



## The Impact of Merger & Acquisition Firms on Stock Market Bubble

Vol. IV, No. I (Winter 2019) | Page: 335 – 342 | DOI: 10.31703/grr.2019(IV-I).36

p- ISSN: 2616-955X | e-ISSN: 2663-7030 | ISSN-L: 2616-955X

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### Abstract

*In this research, we have endeavored to ascertain how the Merger & Acquisition firms effect the Pakistani stock market (PSX) during all stages of bubble periods. The regression results of “transaction multiples” and “inverse transaction multiples” show that the trading of the securities of Merger & Acquisition firms has increased in all stages of bubble periods less crash period where they decreased. The regression results have also revealed that Pakistani investors in the stock market carry a “weak financial knowledge & financial risk distress management” & they prefer market manipulation for discounting & therefore, they are adversely hit market manipulations in the stock exchange while trading securities. Resultantly, managerial incentives, as well as cost of capital of Merger & Acquisition firms, stand increased with the help of relevance of accounting, Earning’s manipulation & by exercise Investing Activities.*

**Key Words:** History of Bubble; Stock Market Bubble, Firms Valuation, Earnings Management; Merger & Acquisition.

### Introduction

The stock market forms the backbone of a country’s financial hub and is based on various markets and exchanges. The security trading & investment is affected by multiple factors thereby creating speculations among investors which resultantly change the original fundamental and book values of the firm’s assets (Ahmed et al., 1998). What is stock market bubbling? Stock market bubbling has been expressed differently by the authors. Some say it is due to over-investment, some regard it as demand & supply imbalance & some claim it to be due to investors' speculative beliefs Alana et al., 2016; Gilchrist 2005; Garcia et al., 2007; Fama 1965; Porter 2003 & Tirole 1985). Yang (2006) comments that so far, no cogent econometric technique for detection has been designed. However, some useful econometric techniques employed are Cointegration by “Brooks et al., 2003”, by data “Bhol (2003) & Basu (1977)” & Markovian Regime Model by “Ferreira 2009”. Various researches gone in this regard predict that “South sea bubble by Hoppit which was due to investor Speculative beliefs (2002)”; “Impact of Merger & Acquisition by Yosef et al., (2010) due to firms Earnings management, issuance of shares & firms relevance of accounting Techniques” & “1990 USA Tech Bubble by Huddart et al., (2001-03-06-07) due to Insider trading & earnings management etc.”

Unfortunately, very little research on the aspect of the M&A effect on stock market bubbling has gone in even at the international level. In the case of Pakistan, this aspect stands totally ignored. It has been very unfortunate that the phenomena of M&A in Pakistan could not be developed at the desired pace due to the nationalization policies of the previous Governments. However, during the period of 1995 to 2015 M&A transactions have taken place mostly in the banking sector as compared to the corporate sector yet it cannot be regarded as a complete success. In this research, we have tried to assess the effect of M&A on the Pakistani stock market (PSX) bubbling. The scope of this research covers the causes as to why our stock market is so inefficient, why it is not the true representative of our Economy, Industry production rate, GDP, why the FDI and M&A

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has failed in the perspective of Pakistan & How the Business Tycoons change their Share values through Financial Manipulation & Relevance of Firms Accounting Information Techniques.

### Conceptual Frame Work

The research framework & conceptual design of our study have been derived from the research work of these authors i.e. Hansen (1987, 2000); Liu et al. (2002); Bhojraj and Lee (2002); Omran (2003); Cosh et al., (2005); Officer (2007); Schreiner & Spremann (2007); De Franco et al. (2008); Franco & Jin (2008); Elnathan et al. (2009); Sehgal & Pandey (2010); Yosef et al. (2010) and Roux et al. (2014). In this research, the impact of M&A firms on the bubble have been examined. We have also carried out different studies in this respect such as the technology bubble which prevailed in the US stock market during the era of the 1990s and related it to the Pakistani stock market, which is highly speculative in nature & also possesses too weak checks and balance. It has also been noticed that profitable firms increase their M&A activities long side come out with new projects due to which trading of equities is enhanced manifold inside as well outside of the exchanges during the bubble period. In order to estimate the quantum of trading of equities we have used transaction multiples and these multiples will further help us to determine the valuation firm's equities (Sehgal & Pandey 2010; lie & lie 2002; Yosef et al., 2010 & Schreiner & Spremann 2007). In the aftermath of previous studies, it was also established that all through the pre-bubble and bubble stages the equity of M&A companies gets enhanced whereas during the bubble burst period it is declined. In the USA market, the investors trade equities & carry investment after gaging the performance of the firm in the stock market. in Scenario of Pakistan stock market, we have applied CFO VS Accruals in the Ohlson (1995) model to assess the Financial knowledge of Pakistani investors (Yosef et al., 2010; Rozic et al., 2017; Burgstahler and Dichev 1997; Kothari et al., 2005 & Roman & Shahrur 2008 etc). During the bubble period also firm's incentive & managerial incentives are obtained through earnings manipulations and to estimate these manipulations we will employ Expected accruals Vs Unexpected accruals in Ohlson's Model. Which will also provide us the information of about the financial knowledge & earnings manipulations of investors by multiplying loss earnings with Expected accruals & Unexpected accruals (Yosef et al., 2010; Rozic et al., 2017; Burgstahler and Dichev 1997; Kothari et al., 2005 & Roman & Shahrur 2008 etc).

### Hypothesis

The global study of the aspect of M&A reveals that firms resort to this while carrying their expansion & during the wealth maximization & the same is transformed in to share prices of their firms. We have used various Financial variables to measure the effect of Pakistan's M&A firms on the stock market during all phases of the bubble. Similarly, how Firms Earnings management, Managerial Incentive, Relevance / Non- Relevance of Accounting Information and Valuation & Trading (inside/outside the exchange) affect the stock prices during all phases of bubble & how firm's economic condition & Investors financial Knowledge contribute towards the stock market bubbling during all phases of the bubble.

### Econometric Model

#### Transaction Multiples Analysis

In this research transaction multiples based on three multiples Price-Earnings ratio (P/E), Enterprise Value to Sales (EV/S) & Price to Book value (P/B) have been employed to access firms valuation & trading inside & outside the exchange during all phases of bubble and how stock market or stock exchanges movements affect the Merger & Acquisitions activities with each other (Bhojraj & Lee, 2002 De Franco et al., 2008 & Francis et al., 2005).

*Transaction value ratios*  $_{it}$

$$= \alpha_{it} + \beta_1 ROE_{it} + \beta_2 Profit\ margin_{it} + \beta_3 Sales\ growth_{it_1} + \beta_4 Lev_{it} \\ + \beta_5 Pre\ Bubble_{it} + Post\ Bubble_{it} - - + e_{it}$$

### Price-Regression Analysis

Here the price regression analysis has been employed to determine the relationship between target price with financial information of firms during all sub-stages of a bubble. The price regression model has been taken from Ohlson (1995). In this model regression of sale price is done on the basis of BV of its equity, expected earnings growth & earnings (Collins et al., 1997; Sloan et al., 1996 & Basu 1997). The price regression model is appended below;

$$P_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 E_{it} + \beta_3 R\&D_{it} + \beta_4 Sales_{it} + \dots + e_{it}$$

$$P_{it} / BV_{it} = \alpha_o \left( \frac{1}{BV_{it}} \right) + \beta_1 \left( \frac{BV_{it}}{BV_{it}} \right) + \beta_2 \left( \frac{E_{it}}{BV_{it}} \right) + \beta_3 \left( \frac{neg E_{it}}{BV_{it}} \right) + \beta_4 \left( \frac{SalesCh_{it}}{BV_{it}} \right) + \dots + e_{it}$$

### Explanation of purchase price through accruals vs. cash flows capability

Accrual & non-accrual parts can be derived by disaggregating the income statement, which can be used to compare the investor's reliance during M&A and to find out as to how the market investors are attracted by earnings manipulation. The firm managers always keep Accruals positive in the income statements to keep their share prices high in the capital market (Yosef et al., 2010). The equation of Accruals Vs OCF is appended below,

$$P_{it} / BV_{it} = \alpha_o \left( \frac{1}{BV_{it}} \right) + \beta_1 \left( \frac{BV_{it}}{BV_{it}} \right) + \beta_2 \left( \frac{Total ACC_{it}}{BV_{it}} \right) + \beta_3 \left( \frac{CFO_{it}}{BV_{it}} \right) + \beta_4 \left( \frac{Total ACC_{it} * loss}{BV_{it}} \right) + \beta_5 \left( \frac{CFO * loss_{it}}{BV_{it}} \right) + \beta_5 \left( \frac{R\&D_{it}}{BV_{it}} \right) + \beta_5 \left( \frac{Sales_{it}}{BV_{it}} \right) + \dots + e_{it}$$

### Expected & Unexpected Earnings Management

Unexpected & accepted earnings management is based on Jones Model (1991), Kothari et al., (2005) & Raman & Shahrur, (2008). Hence the equation is mentioned below

$$\left( \frac{TA_{it}}{TA_{t-1}} \right) = \beta_o \left( \frac{1}{TA_{t-1}} \right) + \beta_1 \left( \frac{Ch rev}{TA_{t-1}} - \frac{ch AR}{TA_{t-1}} \right) + \beta_2 \left( \frac{GPPE_t}{TA_{t-1}} \right) + \beta_e (ROA_t) + \beta_4 (BM_t) + e_{it}$$

## Methodology

### Sampling and Data

The present research on the effect of M&A companies on the stock market constitutes of the data obtained from 48 firms enlisted on the inventory of SECP & PSX and the time series data made use of in this context is for the period of 2000 to 2017. The whole data has been taken from COMPUSTAT. The M&A data has been taken from the government website of “Competition Commission of Pakistan”. In addition, the panel data has been used for research regression analysis (Yosef et al., 2010).

### Description of Variables

$$Abn Accruals = \frac{Total Accr}{TA_{t-1}} = \alpha_o \frac{1}{TA_{t-1}} + \beta_1 \left( \frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}} \right) + \beta_2 \frac{GPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM ; Sales \left( \frac{Sales}{Turnover(Net)} \right)$$

$$Lev_t = \left( \frac{Total Liabilities - Current Liabilities}{Total Asset} \right); BM_t = \text{Common book equity to market Value of equity} ;$$

$$Transaction Value = \text{sale price of firms equity. } MVE = \text{Price} * \text{Number Of Out Standing Shares};$$

$$Profit Margin = PM = \left( \frac{EBITDA}{Sales} \right); ROA = \left( \frac{EBITDA}{Total Assets} \right); \frac{P}{S} = \left( \frac{Price of Firm's equity}{Book Value of Equity} \right); Sales \left( \frac{Sales}{Turnover(Net)} \right)$$

$$ROE = \left( \frac{Net income Before Extraordinary Items}{Book Value} \right); \frac{P}{E} = \left( \frac{Sale price of Firm's Equity}{Net income before extraordinary Items} \right); \frac{EV}{S} = \left( \frac{EV}{Total Revenue} \right);$$

Dummy Variables = “Bubble period; Crash Period, Pre-Bubble Period; Post Bubble Period &

Earnings Loss”. Sales Growth. = Percentage Change.in Sales.; Size = log of total market capitalization

of common stock or log of total Asset MV = Common shares outstanding multiply by Current market price.

## Results & Discussion

### Bubble Detection in PSX (Pakistani Stock Market)

The above-captioned diagram represents the stock market bubbling process and this procedure we have obtained from the research work of the following authors i.e. (Bhattacharya et al., 2010; Basu 1997 & Himmelberg et al., 2005). According to these authors, the Stock market bubbling prevailed in the PSX from “2003 to 2006”, “2007 to 2009” & “2012 to 2017”.

Fig 1: Market capitalization KSE 100 Index



Fig 2: Pakistan Market capitalization: percentage of GDP 1970

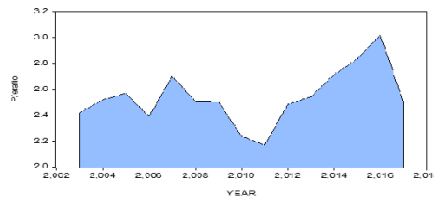
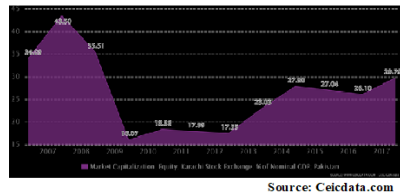


Fig 3: Data of Firms P/E Ratio for Bubble Detection from 2000 to 2017

## Results & Discussion

Regression analysis of all transaction multiples indicates that they possess a mutual +ve relationship during all phases bubble to accept crash period. This also proves that the trading & share values of M&A firms have also enhanced consequently which also effects stock market bubbling positively. In addition, these results also indicated that the firm’s trading inside or outside the exchange, Operational activities, increase in the cost of capital & Shareholders’ wealth has also increased.

Table 1.

Dependent Variable: P/E			Dependent Variable: B/P			Dependent Variable: EV/S		
Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic
C	-0.0218	-1.489	C	-0.0094	-0.3323	C	-0.0485	-1.61132
Pre-Bubble	0.021	1.1974	Pre- Bubble	0.05994	(1.7569)*	Pre-Bubble	0.1155	(3.2000)***
Bubble	0.0707	(4.2707)***	Bubble	0.1347	(4.1917)***	Bubble	0.0584	(1.7187)*
Crash	-0.0733	(-4.0074)***	Crash	-0.1286	(-3.6220)***	Crash	-0.0965	(-2.5716)***
Post-Bubble	0.0381	(2.9075)***	Post-Bubble	0.06857	(2.6927)***	Post-Bubble	0.0525	(1.9501)***
Effects Specification			Effects Specification			Effects Specification		
Cross-section fixed (dummy variables)			Cross-section fixed (dummy variables)			Cross-section fixed (dummy variables)		
R-squared	0.47855		R-squared	0.439226		R-squared	0.566172	
Adjusted R-squared	0.445421		Adjusted R-squared	0.403598		Adjusted R-squared	0.53861	
F-statistic	14.44503		F-statistic	12.32834		F-statistic	20.54164	
N	847		Prob(F-statistic)	847		Prob(F-statistic)	847	
Dependent Variable: E/P			Dependent Variable: B/P			Dependent Variable: S/EV		
Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic
C	-0.045	-1.059	C	-0.0141	-0.37384	C	0.0033	0.0925
Roe	-0.2574	(-2.5202)***	Roe	-0.3297	(-3.6340)***	Roe	-0.1826	(-2.1149)***
PM	-0.1534	(-3.6335)***	PM	-0.0762	(-2.0315)***	PM	-0.4258	(-11.9248)***
Lev	-0.0495	-1.5297	Lev	-0.0355	-1.2371	Lev	-0.1607	(-5.8724)***
Sales Growth	0.0271	1.1915	Sales Growth	0.0313	1.5495	Sales Growth	0.0229	1.1939
Size	-0.0613	(-2.875)***	Size	-0.0371	(-1.9595)**	Size	-0.0724	(-4.0139)***
Pre-Bubble	-0.0235	-0.5133	Pre-Bubble	0.0659	1.6228	Pre-Bubble	0.0091	0.2363
Bubble	-0.1293	(-2.5015)***	Bubble	-0.1427	(-3.1063)***	Bubble	-0.1486	(-3.3993)***
Crash	0.1601	(2.9204)***	Crash	0.1314	(2.6983)***	Crash	0.1759	(3.7942)***
Post-Bubble	-0.0718	(-2.2116)***	Post Bubble	-0.0598	(-2.0735)***	Post Bubble	-0.0015	-0.05486

Effects Specification			Effects Specification			Effects Specification		
Cross-section fixed (dummy variables)			Cross-section fixed (dummy variables)			Cross-section fixed (dummy variables)		
R-squared	0.321612		R-squared	0.453831		R-squared	0.651799	
Adjusted R-squared	0.283899		Adjusted R-squared	0.415417		Adjusted R-squared	0.627309	
F-statistic	6.740584		F-statistic	11.81436		F-statistic	26.61505	
N	847		N	847		N	847	

Dependent Variable: P/BV			Dependent Variable: P/BV			Dependent Variable: P/BV		
Variable	Coefficient	t-Stat	Variable	Coefficient	t-Stat	Variable	Coefficient	t-Stat
C	0.1593	(3.2321)***	C	0.1085	(2.0853)***	C	0.1768	(2.9013)***
1/BV	-1.1209	(-14.8849)***	1/BV	-0.379	(-5.3136)***	1/BV	-0.4593	(-6.1541)***
Sales Ch/BV	0.0774	(2.6057)***	TACC/BV	0.4477	(7.7852)***	ACC/BV	0.0529	(6.7015)***
Earnings/BV	0.2004	(9.505)***	CFO/BV	0.0828	(3.3609)***	Abn-Acc/BV	0.1341	(2.5644)***
Negative Earnings/BV	-0.3207	(-6.0629)***	CFOLOSS/BV	-7.08E-05	(-2.6372)***	loss*Abn-Acc/BV	-0.7863	(-4.5153)***
			LOSS*TACC/BV	-0.001	(-1.8841)**	Loss ACC/BV	-3.37E-05	(-4.7143)***
			Sales Change/BV	0.0079	0.2543	CFO/BV	0.6472	(2.5419)***
						CFO Loss/BV	-3.78E-05	-1.1413
						Sales Growth/BV	-0.0085	-0.3952

Effects Specification			Effects Specification			Effects Specification		
Cross-section fixed (dummy variables)			Cross-section fixed (dummy variables)			Cross-section fixed (dummy variables)		
R-squared	0.413863		R-squared	0.401043		R-squared	0.40044	
Adjusted R-squared	0.376624		Adjusted R-squared	0.361367		Adjusted R-squared	0.35345	
F-statistic	11.11379		F-statistic	10.10793		F-statistic	8.521779	
N	847		N	847		N	847	

Similarly, regression of the inverse transaction multiples model also shows that the Growth, ROE, profitability, annual growth of profit of firms & demand of shares of M&A firms also increase less during the crash period. This proves that the future prospect of M&A firms is better than competitive firms. The stakeholders of these firms earn high profit & willing to take a risk and invest more. The leverage results also indicate that the capital structure of M&A firms also stands strengthened, which also conform that M&A firms enhance their investment & cost of capital during all phases of bubble & decrease in the crash period. The analysis of expected / unexpected Accruals, Cash Flows & Cash Flows Losses reveal that market investors like manipulations by the M&A firms and having observed even the slightest upward movement in already overvalued shares of these firms they again start investing heavily in these firms. The discounting rates have also increased. The results of BV or 1/BV results indicated during all stages of the bubble firm’s managerial incentive & book value have also inclined in all phases of the stock market bubble. The price regression model also states that Pakistani investors pay more heat to “non-relevance of accounting information” of the M&A firms and invest more vigorously in these firms.

### Conclusion

In this research, we have endeavored to ascertain how the M&A firms effect the Pakistani stock market (PSX) during all stages of the stock market bubble phases. In this research, we have made use of 847 observations. The regression results of “transaction multiples” and “inverse transaction multiples” show that the trading of the securities of Merger & Acquisition companies has improved during all stages of stock market bubble periods less Bubble crash period where they decreased. The research results have also revealed that Pakistani stock market investors in the stock market carry a weak “financial knowledge” and the financial risk – distress - management. Hence, they adversely hit market manipulations in the PSX while trading securities. Resultantly the managerial incentives, as well as the cost of capital of M&A companies, stand increased with the relevance of accounting, Abnormal accruals & Earning’s management.

### Suggestions & Recommendations

To control bubble creation in the PSX right from the outset, it is imperative that the rules & regulations of SECP must be implemented in letter & spirit through dedicated & honest staff. In order to achieve the objective, SECP must also hire highly qualified financial analysts who should always be ready with efficient remedial solutions at hand. Since firms resort to abnormal earnings manipulations during the bubble stage, therefore SECP must design an efficient Audit mechanism that could promptly detect the anomalies and take corrective measures well in time so that the market investors could be safe from unusual losses. SECP should also make earnest efforts to educate general market investors on business trends through arranging various seminars and workshops thereby improving the financial knowledge of investors to save them abnormal losses.

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