

The impact of Profitable firms of Pakistan on Stock Market Bubbling

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Abstract:

In this study, we investigate how profitable firms impact the PSX “Pakistani stock exchange” during different stages of the stock market bubbling. The regression analysis of “transaction multiples” and “inverse transaction multiples” demonstrates that trading in Profitable firm’s equities grew throughout the bubble phases except the bubble-crash periods where it instead declined. The regression findings also suggested that PSX “Pakistani stock market” investors have “weak financial wisdom & financial risk distress management” and they depend on market manipulation for profits and discounts. As a result, they are seriously affected by market irregularities or manipulations in the equity markets while trading securities. Resultantly, firm’s “managerial incentives and cost of capital” of profitable companies have grown as a result of firm’s “relevance of accounting information”, “earnings manipulation” and by exercising its investing plans or activities. Equity holders of profitable firms follow equity prices direction for future return because with the increase in price equity, they invest more for high discounts in the market. Regression analysis of present research indicated that the bubble phenomenon in Pakistani stock market would be curtailed by improving financial knowledge of market arbitrageurs.

Keywords: Stock market bubble, Earnings Management, earnings manipulation and, transaction multiples.

Introduction

The stock market serves as the financial hub for a nation and it is comprised of many marketplaces and exchanges. The capital or stock market is another term for this. There are multiple “micro and macro” variables that influence on equities trading and investment resulting in speculations among equity traders. Resultantly, the basic origin of the firm's equity and the book value of assets have changed (Ahmed et al., 1998; Khalid & Rehman 2019 & Khalid et al., 2019). What is the basic definition of a stock market bubble? As per empirical literature, different authors expressed this term in its own manner. Some of them argued, it is the result of over-investment, some argued it is the result of mismatch of demand and supply and some of them stated that it is because of speculative beliefs of market investors and market speculation practices. (Fama 1965; Porter 2003; Gilchrist et al., 2005; Garcia et al., 2007; Costa et al., 2017; Tran 2017; Alana et al., 2016 and Khalid et al., 2019). Yang (2006) stated that no comprehensive econometric method has been designed so far to detect stock market bubbling phenomena. However, some of the useful methodologies that have been used in the previous literatures include market capitalization (Gilchrist et al., 2005; Khalid et al., 2019 and Joos et al., 2010 etc.), P/E ratio (Basu 1977-1997; Odean and Barber 2000; Bohl 2003; Gilchrist et al., 2005; Khalid et al., 2019), Co-integration (Brooks et al., 2003

and Flood et al., 1985) and Markovian regime (Ferreira 2009). Some of the basic researches that have been conducted on this subject are “South sea bubble by Hoppit (2002), which was the result of market investors or arbitrageurs Speculative beliefs”, “Impact of Merger & Acquisition on the stock market bubble by Aharon et al., (2010) and Khalid et al., 2019 , which was the result of firms manipulation, relevance of accounting information and abnormal accruals” “ Pakistan stock market bubble in 2005, 2009 and 2015 by Khalid et al., (2019) and Khalid and Rehman (2019) which was the result of insider trading and firms accounting manipulation” and “ 1990’s US Tech bubble by Huddart et al., (2001)”.

Unfortunately, a very few research studies have been done on this aspect that how a country’s profitable firms affect their respective stock market during bubble like condition, financial crises, market over-reaction and market under-reaction domestically and globally. But in the context of Pakistan, this subject and problem was totally ignored since the beginning of Pakistan stock market. In this research study, we attempted to examine the impact of Pakistani profitable firms on the PSX (Pakistani stock exchange) index. The basic dilemma to conduct research on this topic is that i) we can assume that PSX is not considered the true representative of Pakistani economy because if we look at the ardent observation of Pakistan economy and PSX index then we come to this conclusion that PSX has an inverse relationship with country’s economy or GDP. On the other-side, Indian stock market earns more than 300 billion dollars by FDI from 2009 to 2015 whereas Pakistan’s stock market has just earned few million dollars from 2009 to 2020 through FDI. The basic theme of the previous studies is that our factors of production are negative whereas our stock market index has crossed 45000 points in recent years¹.

Conceptual frame work

The conceptual design or frame work of this research investigation have been extracted from the empirical studies of these writers i.e. (Bhojraj & Lee 2002; Huddart et al., 2001-03-06-07; Franco & Jin 2008; Hauser et al. 2009; Aharon et al., 2010; Nissim et al., 2002; Bruwer et al., 2014; Khalid et al., 2019 and Khalid and Rehman 2019). The impact of profitable firms on Pakistan stock market has been examined and evaluated in

this research study. We have also studied several studies with reference to global markets such as the technological bubbles that existed in the US stock exchanges during the 1990s and, which is primarily speculative in nature and has weak accountability or check and balances. It is generally observed that profitable corporations boost their M&A activities or launch new projects during bubble and market over-reactions to increase the trading and book value of equities inside/outside the stock exchanges (. To examine the effect of equities trading of the respective firms in the stock market, we have applied transaction multiples. Similarly, to evaluate respective firms' profitability and risk during bubble period, we have applied inverse transaction multiple model (Sehgal & Pandey 2010; Khalid et al., 2019, lie & lie 2002; Khalid & Rehman 2019; Yosef et al., 2010; De Franco et al., 2008 & Schreiner & Spremann 2007). According to the earlier research studies, it was noticed that the securities of profitable corporations increase throughout the bubble stages but decline during the bubble crash stages. In the United States stock markets, investors trade shares and carry investments after assessing the firm's performance in the stock market. In case of PSX, we have employed "CFO VS Accruals in the Ohlson (1995) model" to evaluate the PSX investor's financial knowledge. (Leone et al., 2005; Huddart et al., 2001-03-06-07; Aharon et al., 2010; Khalid et al., 2019; Degiannakis et al., 2017; Khalid and Rehman 2019; Franco & Jin 2008 and Raman and Shahrur 2008 etc.). In the bubble peak period, it was observed that earnings manipulation is also used by the firms to achieve corporate and management incentives, to determine these anomalies we have used the "Expected Accruals vs. Cash flows model, Accruals vs. Cash flows and unexpected Accruals vs. un expected cash flow" models (Aharon et al., 2010; Khalid et al., 2019 and Khalid & Rehman 2019). Furthermore, we have used various loss dummies with "expected accrual", "cash flows" and "unexpected accruals" in the price regression model to cross check the financial knowledge of the PSX investors (Burgstahler and Dichev 1997; Leone et al., 2005; Guest et al., 2005; Franco & Jin 2008; Raman and Shahrur, 2008; Aharon et al., 2010; Degiannakis et al., 2017; Khalid et al., 2019 etc).

Hypothesis

It is generally argued that profitable enterprises gain max. financing benefits in term of equities during the pre-bubble and bubble times by launching new projects,

conducting M&A activities, earning management, by providing favorable “relevance & non relevance accounting information and by issuing manipulated financial statements. The main purpose to do this is to attract common market investors to invest in their firm’s shares, to increase its share’s values and to fulfill shareholders wealth maximization, market and book value of their firm's shares (Brown et al., 1999; Franco & Jin 2008’ Yosef et al., 2010 & Khalid et al., 2019).

We examined a variety of financial variables to assess the impact of Pakistan's profitable firms on the stock market at key stages of stock market bubble. In this regard, we would like to know in this study that how profitable firm’s earnings manipulation, trading of shares inside the stock exchanges and outside the stock exchanges, earnings management, investment, relevance of accounting information effect the stock prices during different stages of stock market bubble & how a firm's economic position and an investor's financial wisdom contribute to the stock market (e.g., Brown et al., 1999; Khalid et al., 2019; Francis & Schipper, 1999; Khalid and Rehman 2019 & Lev & Zarowin, 1999).

Research Econometric Models

Transaction-Multiples-Analysis (TMA)

In this study, transaction multiples (P/E “Price-Earnings ratio”, EV/S “Enterprise Value to Sales” & P/B “Price to Book value”) have been used to access firms capitalization, valuation and shares trading inside the stock market and outside the stock market during different segments of bubble (Bhojraj & Lee, 2002; LaFond et al., 2005; De Franco et al., 2008; Khalid et al., 2019; and Khalid and Rehman 2019).

$$\begin{aligned}
 & \text{Transaction value ratios}_{it} \\
 & = \alpha_{it} + \beta_1 \text{PreBubble}_{it} + \beta_2 \text{Bubble}_{it} + \beta_3 \text{Crash}_{it} + \beta_4 \text{Post Bubble}_{it} - - + e_{it} \\
 & \text{Transaction value ratios}_{it} \\
 & = \alpha_{it} + \beta_1 \text{ROE}_{it} + \beta_2 \text{Profit margin}_{it} + \beta_3 \text{Sales growth}_{it_1} + \beta_4 \text{Lev}_{it} \\
 & + \beta_5 \text{Pre Bubble}_{it} + \text{Post Bubble}_{it} - - + e_{it}
 \end{aligned}$$

Price-Regression-Analysis(PRA)

The PRA was used in this research to establish the link between target price and financial information of enterprises during all stages of the stock market bubble. The PRA was derived by Ohlson (1995). The selling price is regressed based on the BV of its

equity, earnings, growth earnings, expected earnings and cash flows etc (Maydew et al., 1997; Basu 1997; Yosef et al., 2010 and Khalid et al., 2019)

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

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

Explanation of buying price based on “accruals vs. cash flows” capability

Disaggregating the income statement yields the accrual and non-accrual components. This may be used to assess investor reliance profitable firms accounting information and determine how market investors are enticed by earnings manipulation. Profitable organization’s Accruals are always positive in the income statements because business management want to maintain their equity prices (high prices) at the market place or (Yosef et al., 2010 and Khalid et al., 2019).

$$\frac{P_{it}}{BV_{it}} = \alpha_o \left(\frac{1}{BV_{it}} \right) + \beta_1 \left(\frac{BV_{it}}{BV_{it}} \right) + \beta_2 \left(\frac{Total\ ACC_{it}}{BV_{it}} \right) + \beta_3 \left(\frac{CFO_{it1}}{BV_{it}} \right) + \beta_4 \left(\frac{Total\ ACC_{it} * loss}{BV_{it}} \right)$$

$$+ \beta_5 \left(\frac{CFO * loss_{it}}{BV_{it}} \right) + \beta_5 \left(\frac{R\&D_{it}}{BV_{it}} \right) + \beta_5 \left(\frac{Sales_{it}}{BV_{it}} \right) + \dots + e_{it}$$

Earnings Management

For earnings management, the Jones model (1991) was used for “expected & unexpected accruals” in the PRA (Yosef et al., 2010 and Khalid et al., 2019).

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

Methodology: Sample and Nature of Data

For research analysis, the impact of profitable enterprises on the stock market is based on data acquired from 354 companies listed on the SECP “Securities exchange commission of Pakistan” & PSX “Pakistan stock exchange” inventories, and the time-series data used in this connection spans the years 2003 to 2018. The entire set of data was obtained from COMPUSTAT. The sampling firms have been obtained from the Textile industry, Cement industry, pharmaceutical industry and chemical industry.

Description of Variables

Tobin's Q is MVE plus BV of the security ratio BVA²; Total-Accruals = Net income minus cash flow from operations or $= (CA_t) - (\Delta CL_t) - (\Delta Cash_t) + (\Delta STD_t) - Depreciation_t$ ³; Abnormal -Accruals⁴, Size is logarithm of total capitalization of shares outstanding or logarithm of total Assets⁵; BM= Ratio of BV and MVE⁶; Leverage is the reduction of current obligations from total liabilities to total assets.⁷; Sales Growth is Change in Sales as a Percentage, Transaction Value is sale value of firm's shares ; EV (enterprise Value) is the value of the firm's equity add total liabilities reduce current obligations at the time of sale.; Market Value is shares-outstanding multiply by present market price; Sales is equal to Sales/Turnover (Net); Profit Margin is EBITDA to sales⁸; "Return On Assets is the ratio of EBITDA to total assets"⁹; ROE is the ratio of " net income before other extraordinary items" to Book value"¹⁰ P/E is sales price of firm's equity to net before extraordinary items¹¹; Enterprise value to sales is equal to enterprise value to revenue¹²; P/S is price of the profitable firm's equity to book value of equity¹³; MVE is equal to price is multiply by the outstanding shares¹⁴ ; Dummy Variables is bubble periods, crash Periods stage, pre-bubble periods & post bubble periods and earnings Loss (Khalid et al., 2019 and Aharon et al., 2010).

Results & Discussion

In this study, the P/E ratio and PSX capitalization were used to quantify or detect the Stock market bubbles Gilchrist et al.,(2005), Basu (1977 and 1997) Odean (2001); Joos et al., (2010) & Aharon et al., (2010) procedures.

² $Q = \left(\frac{MVE + BV \text{ of Total Liabilities}}{\text{Book Value of Total Assets}} \right)$ Gilchrist et al., (2005); Love & Zicchino (2006); Aktas et al.,(2015); Lindenberg & Ross (1981) El Ghoual et al., (2017)

³ Yosef et.al (2010); Chowdhry (2017), Huddart et al., (2007 & 2011) & Teoh et.al. (1998)

⁴ $EI = \frac{\text{Total Accr}_t}{TA_{t-1}} - \alpha_0 \frac{1}{TA_{t-1}} + \beta_1 \left(\frac{\Delta Rev_t}{TA_{t-1}} - \frac{\Delta AR_t}{TA_{t-1}} \right) + \beta_2 \frac{GPPPE_t}{TA_{t-1}} + \beta_3 ROA + \beta_4 BM$ Yosef et.al (2010); Chowdhry (2017), Hudart et al., (2007 & 2011) & Teoh et.al. (1998)

⁵ Chowdhry (2018), Chen et al., (2002), D'avolio, G. (2002), Hudart et al., (2007 & 2011) & Teoh et.al. (1998), Yosef et.al (2010)

⁶ Chen et al., (2002), D'avolio (2002), Chowdhry (2017), Hudart et al., (2007 & 2011) & Teoh et.al. (1998), Yosef et.al (2010), Chan et al., (2007); Aktas et al.,(2015); Datta et al., (2001)

⁷ $= \left(\frac{\text{Total Liabilities} - \text{Current Liabilities}}{\text{Total Asset}} \right)$ Payne & Robb (2000); Felo et al.,(2018); Yosef et.al (2010); Chowdhry (2018), Hudart et al., 2007 & 2011) & Teoh et.al. (1998); Aktas et al.,(2015)

⁸ $= \left(\frac{EBITDA}{\text{Sales}} \right)$ Yosef et al., (2010)

⁹ $= \left(\frac{EBITDA}{\text{Total Assets}} \right)$;

¹⁰ $= \left(\frac{\text{Net income Before Extraordinary Items}}{\text{Book Value}} \right)$ Yosef et al., (2010)

¹¹ $= \left(\frac{\text{Sale price of Firm's Equity}}{\text{Net income before extraordinary Items}} \right)$

¹² $EV/S = \left(\frac{EV}{\text{Total Revenue}} \right)$

¹³ $P/S = \left(\frac{\text{Price of Firm's equity}}{\text{Book Value of Equity}} \right)$

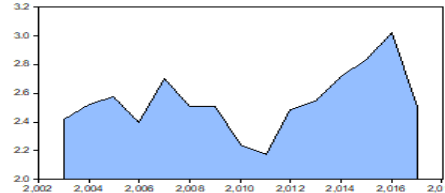
¹⁴ $MVE = \text{Price} * \text{number Of Out Standing Shares}$

PSX “Pakistani Stock Market” Bubble detection

Bubble Detection:
Fig 1: Pakistan KSE 100 index Data From 2000 to 2017



Source: Trading economics.com
Fig 2: Data of Firms P/E Ratio for Bubble Detection from 2000 to 2017



The above-mentioned figure depicts the stock market bubbling process, which we learned through the study of the following writers. i.e. (Odean 2001; Basu 1997; Gilcrist 2005; Joos et al., 2010 and Yosef et al., 2010). According to above-mentioned figure the PSX stock market bubble lasted from "2003 to 2006," "2007 to 2009," and "2012 to 2017."

Results of profitable firm's "transaction multiple models" are favorable in all periods of the stock market bubbles, except the bubble-crash periods. It has increased the wealth of profitable firm's equity holders, share trading inside exchanges (through direct trading in the stock market) and outside exchanges (via short selling), capital structure, and operations of those firms. Furthermore, these findings imply that increasing the "transaction multiple values" of those firms decrease their chances of bankruptcy. These firms equity has tempted stock market investors to invest in them. According to the "inverse transaction multiple models," the profitability and risk of profitable enterprises have grown during bubble periods less crash periods, because ROE and profit margin show a firm's profitability while size, growth, and leverage reflect the risk component.

These enterprises yearly numerical statistics show that their operational activity, capital structure, and cost of capital have all grown. The third model, "PRA," expands on the common investor's financial understanding abilities (by using "Accruals vs. Cash Flows" and "Abnormal accruals vs. Cash Flows" in the PRM) at the market and reveals

the firm's financial situation. The regression analysis of all three models reveal that the economic condition of the profitable enterprises has improved. The coefficient of inverse BV describes the growth in "firm's managerial incentives as well as shareholder wealth maximization and PSX investors like to see firm's relevance of accounting information." The PRM findings of the model "accruals vs. cash flow and abnormal accruals vs. cash flows" suggested that Pakistani investors favored successful and M&A businesses manipulation for discounting incentives rather than these firms' investment plans because the accrual and irregular accrual coefficient values are greater than the firm's cash flow coefficients. It means that if Pakistani investors resort to firm manipulation, this indicates a lack of financial awareness. They are unconcerned about the firm's new projects and investment strategy.

Suggestions & Recommendations

To prevent the PSX bubble, the SECP should apply its "rules and regulations" in the best way possible. To do this, SECP should strengthen the regulatory mechanism of the PSX through enforcement of existing "rules and regulations" in line with the global best practices. Private enterprises make large gains in PSX under bubble-like situations. In this context, SECP should establish an internal audit mechanism to prevent the irregularities by corporate sector in the stock market. The PSX and SECP should hold seminars at the university and market levels to improve the financial awareness of ordinary market investors in order to control future stock market bubbles in Pakistan.

"Profitable firms: Transaction Valuation Multiples"
Sample: 1 2253; Total panel (unbalanced) observations: 2253; Periods included: 18
Cross-sections included: 164

P/E			P/B			EV/S					
Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic			
C	0.0797	0.4371	C	0.3458	0.9094	C	0.3158	1.1744			
Pre-Bubble Stages	(1.4378)**	2.1934	Pre-Bubble Stages	(0.1247)***	2.9790	Pre-Bubble Stages	(0.0112)***	2.5584			
Bubble stages	(1.4378)**	2.1934	Bubble stages	(0.5777)***	3.6111	Bubble stages	(0.1127)***	2.2037			
Crash stages	(-1.0876)*	-1.9032	Crash stages	(-0.1811)***	-2.6602	Crash stages	(-0.5063)**	-2.1237			
Post bubble stages	3.4585	0.9094	Post bubble stages	-0.0899	-1.5599	Post bubble stages	4.1181	0.9621			
"Cross-section fixed (dummy variables)"											
Adj_R-sq	0.2090	S.D.dependent_var	2.5646	Adj_R-sq	0.4052	S.D.dependent_var	1.9312	Adj_R-sq	0.5273	S.D.dependent_var	0.8733
F-statistic	4.1699	DW_stat	1.4679	F-statistic	5.8403	DW_stat	0.9561	F-statistic	8.1232	DW_stat	1.8486

"Profitable Firms: Inverse Transaction Valuation Multiples"

E/P			B/P			S/EV					
Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic			
C	-0.0899	-1.5599	C	-0.0861	-0.1994	C	0.0027	0.3981			
Ret On Eq_	(-0.2894)***	-2.4013	Ret On Eq_	(-1.989)***	-2.3719	Ret On Eq_	(-0.7862)***	-2.5250			
Profit Mar_	(-0.3496)**	2.0900	Profit Mar_	(-1.9295)***	-2.2888	Profit Mar_	(-0.7657)***	-2.8185			
Lev_	(-0.1706)**	-2.0629	Lev_	-0.0027	-0.4464	Lev_	-0.1711	-0.1003			
Sales Growth_	(-0.2256)***	-2.8395	Sales Growth_	(-0.2633)**	-2.0352	Sales Growth_	(-0.6417)**	-1.9609			
Size_	(0.5548)**	2.3195	Size_	(-0.1089)*	-1.9853	Size_	(-0.9077)*	-1.7583			
Pre bubble stages_	-0.4542	-1.2491	Pre bubble stages_	-0.0813	-0.9240	Pre bubble stages_	(-0.0480)**	-2.0083			
Bubble stages_	(-0.578252)*	-1.8302	Bubble stages_	(-2.8078)*	-2.0206	Bubble stages_	-0.6730	-1.5097			
Crash stages_	-0.0312	-0.2081	Crash stages_	(-0.1706)*	-2.0629	Crash stages_	(0.7036)***	2.4330			
Post bubble stages_	(-0.8626)*	-1.9315	Post bubble stages_	(-0.2256)***	-2.8395	Post bubble stages_	(-0.0172)*	-1.8499			
"Cross-section fixed (dummy variables)"											
Adj_R-sq	0.2447	S.D.dependent_var	1.1129	Adj_R-sq	0.3949	S.D.dependent_var	0.7762	Adj_R-sq	0.7199	S.D.dependent_var	5.3161
F-statistic	2.8233	DW_stat	2.1006	F-statistic	5.5556	DW_stat	1.6942	F-statistic	15.4634	DW_stat	1.6577

"Profitable Firms: CashFlow Vs Accruals -Judging investors financial knowledge, risk perception awareness & financial intelligence"

P/BV			P/BV			P/BV					
Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic			
C	-0.0494	-0.3729	C	1.1455	0.7199	C	-0.0258	-1.0187			
1/Book Value	(-0.3192)***	-2.7426	1/Book Value	(1.9295)***	2.2888	1/Book Value	(-0.0417)**	-2.0569			
Sales Change/Book value	(1.7802)***	2.7960	Total Accruals/Book Value	(0.7036)***	2.4330	Accruals/Book Value	(0.1341)***	2.5644			
Earnings/Book Value	(0.3220)***	2.8003	Cash flows/Book Value	(0.7161)***	3.9945	Abnormal Accruals/Book Value	(2.4998)***	3.2670			
.-ve Earnings/Book Value	(0.3413)***	2.4518	Cash flow Loss/Book Value	(0.0759)***	2.5697	loss*Abnormal Accruals/Book Values	(-2.4967)***	-3.2619			
			Loss*Total Accruals/Book Value	-0.0604	-1.3439	Loss Accruals/Book Value	(-0.0417)**	-2.0569			
			Sales Change/Book Value	(-0.0171)*	-1.8529	Cash flows/Book Value	0.0258	1.0187			
						Cash flows LOSS/Book Values	(0.0243)*	1.7717			
"Cross-section fixed (dummy variables)"											
Adj_R-sq	0.5515	S.D.dependent_var	1.1864	Adj_R-sq	0.3462	S.D.dependent_var	1.1864	Adj_R-sq	0.3428	S.D.dependent_var	1.1864
F-statistic	10.4988	DW_stat	0.8713	F-statistic	7.0067	DW_stat	0.6572	F-statistic	6.5684	DW_stat	0.6610

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