<td>35,738,72.37 [35,784,44.5]</td>
<td>35,738,72.37 [35,784,44.5]</td>
<td>0.32</td>
<td>81% / 19%</td>
</tr>
<tr>
<td></td>
<td>Asia</td>
<td>25</td>
<td>98,023,31.54 [195,003.3]</td>
<td>175,563,238 [150,736,9]</td>
<td>1.33</td>
<td>58% / 42%</td>
</tr>
</tbody>
</table>

Listing Trend

Figure 7 shows a number of listed companies equal to 2,718, 1,949, and 1,147 before demutualization and to 2,475, 1,147, and 1,417 after demutualization in the American, European, and Asian stock exchanges, respectively. In Table 3, the Paired Sample t-test shows that demutualization of stock exchanges has decreased the number of listed companies in the American and European regions, but has increased in the Asian region. The Paired Sample t-test in Table 4 shows that the number of listed companies has a significant difference of stock exchanges of American and Asian regions after demutualization. The Wilcoxon test shows that 25 percent, 19 percent, and 100 percent of the sample has increased the number of listed companies after demutualization of stock exchanges of the American, European, and Asian regions, respectively and this increase is significant in all regions.

Figures 7:
Number of Listed companies
Stock Index

Figure 8 shows a stock index equal to 60220, 10005, and 10002 before demutualization and to 43414.27, 18684.43 and 19340.37 after demutualization in American, European, and Asian stock exchanges, respectively. In Table 3, the Paired Sample t-test shows that the number of stock index has decreased after demutualization of stock exchanges of all three regions. The Paired Sample t-test shows that the stock index has no significant differences after demutualization of stock exchanges of all three regions. The Wilcoxon test indicates that 50 percent, 31 percent, and 67 percent of the sample has increased stock index after demutualization of stock exchanges of American, European, and Asian regions, but this increase is not significant. Figure 9 shows a stock index equal to 16303952.75, 3573872.37, and 980259.31 before demutualization and to 17278452.6, 5259394.248, and 1575963.238 after demutualization in the American, European, and Asian stock exchanges, respectively.

Figures 8:
Stock Index

Figures 9:
Market Capitalization
Conclusion

It is generally discussed that demutualization is only fruitful for developed regions. By focusing on this premise, the current study examined the effects of demutualization on the financial performance and stock market performance of stock exchanges for the periods of five years before and after demutualization in different regions. Financial performance is measured through the return on assets, return on equity, total assets turnover, fixed assets turnover, debt ratio, equity ratio, and current ratio, whereas the stock market performance is measured through the number of transactions in equity shares, number of listed companies, stock index, and market capitalization.

The study is consistent with previous literature that the demutualization of stock exchanges increases the financial performance of stock exchanges including Mosry and Rwegasira (2010) and Tahir and Sial (2013). The Paired Sample t-test and Wilcoxon signed ranks test are applied to examine the change in financial performance and stock market performance of stock exchanges after demutualization. In the region-wise results, the Asian and European stock exchanges appear to be more fruitful than the American counterpart in terms of financial performance. On the other hand, the American stock exchanges are more progressive than the Asian and European stock exchanges in terms of stock market performance. Demutualization is productive for stock exchanges in the overall financial performance and stock market performance of the stock exchanges. The democratic governance structure is more progressive than the mutual governance structure for the stock exchanges.

The stock exchanges of Pakistan converted their status from the mutualized to demutualized firms. The recommendations of the study are quite helpful for formulating demutualization policies in Pakistan. The scope of the study can be extended to other countries of the region and especially the developed countries where demutualization is being exercised.
References


