

Stock market efficiency: The Pakistan Stock Exchange merger

Saqib Sharif

Assistant Professor of Finance

Asad Ali

Research Associate

CAREIC-PCWF-2018

AERC International Conference

Abstract

- This study examines the valuation, liquidity, volatility, and efficiency before and after the integration of Islamabad Stock Exchange (ISE) and Lahore Stock Exchange (LSE) with Karachi Stock Exchange (KSE) to form the Pakistan Stock Exchange (PSX).
- Results indicate mixed evidence for different market measures following the integration of domestic bourses.
- The post-integration period in Pakistan is fraught with political turmoil and weak economic indicators.
- Thus any improvement that is hypothesized following the merger is offset by economic vulnerabilities and political uncertainties.

Introduction

- Global competition and technological advancement has paved the way for demutualization, merger and acquisition of financial markets.
- The merger of stock markets not only facilitate the overall economic growth, but also improve financial market development (e.g., Bracker, Docking, & Koch, 1999; Dickinson, 2000; Dorodnykh, 2014; Shamsuddin & Kim, 2003).
- Stock exchanges amalgamation helps in increasing trading values, market share, and stock price discovery, as well as in narrowing the bid-ask spread for smooth functioning (e.g., Arnold et al., 1999; Dorodnykh, 2014; Slimane, 2012).
- Thus in this study we examine and compare the pre- and post-merger period, to document the effects of financial markets integration in Pakistan.

Introduction & Contribution

- From January 11, 2016, a newly integrated Pakistan Stock Exchange (PSX) started its operations, replacing the Karachi, Lahore, and Islamabad Stock Exchange.
- This event (i.e., regulatory shift) allows us to document the impact of a demutualization process. Specifically, we examine the effects of second phase of the 'Stock Exchanges Demutualization and Integration Act 2012'.
- To the best of our knowledge, the relationship between stock market integration and efficiency, liquidity, and volatility have not been the focus of previous analysis in Pakistan.
- This research contributes to the relatively underdeveloped literature on domestic capital market integration and its effects on various market efficiency measures in emerging markets.

Literature Review & Hypothesis Development

- The first hypothesis deals with the impact of domestic bourses amalgamation on the stock market valuation.
- In this paper, we expect that stock prices react positively following the merger of national bourses, due to increase in the relative size of the firm's investor base and trading of all listed firms on a more prominent bourse (e.g., Bacmann, Dubois, & Ertur, 2002).
- Moreover, focus on single unified stock market, following the merger, suggests more careful following by analysts, the Financial Press and the investors, which implies a decline of the expected stock return.
- ***Hypothesis 1: The abnormal returns for listed securities increases following the merger of stock exchanges.***

Literature Review & Hypothesis Development

- The second hypothesis relates to the effect of stock market integration on the turnover of stocks.
- The Securities and Exchange Commission of Pakistan (SECP) expects the unified trading platform increases the pool of investors and also attract foreign investors.
- Arnold et al. (1999) find significant increase in dollar trading volume for merging exchanges in United States.
- Amalgamation events improve market liquidity documenting positively significant trading activity (Slimane, 2012; Yang & Pangastuti, 2016).
- ***Hypothesis 2: The turnover of securities improves after the merger of stock exchanges.***

Literature Review & Hypothesis Development

- Our third hypothesis deals with bid-ask spreads (another measure of liquidity).
- Slimane (2012) finds that integration of stock exchanges enhances market liquidity and decreases bid-ask spread.
- Alliances between stock exchanges enhances market liquidity (e.g., McAndrews & Stefanadis, 2002).
- Similarly, Arnold et al. (1999) documents narrower bid-ask spreads for merged exchanges.
- ***Hypothesis 3: The relative bid-ask spread decreases after the merger of domestic bourses.***

Literature Review & Hypothesis Development

- Our fourth hypothesis relates to the impact of amalgamated exchange on the high-low price volatility.
- Generally, higher liquidity leads to lower volatility (Domowitz, Glen, & Madhavan, 2001).
- The stock market mergers likely to diminish the security price jumps, on average (Liu, 2016).
- Rejeb & Salha (2013) suggest that degree of financial integration seems to reduce the effects of financial crises on stock market volatility.
- By contrast, Slimane (2012) documents that Euronext merger have no effect on the market risk.
- ***Hypothesis 4: The relative high-low price volatility declines following the merger of domestic financial markets.***

Literature Review & Hypothesis Development

- The fifth hypothesis relates to the informational efficiency of domestic stock exchange merger.
- The price adjustment to new information is faster in developed markets compared to developing economies.
- Santos & Scheinkman (2001) find improvement in informational efficiency following the alliances between stock exchanges.
- Yang and Pangastuti (2015) find improvement in market efficiency following the merger between the Surabaya Stock Exchange and the Jakarta Stock Exchange into the Indonesia Stock Exchange (IDX).
- However, Charles *et al.* (2016) finds lower level of efficiency in the post-merger period for different domestic and cross-border merger of stock exchanges.
- ***Hypothesis 5: The informational efficiency remains unchanged following the integration of stock exchanges.***

Data and Methodology

- Our study covers the period from 1 January, 2014 through 23 November 2017. This is split into roughly 2-year pre-period of January 01, 2014 – January 08, 2016 and 2-year post-period of January 11, 2016 – November 23, 2017.
- Daily data on closing stock price, trading volume, turnover, ask price, bid price, high price, low price, free-float market capitalization and number of shares outstanding are obtained from Thomson Reuters Data stream.
- $AR_t^m(t) = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{Mt}$ (1)
- $Spread = (Ask\ Price - Bid\ Price) / \left(\frac{Ask\ Price + Bid\ Price}{2} \right)$ (2)
- $Turnover = Trading\ volume / common\ shares\ outstanding$ (3)
- $Volatility = (High\ Price - Low\ Price) / \left(\frac{High\ Price + Low\ Price}{2} \right)$ (4)
- $r_{it} = \alpha_i + \beta_i^M * r_{mt} + \varepsilon_{it}$ (5)
- $\rho_{it} = corr(r_{it}, r_{mt-1})$ (6)

Figure-1

KSE- 100 Index value (LHS) and Month-wise daily average traded value (RHS)

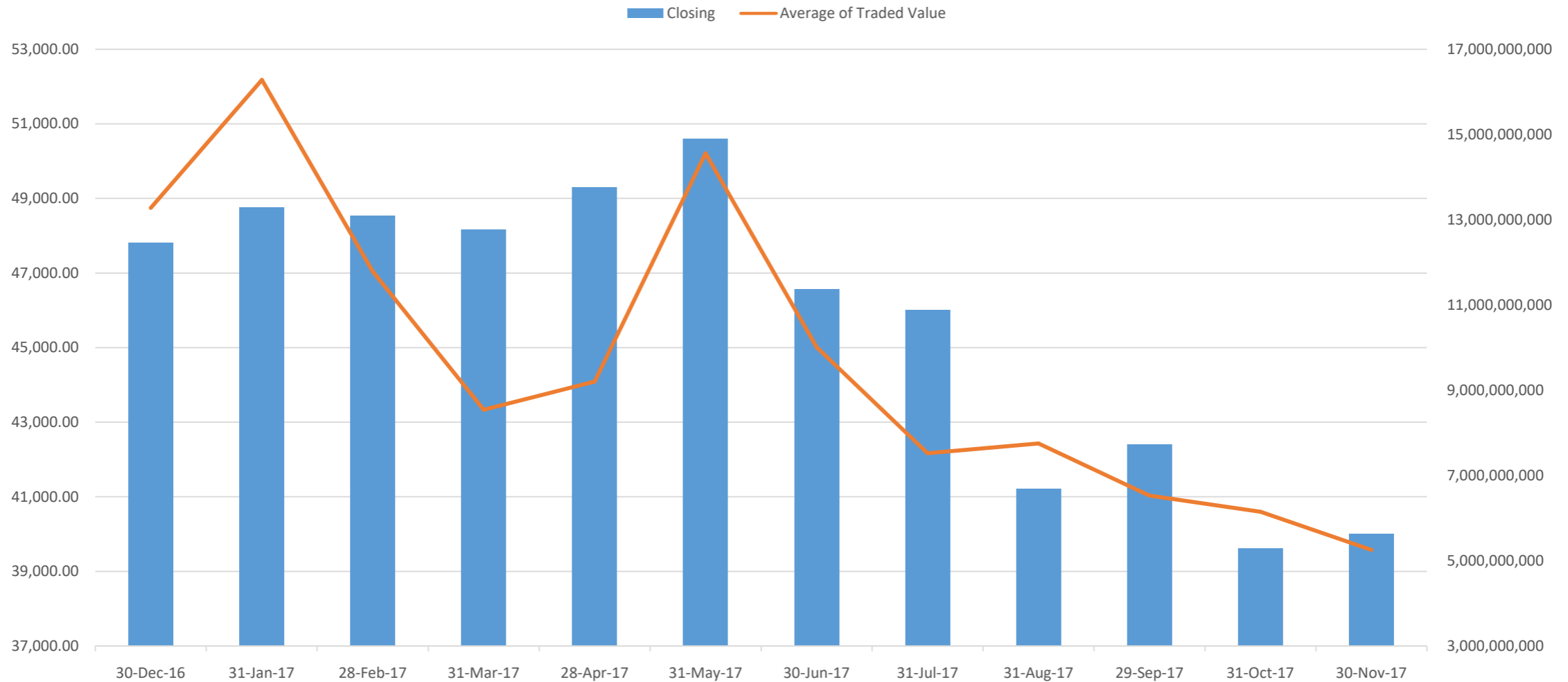


Table 1: Univariate results

Panel A	Mean Values			
	Pre	Post	Diff	p-value
Ln Closing Price	3.4431	3.6783	0.2352	0.0000
Ln Market Value	7.7899	8.1031	0.3132	0.0000
Ln Turnover by Volume	4.1313	4.2101	0.0788	0.0000
Liquidity Spread	0.0294	0.0260	-0.0034	0.0000
Price Volatility	0.0332	0.0329	-0.0003	0.0503
Abnormal Return	-0.00001	-0.0003	-0.00029	0.0168
Panel B	Median Values			
Ln Closing Price	3.4362	3.7226	0.2864	0.0000
Ln Market Value	8.2606	8.6297	0.3691	0.0000
Ln Turnover by Volume	4.2570	4.3944	0.1374	0.0000
Liquidity Spread	0.0109	0.0089	-0.0020	0.0000
Price Volatility	0.0265	0.0263	-0.0002	0.8715
Abnormal Return	-0.0001	-0.0002	-0.0001	0.0004

Table 2: Abnormal Return Regression – Valuation Effect

Post_Period	-0.0003** (-2.39)	-0.00003 (-0.19)
Liquidity Spread		0.0464*** (3.18)
Price Volatility		0.0709*** (8.28)
Constant	-0.0000 (-0.14)	-0.0048*** (-14.92)
Observations	259,841	165,964
R- Squared	0.0000	0.0906

Table 4: Bid-Ask Spread Regression – Liquidity Effect

Dependent Variable: Relative Bid-Ask Spread	(1)	(2)
Post_Period	-0.0034*** (-16.14)	-0.0017*** (-3.44)
Ln (Trading Volume)		-0.0040*** (-16.57)
Price Volatility		0.0759*** (11.32)
Constant	0.0294*** (199.91)	0.0329*** (28.54)
Observations	206,204	180,184
R- Squared	0.0013	0.3428

Table 7: Cross-Sectional Regression of Cross-Autocorrelation – Information Efficiency

Dependent Variable: Cross-Autocorrelation	(1)	(2)
Period	0.0121** (2.37)	0.0108** (2.38)
% Zero Return		-0.0008*** (-8.86)
Constant	0.0533*** (14.84)	0.0743*** (18.67)
Observations	521	520
Adj. R ²	0.0088	0.1415

Conclusion

- We find mixed evidence based on different proxies / measures used to prove our hypotheses.
- First, no change is observed in the abnormal returns. Nonetheless, we may not generalize our results on other emerging markets, since, during the post-merger period, Pakistan witnessed political upheaval and weak economic situation.
- We document insignificant change in turnover and significant reduction in bid-ask spread.
- Again, we find mixed evidence for our two efficiency measures.
- Our study contributes to the stock exchange merger literature by investigating the changes in various market measures from daily firm level microstructure data. Regulators and issuers of securities may refer to the findings of our study for regulation and policy formulation.