

Intra-Industry Impacts of Initial Public Offerings: Evidence from Pakistan Stock Exchange

Muhammad Irfan Khadim* and Samreen Fahim Babar†

Abstract

This study has examined the relationship between IPO events with its competing firms in long run within the same industry and overall stock exchange. For this purpose, the study has been conducted on Pakistan Stock Exchange. A sample of 104 listed firms has been taken from Pakistan Stock Exchange (Psx) from 26 different industries. The study has covered a time span of nineteen years from 1998 to 2016, both years being included. Predominantly, the IPO event has been analyzed from three perspectives including initial returns, IPO proceeds and Lag time between IPO subscription and IPO listing date. To measure the impact of IPO on rival portfolios stock returns in short and long run, we Cumulative Abnormal Returns (CAR) and Buy and Hold Abnormal Returns (BHAR) respectively. For measuring intra-industry operating performance of rival portfolios we applied Wilcoxon significance test. The findings revealed IPO intra-industry effects are insignificant in short run while significant negative effects has been observed in long run. In addition, IPO abnormal returns and IPO proceeds has a significant negative relationship with rival's stock returns in long run. Whereas, IPO lead time has no significant impact on rival's portfolios in long run. This study is important from prospective of IPO activity and stock market of a developing economy.

Keywords: IPO event, Rival portfolios, BHAR, IPO proceed, Lag time.

Introduction

Initial Public Offerings (IPO) is one of the most noteworthy events in the life of a firm and it gets a lot of attention from public including both existing investors and potential investors in the market. When a firm decides to go public, it means it exposes many changes like legal requirements, information disclosure, public participation in ownership, and last but not the least firm benefits to access to capital market for excess funds. Also, all these would be possible if a company has enough funds to conduct such events because IPO itself is a costly process as compared to other forms of external financing. Therefore, the companies try their level best to generate enough funds which not only meet the cost of IPO but also generate sufficient funds for companies needs. On one side initial public offering (IPO) is a prospect for investors to participate

* Muhammad Irfan Khadim, Ph.D. Scholar, Bahria University Islamabad.
Email: mirfankhadim@gmail.com

† Samreen Fahim Babar, Assistant Professor, Bahria University Islamabad, E-mail: samreen.babar@bui.edu.pk

in the ownership of an emerging firm, satisfy the firm's existing owners and venture capitalist. But, on the other hand, it may have negative consequences for those investors who buy new shares in secondary markets.

Many researchers have shown the impact of Initial Public Offerings on investor's returns. In short run an under priced IPO leads to oversubscription, gives huge returns to investors on first trading day but followed by deteriorating returns afterwards. Similarly IPO provides negative returns to investors in long run. There are several factors which participate in low returns of IPO after the issuing day. Many researches shed light on how Initial Public Offerings (IPO) affect firm performance but the studies are rare which show how it affects the competing firm within the same industry and overall financial market. A firm goes public might create negative impact on market price of competing firms in the same industry. The reason for competitor's negatives returns is quite obvious. If the market is not capable of attracting new investment than a new IPO simply snatches its shares from rival firms. Similarly, if IPO is taking place at that time when the relevant industry performance is at peak, than it causes negative reaction to stock prices of rival firms. Alternatively, if an Initial public offering brings some positive prospects for existing industry then it can bring some positive impact on the firms competing in the same industry.

In this study we are trying to assess the impact of IPO on stock returns of corresponding firms in short run as well as in long run. In this connection we are going to hypothesize that an IPO may have a significant impact of its industrial rivals. Why an IPO impact on other firms in the same industry? It might give a signal to rival firms that overall outlook of industry will now change which will also bring change in competitor's valuation. Moreover, it compelled the rivals to review their competitive balance in the industry. Apparently, it seems IPO is a positive activity which brings some positive changes in relevant industry as well as the overall stock market. However, there are some findings which give contradictory results about effect of newly listed firm on competing firm performance in the same industry (Hsu, Reed & Rocholi 2010). In this context, it is interesting to know how the performance of competing firms and overall stock exchange will be affected a newly listed firm with reference to Pakistan Stock Exchange.

Pakistan Stock Exchange(Psx) has shown extraordinary performance in recent years. Historically Psx exhibited a remarkable performance in years before economic recession of 2007-08, especially from 2002 to 2004 followed by a market crash in year 2005. After economic recession

of 2007-08, it again gained momentum in 2011 and from last 3 years, its performance is exceptionally good and its attained 50000 point index at the start of year 2017. It is worth mentioning that a small number of companies listed themselves in Psx in last few years. So keeping in view all the mentioned reasons, it will be interesting to know what will be the impact of newly registered firms on the share price of already existing firm's shares in short run and long run.

Initial public offering (IPO)

Initial public offering is an event where a firm listed itself in stock exchange and offers its share to public. It includes both newly established firms as well as that firm which change their status from private to public. The main reason behind IPO is to get excess of funds through an external channel besides internal funding resources and debts.

Subscription

Subscription means how much attention (demand from public) a firm can get in response to its offering. The subscription rate is high if public demand is more as compared to the size offered by the issuing firm. Sohail and Nasr (2007) investigated that main factors responsible for under-pricing include uncertainty about new issue, over-subscription, offering size of IPO, and market capitalization of IPO. Krishna murti & Kumar (2002) also viewed the performance of Initial Public Offerings in NIFTY Indian and they ended up with the findings that both under-pricing and over-subscription are positively correlated.

IPO Proceeds

The proceeds from IPO mean how much a fund has been generated by the IPO firm through IPO activity. The method to calculate proceeds is number of shares subscribed by the IPO firm multiply by subscription price.

Lead Time

Lead time means the time span between IPO stock subscription date and IPO stock formal listing date. Here listing data means first day of IPO stock trading. Chan, Wang and Wei (2004) studied the impact of lead time between the subscription date and the formal listing date of Chinese IPOs and revealed a positive relationship between lead time of IPO and under pricing.

Industrial rivals

The firms which already exist in that industry where IPO event take place are considered as competing or rivals firms of IPO firm. There are researches which analyzed the impact of IPO event on existing firms performance of the same sector. The results are mixed; few studies found negative impact of IPO on rivals firms whereas some found no

significance of IPO on existing firms. The key objective of this study is to bring to light those issues which help in determining the impact of IPO on competing or rival firms in the same industry.

It has two main objectives;

1. To find the impact of IPO on intra-industry stock returns.
2. To find the impact of IPO intra-industry operating performance.

Following are the questions arising from above objectives.

1. What is the impact of IPO on existing firm's share price in the same industry?
2. What is the impact IPO on existing firm operating performance in the same industry?

The remaining paper will be arranged like this. Section 2 contains the important literature in support of study. Section 3 about the data collection and methods to calculate and section 4 includes results and discussion on results of the study and last part consist of conclusion and recommendation.

Literature review

The present study investigates the impact of IPO on its intra-industry rivals. A study by Akhigbe et al. (2003) analyzed how an IPO affect the performance of rival firm's portfolios in the same sector in short run. Taking a large sample of 2493 IPOs their finding revealed that impact of IPO is not significant on competing firms within the industry. They explained that irrelevance between two variables is due to competitive and information effect which counterbalance each other. They further explained that the IPOs which are either conducted in regulated industries or occurred in an industry which is poorly performed; they give a positive signal to industrial rivals. While analyzed long run effect of IPO on its industry rivals, Akhigbe et al. (2006) have found an unfavorable share price movement of rival firms on average over the 3 years period after occurrence of an IPO. Braun and Larrain (2009) explicitly elaborated that cross-section of performance is directly proportional to the supply of new assets from IPOs. The launch of a large asset in the market causes fluctuation in the prices of existing assets. On the bases of data collected from 254 IPOs in 22 emerging markets, it has been found that portfolios with high IPO undergo a reduction in prices as compared to other portfolios during the time of issue. Within less integrated international markets, the impact is stronger with bigger IPO. These findings support the hypothesis that surprises in asset supply create a significant impact on asset price. Hsu, Reed & Rocholi (2010) found a negative impact of IPO on stock prices of

competing firms and a positive impact have been observed when companies withdraw from the industry. The study spot out numerous possible elements which gave an IPO a competitive edge over its industry rivals. They include recognition from financial institutions like investment banks during IPO, signaling a low level of leverage financing, and having an immense level of knowledge capital which create an operational difference. Their findings confirmed that the above said three elements are the key elements for gauging the performance and ensure the existence of already existed public firms. Cotei and Farhat (2011) have compared a venture capitalist backed IPO with a non venture capitalist backed IPOs and found a positive reaction from competing firm's portfolios if an IPO is backed by venture capitalist and vice versa. Lee et al. (2011) analyzed the impact of IPO event on technology firm's specifically related to computers. Their findings revealed the positive information spread out in more efficient way on competing firms in the similar product market as compared to competing firms in associated product markets. Sohrabia, Biglarb and Jamshidian (2013) analyzed the data of Tehran Stock Exchange TSE for the period of ten years, started from year 1999 up to the year 2009. They have imposed the same two conditions as imposed by many previous researchers that is a specific time span where IPO event occurred and IPO firm and at least one competitor within the industry. They hypothesize that a significant relationship exists between IPOs and industrial rivals in long run. Further offering size, industrial concentration, firm operating, financial leverage and Industry valuation of IPO and industry portfolios are correlated. A similar research by Peller (2013) studied the response of industrial rivals on withdrawal of an IPO within the same industry. While considering several factors like market sentiment, industry concentration and financial leverage, his study have shown a considerable effect of IPO on competing rivals response. Moreover, industrial concentration brings negative impact, whereas the firm leverage draws a positive impact. Nguyen, Sutton and Pham (2014) found IPO as threat for rival competing firms within the same industry. In order to counter IPO effects rival firms gone for stock repurchase decision. This decision is much stronger when IPO's competing firms belong to industry with more concentration and practiced poor stock performance in their previous years.

The aim of present study is to include some new dimensions which were missing previously. The study includes the lag days effect in IPO event and see what type of reaction it reveals on rivals portfolios. Study also replace IPO offered capital with final proceeds from IPO which makes

study more rational, as offered capital can be over or under subscribed. Moreover, the study belong to Pakistan where few studies conducted on IPOs with mostly taken IPO as isolated event (Rizwan and Khan, 2007; Sohail and Nasr, 2007; Mumtaz Smith and Maqsood, 2016). Finally, this study belongs to PSX a stock market of under develop country whereas most of the literature in this context belong to developed economies.

Concepts and definitions

Variable:	Definitions
IPO	Initial Public Offerings
Rival Firms	Other firms in the same industry where IPO Occur.
IPO proceed	The subscription received from IPO including premium
Lag time	The time difference between IPO subscription date and 1 st day of trading.
BHAR	Buy and hold abnormal returns. An event study methodology.

Theoretical Framework

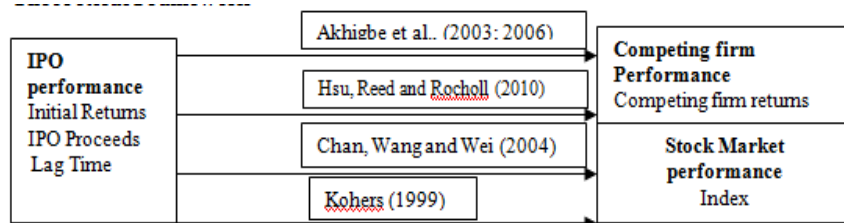


Figure 1 Theoretical Framework

Hypothesis Development

The main objective of the present article is to find the impact of on the performance of rivals companies within the same industry. Although this hypothesis can be measured in several ways but we simply focus on what is the impact of IPO entrance on existing firms share price. Most of the firms would like to enlist themselves when the related industry symptoms are positive for them. (Akhigbe et al., 2003) analysis regarding IPOs revealed that impact of IPO is not significant on competing firms within the industry. Hsu, Reed and Rocholl (2010) found the negative impact of IPO event on rival firms. A new IPO might be alarming sign for rivals as it can pull market share from the industry especially in long run determined by (Akhigbe et al., 2006). Based on these mixed findings our first hypothesis is:

Hypothesis 1: A newly listed IPO firm has a significant impact on share prices of public traded rival firms.

(Akhigbe et al., 2003) established an idea about use of IPO proceeds. The use of IPO proceeds is a signal in itself for other companies. If the purpose of IPO proceeds is repayment of previously taken debts than its competitive position as compared to rivals will be improved. (Akhigbe et al., 2006) says the size of IPO with respect to their competing firms within the same industry pose a potential threat. However a cost involved in conducting an IPO is more easily justified by big firms as compared to small firms. So small size IPO firms generate an information asymmetry problem for other competing firms regarding their aims and future prospects. Based on this idea we developed a hypothesis:

Hypothesis 2: High proceeds from an IPO can exert a significant impact on competing firms performance.

There are few studies which analyzed the impact of IPO timings on overall performance. Chan, Wang and Wei (2004) studied the impact of lead time between the subscription date and the formal listing date of Chinese IPOs and revealed a positive relationship underpricing of IPOs. As many studies revealed a positive relationship between underpricing and abnormal returns of IPO. Based on this idea we develop a hypothesis that lead time between IPO subscription date and 1st day of IPO trading leads to underpricing and under pricing lead to high abnormal returns.

Hypothesis 3: Lead time between IPO subscription date and IPO listing date have significant impact on rival firm performance.

Researcher like (Cai and Wei 1997; Coakley, Hadass and Wood, 2004; Huang and Song, 2004) documented pre and post IPO operating performances but their studies limited to IPO firm only. A significant negative effect of privatization of Commonwealth Bank of Australia (CBA) on its counterpart has been reported by (Ochere and Chan 2003). A similar research conducted by Chen, Li and Moshirian (2005) and reported a decline in operating performance of other banks after the privatization of Bank of China Hong Kong. Moreover, Hsu et al., (2010) have observed a notable decline in operating performance of rival portfolios after IPO. Based on previous literature we hypothesized that;

Hypothesis 4: A newly list firm has a significant impact on competing firm operating performance.

Research Methodology

Table 3.1: IPOs Distribution from (1998 to 2016)

Years	All IPO filing	% of Total	IPO Sample	% of Total	Avg. Proceeds (\$ Million)	% of Total
1998	1	0.8	1	0.8	11.4	0.09
1999	0	0.0	0	0.0	0.0	0.00
2000	3	2.5	3	2.5	215.4	1.77
2001	4	3.3	3	2.5	162.4	1.33
2002	4	3.3	4	3.3	283.8	2.33
2003	6	5.0	4	3.3	663.7	5.45
2004	17	14.2	11	9.2	10.7	0.09
2005	19	15.8	17	14.2	14.3	0.12
2006	9	7.5	3	2.5	2693.3	22.11
2007	11	9.2	11	9.2	2593.6	21.29
2008	10	8.3	9	7.5	1920.4	15.77
2009	4	3.3	3	2.5	328.2	2.69
2010	6	5.0	6	5.0	553.3	4.54
2011	4	3.3	4	3.3	454.7	3.73
2012	4	3.3	1	0.8	25.0	0.21
2013	2	1.7	1	0.8	225.0	1.85
2014	7	5.8	4	3.3	1176.0	9.65
2015	6	5.0	6	5.0	683.0	5.61
2016	3	2.5	3	2.5	166.0	1.36
Total	120	100	94	78	12180.39	99.91

The sample consists of all IPO firms that gone public between a time span of 19 years from year 1998 to 2016 both inclusive. The total population of IPOs during this time span is 120 IPO but the final sample chosen for study is 94 IPOs which is 78 % of total population. Table 3.1 shows the total IPOs, Sample taken for present study and average proceeds received from IPO in different years. The IPOs range in numbers from 3 in 2002, 2006 and 2009 up to 19 IPOs in 2005. The present study is based on secondary data. In order to ensure the reliability of data, only those data sources have been used which are authenticated and well reputed. We have used the data bank of Pakistan Stock Exchnage, Securities and Exchange Commission of Pakistan, State Bank of Pakistan and Business recorder has been used.

Rivals performance in short run

The study applied the event study methodology of Cumulative Abnormal Returns (CAR) to gauge the impact of IPO on competing firms in short

run. While analyzing the short term intra-industry performance of IPO Akhigbe et al., (2006) used the same methodology.

$$CAR = \sum_{i=1}^n AR_{it}$$

Impact of IPO proceeds on rival’s performance in Long run

For long run performance of IPOs on its rival firms we applied Buy and Hold Abnormal Returns(BAHR) model. BAHR is a famous event study technique used by several researchers (Akhigbe et al., 2006, Hus et al., 2010).

$$BHAR = \frac{1}{n} \sum_{i=1}^n \{ (1+R_{it}) - 1 \} - \{ (1+R_{mt}) - 1 \}$$

Impact of IPO lead time on rival’s performance in Long run

There are few studies which analyzed the impact of IPO timings on overall performance. Chan, Wang and Wei (2004) studied the impact of lead time between the subscription date and the formal listing date of Chinese IPOs and revealed a positive relationship underpricing of IPOs. As many studies revealed a positive relationship between underpricing and abnormal returns of IPO. Based on this idea we develop a hypothesis that lead time between IPO subscription date and 1st day of IPO trading leads to underpricing and under pricing lead to high abnormal returns. So in order to see the impact of time lag (between IPO registration dates with listing date) with rival firm performance we use BAHR methodology to see long run impact.

Data analysis and findings

Table 4.1: Cumulative abnormal returns CAR

Days	No. of IPOs	CAR (% age)	z-stat
0	94	-0.04	-1.59
(0, +1)	94	-0.01	-0.77
(0, +5)	94	0.06	0.19
(0, +10)	94	0.1	0.25
(0, +20)	94	0.12	0.27

Table shows Cumulative abnormal returns (CAR) of IPO industry rivals by taking a difference between actual and expected returns. For expected return we applied market model and take daily returns from period t-220 to t-20. The z-stat represent null hypothesis that CAR is 0.

Table 4.1 shows CARs of rival portfolios on 1st, 5th, 10th and 20th trading days of IPOs. The results are different from Sushka and Ferraro (1995)

who reported negative intra-industry impact but similar to Akhigbe et al., (2003) who found insignificant impact of IPO on rivals in short run.

Table 4.2: Buy and Hold Abnormal Returns (BHAR)

Year	No. of IPOs	BHAR (% age)		t-stat	
		IPO	Rival firms	IPO	Rival firms
1	94	-23.33	-5.69	-10.78***	-12.02***
2	94	-17.2	-13.56	-4.89***	-3.83***
3	94	-9.09	-6.13	-3.73***	-5.67***
(1-3)	94	-59.04	53.87	-2.78***	-2.01***

Table shows Buy and Hold Abnormal Returns (BHAR) of IPO industry rivals by subtracting average holding period return of bench mark with rival's portfolio by computed daily returns over 3 years after IPO. 1-3 is 3 year period starting 20 days after IPO. T-stat shows null hypothesis of BHAR is 0 for IPO and its rivals.

*** Sig. at 1%

Table 4.2 shows BHARs of rival portfolios after 1, 2 and 3 years of IPOs. The results are in line with (Akhigbe et al., 2006; Hsu et al., 2010) which shows a significant deterioration in rival stock performance after IPO event.

Table 4.3: Post-IPO Operating performance of Rival's portfolios

Time period	ROA	ROE	Δ Sales	Δ Assets	Leverage
	%	%	%	%	%
3 years Pre-IPO	4.1	8.79	11.45	15.47	12.37
3 years Post-IPO	1.27	5.44	7.58	8.97	14.67
Wilcoxon Sig.	***	***	***	***	***

Table shows operating performance of rivals portfolios 3 years pre and post-IPO event. ROA is the ratio of profit to assets, while ROE is ratio of profit to equity. Δ Sales and Δ Assets shows annual %age change in sale and assets respectively. Leverage is taken by debt to assets. *** indicate significance at 1%.

Table 4.3 shows a decline in operating performance of rival firms 3 years before and after IPO event. All ratios of rival portfolios shows a considerable decline in their performance except leverage which increased during that period.

Table 4.4: Regression results of IPO intra-Industry effects

	1	2	3	4	6	7	8
	AR1	AR5	AR10	AR20	AR365	AR730	AR1080
IR	0.005* (1.90)	-0.600 (0.72)	-0.128 (0.13)	-0.594* (1.54)	-0.070** (2.77)	-2.770*** (6.88)	-0.061** (2.46)
IP	0.005* (1.30)	-3.907* (1.06)	-0.849 (1.41)	-3.717* (1.25)	-0.060*** (4.17)	-4.930*** (6.51)	0.06*** (3.54)
LT	0.002 (0.23)	-2.930 (0.79)	-6.444 (0.18)	-2.100 (0.88)	-5.300* (1.16)	-1.414** (2.12)	-3.50* (1.57)
Adj R²	0.08	0.12	0.04	0.07	0.19	0.41	0.24
N	94	94	94	94	94	94	94

The table shows IPO intra-industry effect in short run(1st, 5th, 10th, 20th day) and long run (1, 2, 3 years). The explanatory variables in different regressions are; IR is the Initial Returns, IP Proceeds from IPO and LT is lead time. The t-statistics are reported in parentheses below the coefficient. Adjusted R² and the sample size for each regression are reported in the last rows of the table.*** Significance level of 1%.** Significance levels of 5% level.* Significance levels of 10% level.

Table 4.4 regressed IPO against rival portfolios in both short and long run. The result clearly indicates that IPO intra-industry impacts are mostly insignificant in short run. While in long run time they show a considerable significance. Moreover, IPO Initial returns (IR) and IPO proceeds (IP) are shown significance on rival firms in long run while Lag time (LT) I insignificant in both short and long run.

Conclusion

The present study envisaged the relationship between IPO and its industry rivals in terms of their stock returns and operating performance. IPO event is measured through three proxy’s namely initial returns, IPO proceeds and lag time. The study shows an insignificant impact of IPO on its rivals firms in the short run which is different from Sushka and Ferraro (1995) who reported negative intra-industry impact but similar to Akhigbe et al., (2003) who found insignificant impact of IPO on rivals in short run. On the contrary IPO has shown a significant negative impact on rival firm’s portfolios in long run which is in line with previous researches (Akhigbe et al., 2006; Hsu et al., 2010). Among three proxies Initial returns and IPO proceeds have significant impact on rival firm’s stock returns but lag time, a time difference between IPO filing and listing date is quite insignificant on existing firms stock returns. Like IPO intra-industry performance in long run, operating performance of rival portfolios also significantly deteriorating in long run and confirmed through Wilcoxon test. This shows that a successful IPO bring a negative

signal for existing firms in an industry in terms of their share prices as well as their market share which is evident through significant drop in their stock returns and operating performance.

Further dimensions which are yet to be explored are what sort of counter measures taken by rival firms in order to stop decline in their performance? Moreover, how they react when an IPO failed and drop out from the industry? It is also interesting to find out external factors from industry which take part in success or failure of an IPO.

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