

---

# Survival Pattern of Initial Public Offerings in India: An Empirical Study

---

GARIMA BALUJA<sup>1</sup> and BALWINDER SINGH<sup>2</sup>

<sup>1</sup> DAV University, Jalandhar, India

<sup>2</sup> Guru Nanak Dev University, Amritsar

---

*The aftermarket performance of Initial Public Offerings (IPOs) has been widely investigated by the researchers across the world; however the phenomenon of survival of IPOs in the market place has not been extensively explored, especially in India. In the post-SEBI era, several structural changes and the huge volatility in the market led to a significant failure of IPOs. Many new issues failed to maintain their identity on the exchange while a few face the challenge well and continue to survive. This certainly indicates that there must be some crucial factors that determine the survivability of IPOs in the aftermarket. The present study is an attempt to explore those factors and examine the survival pattern of IPOs across such factors in India. The survivorship comparison of IPOs across issue, market and company specific factors reveals that there exists a significant difference between survivors and non-survivors across such factors. Overall, the evidence indicates that survival rate of IPOs accelerates with the increase in issue size, lead manager's reputation, demand for the issue and firm age whereas it decelerates with the high initial returns, risk, list delay, market level and IPO activity. Further, the non-parametric survival analysis tools, i.e. 'Life table' and 'Kaplan-Meier estimation' exhibits the high terminating pattern and significant deterioration in the survival rate of IPOs in the first five years of listing in India.*

**Key Words:** IPO survival; Kaplan-Meier estimation; Life table; Survival analysis.

**JEL Classification:** G24; G30; G32; G33.

## INTRODUCTION

An Initial Public Offering (IPO) provides a vital channel for resource mobilization to newly established as well as existing businesses and offers a mechanism to the existing owners to realize a return for their efforts. Moreover, IPOs also hold importance for investors, as these are considered to be important investment avenue and are believed to generate relatively higher returns in lesser time. Despite their perceived importance for the businesses, owners and the investors, the IPOs have been found to exhibit anomalous behavior. Since Ritter's (1991) exposure to potential buy-hold wealth hazard towards investing in IPOs, numerous studies have examined such anomalies in IPO market, namely, short term underpricing, long run underperformance and hot issue activity (Ritter, 1991; Jain and Kini 1999; Kooli and Suret, 2004; Bhabra and Pettway, 2003; Miloud, 2009; Mayur and Mittal, 2011; Allen and Faulhaber, 1989; Chi et al., 2010). However, there persists one more phenomenon in IPO market which is equally important yet largely ignored, i.e. the survival of IPOs in the aftermarket. "Survival, as a simple measure, is a powerful and ultimate assessment tool of firm performance because it offers a clear test of whether a firm has performed well enough to survive, given the competitive nature of capital market. From the business strategy context, it also indicates whether a firm has performed well enough to maintain its corporate identity" (Rath, 2008).

The post-issue phase of a firm poses certain

challenges in terms of strategy, structure, competition, regulations and market conditions which not only affects the performance of IPO but also influences its survival prospects in the market (Yang and Sheu, 2006; Jain and Kini, 2008). Hence, apart from just evaluating the short run and long run performance of IPOs, it is imperative to examine the survivability of such issues in the aftermarket. The endurance of IPOs in the market place is very crucial for the company to maximize its value, mobilize funds, accelerate public profile and boost the financial credibility. Similarly, investors can build active trading strategies and enjoy the superior returns as long as an IPO continue to operate in the market (Rath, 2008; Howton, 2006; Peristiani and Hong, 2004). Moreover, there are certain other parties as well whose interests are linked with the likelihood of survival of IPOs such as executives, board members, auditors and underwriters (Demers and Joos, 2006; Espenlaub et al., 2012; Reutzel, 2012). Although the viability and continued existence of IPOs hold importance for each and every party associated with an issue, yet it has received lesser consideration in India.

The Indian IPO market has witnessed enormous fluctuations in the post-SEBI (Securities Exchange

Board of India) era. The abolition of controller of capital issues (CCI), establishment of SEBI, introduction of free pricing mechanism and increase in participation by foreign institutional investors (FIIs) has brought a sea change in the entire IPO market and resulted in a significant upward movement in the volume of IPOs during the period 1992-1996. But after that, several malpractices, discretionary allotments and fly-by-night operators disrupted the smooth functioning of this market. In addition to this, the south east crisis and the Internet bubble burst generated the negative sentiments among the investors, which decelerated the growth of this market drastically. During such period, several new issues failed to maintain their identity on the exchange which shattered the faith of the investors from this market.

All these factors have made the issue of survivability of IPOs in Indian market a matter of concern for practitioners as well as the academicians. Although efforts have been started in India to analyze the survivability of IPOs, but the pattern of survival being followed by IPOs in Indian market is still an unexplored area of research. Therefore, the present study attempts to explore the survival pattern of IPOs in India for the period 1992 till 2011 using

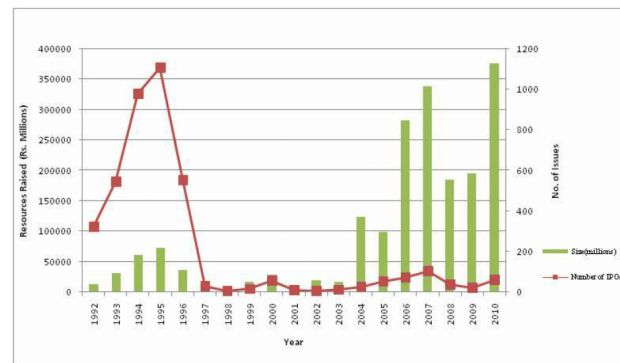


Figure 1: Trends in Indian IPO market

certain sophisticated statistical tools of survival analysis. This paper is organized into various sections: In the next section, some of the prominent studies done on the survival of IPOs across the world and the hypotheses based upon their arguments have been framed, followed by a detail description on the data that has been used and methodology that has been applied for the analysis. Next section presents and discusses the empirical analysis of survival pattern of IPOs across various issue, market and company specific variables and conclusion is presented in the final section of this paper.

## BACKGROUND AND HYPOTHESES

The concept of aftermarket survival of IPOs is relatively new and has not been extensively explored by the researchers. Only few studies have tried to empirically test this phenomenon and mainly such analysis is concentrated in developed economies such as US, UK and Canada (Hensler et al., 1997; Rath, 2008; Demers and Joos, 2006; Jain and Kini, 1999; Kooli and Meknassi, 2007; Chou et al., 2007), whereas, the empirical analysis in the developing economies, such as India, is quite scarce (Raju and Prabhudesai, 2012). The dearth of literature in this area is the major motivation for the present study. In this section, efforts have been made to explore the factors that have been investigated by the researchers for examining the survival pattern of IPOs in the market place. Such theoretical arguments of scholars have been used for developing the hypotheses for the study. All such variables are categorized into three broad headings, i.e. issue, market and company specific variables.

**Issue specific variables:** The first and foremost variable which has been widely studied by researchers is size of the issue. It is believed that issue with larger size are better positioned in the market as they possess more resources to withstand the rough market conditions (Hensler et al., 1997; Goot et al., 2011; Ahmad, 2012). Hence, such larger offers are associated with lower level of uncertainty and lesser risk which creates better chances for survival of IPOs in the aftermarket (Hamza and Kooli, 2010; Kooli

and Meknassi, 2007; Rath, 2008; Jain and Kini, 1999). Based upon the empirical findings of scholars, it is hypothesized that:

H<sub>1</sub>: IPO survival rate accelerates with the size of the issue.

However, no consensus has been obtained from the literature as far as survival pattern across initial returns is concerned. Several researchers support signaling hypothesis which states that only good quality firms have the capacity to underprice their issues because they know that they would be able to recover such cost in the aftermarket, but low quality firms cannot afford to forgo their funds knowing their subsequent valuation and market performance (Hensler et al., 1997; Boubakri et al., 2005; Demers and Joos, 2006; Chancharat et al., 2008). Hence, such good quality issues with higher underpricing manage to maintain their identity and survive in the aftermarket. On the other hand, few researchers support Rock's adverse selection theory which alleged that in order to attract uninformed investors towards the issue, poor quality firms go for underpricing. However, such underpricing leads to unnecessary cost and burden on the firm that enhances the failure chances of such issues in the aftermarket (Kooli and Meknassi, 2007; Hamza and Kooli, 2010; Raju and Prabhudesai, 2012). Hence, in the light of such varied results, it is expected that:

H<sub>2</sub>: IPO survival rate is significantly associated with initial returns.

Researchers have adopted different proxies for measuring the demand of an IPO and have examined its influence on their survival prospects in the aftermarket (Hamza and Kooli, 2010; Kooli and Meknassi, 2007). Subscription ratio, which represents the number of times an issue is subscribed, has been widely used measure of investor's demand. This ratio reflects the acceptability and credibility on the issue perceived by the investors, which is turned into demand for that issue in the aftermarket (Handa, 2014). Higher subscription ratio clearly signifies the readiness of investors to put their funds in the firm's offered



securities and stay long with that issue which may lead to its higher survival in the aftermarket (Hamza and Kooli, 2010; Kooli and Meknassi, 2007; Raju and Prabhudesai 2012). Hence, it is expected that:

H<sub>3</sub>: IPO survival rate accelerates with high IPO demand.

The previous empirical evidence suggests the positive role of expert intermediaries on the subsequent performance and survival of IPOs in the aftermarket (Megginson and Weiss, 1991; Jain and Kini, 1999; Bhattacharya et al., 2011). The expert intermediaries such as venture capitalists, underwriters and lead managers, certify the value of IPO by reducing the information asymmetry in the issue and allures large number of institutional investors towards the issue (Megginson and Weiss, 1991). In other words, the reputed expert intermediaries acts as a signaling factor for the issue whose value added services and the wider network plays a very important role in determining the success of an IPO in the aftermarket (Kooli and Meknassi, 2007; Chancharat et al., 2008; Hamza and Kooli, 2010). Following the positive implication of expert intermediary's reputation in India, it is conjectured that:

H<sub>4</sub>: IPO survival rate accelerates with reputation of lead managers.

Another variable that is crucial for the success on an issue is listing time. The Indian primary market has faced a very unique experience as there has been a very long delay between the issue day and the first day of trading. Such delay is mainly due to time consuming administrative procedure and postponement of the listing day by the IPO company. An issue which takes more time in getting listed on the stock exchange indicates the uncertainty associated with it. Hence, during this time lag, the sensitive information is received by the market, which has an adverse impact on underpricing and initial volatility on the listing day (Chakrabarty and Ghosh, n.d.). Such issues with high delay may find it difficult to sustain longer in the market. Hence, it is expected that:

H<sub>5</sub>: IPO survival rate decelerates with more delay in listing.

Empirical evidence suggests that riskier IPOs are deeply underpriced and exhibit a higher chance of incurring negative outcomes in terms of its operations. These poor operational outcomes leads to the erosion in the firm's asset base, which is one of the major criteria for the firm to remain listed on the exchange (Hensler et al., 1997). Hence, when such listing requirement is not fulfilled, it would create the negative survival pattern of IPOs in the aftermarket. Following this, the study expects that:

H<sub>6</sub>: IPO survival rate decelerates with high risk in the issue.

**Market specific variables:** The extant literature support that market timings are everything for the IPO. It is believed that when there is a period of high market level, large number of low quality firms are allured to enter the market so as to take the advantage of 'windows of opportunity' which creates the 'hot issue phenomenon' in the market (Ritter, 1991; Hensler et al. 1997; Yang and Sheu, 2006). In the hot issue period, the market is more receptive for new equity issues that resulted in herd behavior among the issuers that are mainly young and of poor quality (Lehmann and Boschker, 2002; Zhao, 2005). This means that equity issues tend to cluster around market peaks (Loughran and Ritter, 1995). However, when the economic cycle reverses and enters the tough area, such firms do not have the capacity to face the stiff market situations and hence their issues fail to survive in the aftermarket (Demers and Joos, 2006; Kooli and Meknassi, 2007; Raju and Prabhudesai, 2012). On the other hand, in cold periods, the stock market is open only for the high quality companies, whereas weak firms find it difficult to go public (Zhao, 2005). Hence, such high quality firms survive longer in the aftermarket (Hamza and Kooli, 2010; Raju and Prabhudesai, 2012; Zhao, 2005; Demers and Joos, 2006; Kooli and Meknassi, 2007; Chancharat et al., 2008; Hamza and Kooli, 2010). Following these arguments, it is hypothesized that:

H<sub>7</sub>: IPO survival rate decelerates during the period of high market level.

H<sub>8</sub>: IPO survival rate decelerates during hot issue period.

**Company specific variables:** Age of the firm, at the time of issue, has been investigated by a number of studies upholding it as a crucial company specific measure of survival (Hensler et al., 1997; Demers and Joos, 2006; Peristiani and Hong, 2004; Adjei et al., 2008; Fisher and Pollock, 2004; Li et al., 2006). It is alleged that longevity brings more stability because the firms which have been in existence for a large number of years before the IPO provides the historical data on their performance to the investors, while the young firms lack seasoning and do not have the past performance records which ultimately makes them more speculative and difficult to go long in the aftermarket (Demers and Joos, 2006). Hence, the experience and the knowledge possessed by older firms enable their issues to survive longer in the aftermarket (Ritter, 1991; Schultz, 1993). Therefore, it is conjectured that:

H<sub>9</sub>: IPO survival rate accelerates with the age of the firm.

Industrial sector of an IPO is another significant factor that has been emerged out of survival literature. Since IPO firms are relatively smaller and less established, they are unlikely to beat the stiff competition with big industry players. In high growth, structurally attractive industries, it may be possible that IPO firms identify the profitable niche opportunities that are not of interest to the main players and, thereby, are able to survive and grow. However, firms issuing IPOs in mature industries may find achieving such growth a formidable challenge (Jain and Kini, 1999). This certainly indicates that several factors specific to industry such as its growth rate, competition level, entry barriers, labor conditions, technological developments etc., are crucial for the success or failure of an IPO in the aftermarket (Rath, 2008). Hence, using certain industry dummies, it is tested that:

H<sub>10</sub>: IPO survival rate is significantly associated with industry.

## DATABASE AND METHODOLOGY

**Data and Sample selection:** The data of the study consists of IPOs of common stocks offered on BSE (Bombay Stock Exchange) over the period that January 1992 to December 2011. The total equity offerings were 4018 and out of them, those firms have been retained in the final sample for which the data for all the variables is available. In order to examine the survival pattern of IPOs, each issue has been tracked for five years from the date of listing or until the end of 2011, whichever is earlier. Hence, the sample is restricted till 2006 and it is tracked till the end of 2011 (5 years). These criteria resulted in 3374 IPOs which are categorized into survivors and non-survivors.

**Sources for data collection:** Data for the variables, i.e. issue size, issue price, times subscribed and IPO activity have been compiled from Prime database (commercial agency for monitoring and compilation of information on all primary public issues in India) and Capitaline database (provided by Capital Market Publishers India Ltd.). Incorporation year of each IPO and their National Industrial Classification (NIC) codes have been obtained from Prowess database maintained by CMIE (Centre for Monitoring Indian Economy Pvt. Ltd.) on the basis of which IPOs have been classified into 10 major industries. Further, in order to compute the market returns for underpricing and market level, the Sensex values have been obtained from the official website of BSE. The data for post issue IPO status, date and reason for delisting has been taken from the official website of BSE, i.e. www.bseindia.com.

**Measurement of Variables:** Following Hensler et al., 1997; Bhattacharya et al., 2011; Rath, 2008, survivor is defined as the firm that continues to be listed on the stock exchange and non-survivor if it gets delisted from the exchange due to liquidation, permanent suspension, compulsion by SEBI or any other reason except due to its merger or movement to another stock exchange. This classification

resulted in 1681 survivors and 1693 non-survivors from 1992 till the end of 2011. Further, in order to conduct the survival analysis of IPOs, the dependent variable is the number of trading months from the date of listing till the date of delisting or the end of December 2011, whichever is earlier. This means the time window for each firm is different depending upon when it went public (Jain and Kini, 2000; Chou et al., 2007). The summary of issue, market and company specific variables used in the study has been presented in table 1.

**Methodology:** The empirical analysis has been done using best statistical tools based upon the review of past studies. The survivorship comparison of IPOs across various variables has been done using 'Independent sample t test' and 'Mann Whitney Wilcoxon test'. In order to examine the association between survival pattern of IPOs across different variables 'chi square test' has been employed. Further an in-depth analysis of survival pattern of

IPOs has been done using survival analysis methodology. The aim of survival analysis is not only to examine the occurrence of event but also the timing of such event (Mills, 2010). Further, this methodology is capable of dealing with the censored data as well as time series data. Since both these features are present in IPO market, this methodology is duly applicable (Raju and Prabhudesai, 2012; Hamza and Kooli, 2010). Survival analysis comprises of two functions: Survival function and Hazard function. The survival function is defined as probability that an individual will continue to survive till the end of study period (Kleinbaum and Klien, 2005, p. 9):

$$S(t) = \Pr(T > t) = 1 - F(t)$$

Here,  $S(t)$  is the cumulative survival rate;  $T$  is the time until the firm experiences the event (trading months);  $t$  is the study time period;  $F(t)$  is the cumulative density function= $\Pr(T \leq t)$

Table 1: Measurement of variables		
Variable	Variable defined	Expected survival pattern
Issue Specific Variables		
Issue Size	Logarithm of the size of the offering listed in the prospectus, or the amount raised by the company in the issue.	+
IPO demand	No. of times issue has been subscribed.	+
Initial Returns (MAER)	Raw returns= (Closing price on the listing day– Offering price) / (Offering price) Market returns= Closing value of Sensex on listing date- Closing value of Sensex on Issue date/ Closing value of Sensex on Issue date Market adjusted excess returns = Raw returns- Market returns	+/-
Lead manager's reputation	Megginson and Weiss (1991) reputational measure based upon number of issues and total size of issues managed.	+
Risk	Standard deviation of first 30 trading days of aftermarket returns (Jain and Kini, 1999)	-
List delay	Difference between List date and Issue date	-
Market related Variables		
Market Level	Return on Sensex for the month of issue.	-
IPO Activity	No. of issues in the calendar quarter of the offering.	-
Company specific Variables		
Age of Company	One plus the difference between incorporation year and the year of issue.	+
Industry	Industry sector to which the firm belongs based upon NIC2008 classification	+/-

On the other hand, the hazard function is the measures of conditional probability that the IPO is delisted instantaneously given that it has survived up to time  $t$ . It is defined as (Lee and Wang, 2003, p. 11):

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t \leq T < t + \Delta t | T \geq t)}{\Delta t} = \frac{f(t)}{1 - F(t)} = \frac{f(t)}{S(t)}$$

Here,  $f(t)$  is the probability function which is the product of survival and hazard function:

$$f(t) = S(t) h(t)$$

In the present study, non-parametric survival models, i.e. life table and Kaplan- Meier estimation have been employed which is the excellent way of conducting the preliminary analysis of survival data (Mills, 2010).

## RESULTS AND DISCUSSIONS

**Survivorship Comparison of IPOs:** In order to examine the difference between survivors and non-survivors across various issue, market and company specific variables, the comparison of IPOs has been done and their results are presented in table 2. The Independent sample t test has been applied to examine the difference in mean whereas Mann-Whitney Wilcoxon test has been applied to test the difference in median (Howton, 2006; Jain and Kini, 1999; Raju and Prabhudesai, 2012; Kooli and Meknassi, 2007). The findings of these tests reveal that issue size, lead manager's reputation (measured on the basis of size of issues managed) and IPO demand are significantly higher in survivors than those of non-survivors, whereas, the level of underpricing (MAER), list delay and level of risk are found to be significantly higher in non-survivors. The IPO activity as well as market level are found to be significantly higher in non-survivors. The average age for survivors is significantly higher than non-survivors which support that IPOs of older firms tends to survive in the aftermarket as compared to IPOs of younger firms (Hensler et al., 1997; Demers and Joos, 2006).

**Survival pattern across various factors:** This section covers an in-depth analysis of survival pattern of IPOs across various factors:

**Post-IPO state by Issue Size:** When an issue enters the market, its size matters a lot. The large size of an issue provides the resource based transformational shield to a firm which enhances its ability to cope up with the varying environment in the aftermarket (Fisher and Pollock, 2004). In order to test the survival pattern on the basis of size, the survivor and non-survivor rate has been computed across various level of issue size. Table 3 shows that small issues are more likely to be delisted due to negative reason with failure rate of 53.04%. As the size of an issue goes on increasing, the failure rate diminishes to just 4.64% with survivor rate of 95.39%. This holds the hypothesis to be true that firms with larger issues are more established, less risky and possess sufficient resources to face the uncertain situations in the market as compared to firms with the smaller issues and hence such larger issues manage to survive in the aftermarket (Hensler et al., 1997; Chancharat et al., 2008; Chou et al., 2007; Jain and Kini, 2008). The association between issue size and IPO survival is validated by the significant value of chi square test.

**Post-IPO state by MAER:** The returns on the first day of listing (MAER) and post listing survival pattern of IPOs has been presented in table 4. It clearly shows that as the returns on the first day increases, the survival rate goes downwards. This rejects the signaling theory and supports that leaving money on the table not only indicates the higher risk in the firm but also leads to higher indirect cost, less collected funds and more uncertainty in the issue, which create the financial difficulties and decelerates their survival prospects in the aftermarket. Hence, only low quality firms go for underpricing of their issues, but they do not have the capacity to bear the burden of this cost which in turn enhances the chances of their non-survival in the aftermarket (Kooli and Meknassi, 2007; Raju and Prabhudesai, 2012; Hamza and Kooli, 2010). Further, this association is found to be significant in chi square test as well.



Survival Pattern of Initial Public Offerings  
in India: An Empirical Study

Table 2: Survivorship comparison of IPOs

Variables	Status	Mean	Median	Std. Deviation	t stat	Wilcoxon test
Issue Size (Crore)	Sur NS	32.08287 4.899368	3.25 3.2	207.1083 9.87127	5.375***	-2.69***
IPO demand (Times)	Sur NS	9.616841 6.019055	2.64 1.5	25.99337 13.00319	5.079***	-10.03***
MAER (Percentage)	Sur NS	34.23032 51.01491	12.16 24.91	142.3219 111.1438	-3.816***	-7.82***
Lead Manager's reputation (n) (Percentage)	Sur NS	1.611242 1.693173	1.06 1.07	1.576899 1.630013	-1.484	-1.89
Lead Manager's reputation (size) (Percentage)	Sur NS	1.936657 1.190376	0.26 0.195	3.281743 2.289535	7.655***	-3.72***
Risk (Percentage)	Sur NS	0.109499 0.141352	0.0787 0.1011	0.213561 0.45784	-2.593*	-11.69***
List delay (Days)	Sur NS	126.4307 138.4117	78 87	277.1515 153.6512	-1.554	-13.53***
Market level (Percentage)	Sur NS	0.371285 0.951837	-1.3 -0.68	8.47149 8.872998	-1.944*	-1.52
IPO Activity (No. of issues)	Sur NS	214.5907 224.0774	230 230	129.17 102.1823	-2.365**	-2.06**
Age (years)	Sur NS	8.737656 6.658004	5 5	11.22214 6.170977	6.663***	-4.19***

\*\*\*Significant at 1% level, \*\* Significant at 5% level, \* Significant at 10% level. See table 1 for the definition of variables. Sur=Survivors; NS=Non survivors.

Table 3: Post-IPO state by Issue Size

Size (crore)	N	Survivors	Percent	Non survivors	Percent
S<=5	2485	1167	46.96	1318	53.04
5<S<=10	484	203	41.94	281	58.06
10<S<=50	253	166	65.61	87	34.39
S>50	152	145	95.39	7	4.61
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	171.66 (0.000)				

Note: S stands for Issue Size

Survival Pattern of Initial Public Offerings  
in India: An Empirical Study

Table 4: Post-IPO state by MAER

MAER	N	Survivors	Percent	Non survivors	Percent
MAER<=0	1100	652	59.27	448	40.73
0<MAER<=25	738	339	45.93	399	54.07
25<MAER<=50	512	229	44.73	283	55.27
50<MAER<=100	505	213	42.18	292	57.82
MAER>100	519	248	47.78	271	52.22
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	61.742 (0.000)				

Note: MAER stands for Market Adjusted Excess returns

Post-IPO state by IPO demand: Table 5 provides the survival and non-survival rate across various level of subscription. This clearly shows that IPOs which are very less demanded have very high failure rate (63.53%), whereas issues which are highly demanded exhibits high survival in the aftermarket (72.22%). This pattern is found to be significant in chi square test and hence supports the hypothesis that an IPO with high demand survive in the aftermarket as compared to IPOs with low demand. It suggests that the interest of investors towards an issue plays a positive role in determining the success of IPOs in the aftermarket (Kooli and Meknassi, 2007; Raju and Prabhudesai 2012).

Post-IPO state by Lead Manager Reputation: An IPO backed by reputed lead manager signals the quality of that issue to the outsiders. A lead manager plays a significant role in bringing an issue to the market and making that issue a success. Investors always evaluate the reputation of lead manager associated with an issue while taking the investment decision (Jain and Kini, 1999; Boubakri et al., 2005). Table 6 clearly exhibits that majority of IPOs with low quality lead manager failed to survive in the aftermarket (52.42%), whereas, the IPOs backed by reputed lead managers exhibit higher survival rate (79.63%). The survival profile of IPOs is found to be highly associated with the reputation of experts

attached to that issue. This pattern corroborates with the findings obtained by Jain and Kini, 1999; Jain and Kini, 2000; Demers and Joos, 2006; Hamza and Kooli, 2010 and supports that reputation of lead manager is a boosting factor for the success of an issue in the aftermarket.

Post-IPO state by List delay: Table 7 shows that when the delay in listing is within the SEBI listing delay limit of 30 days, the survival rate is extremely high as compared to non-survivors (98.32 % vs. 1.68%). But as this period goes upward, the survival rate goes downward and non- survival rate reach upto 50.18%. This supports that when an issue takes more time in listing, the level of uncertainty is enhanced which in turn lowers the survival rate of such issues in the aftermarket.

Post-IPO state by Risk: Risk is a part of every IPO but whether such risk is associated with a survival pattern of IPO needs to be examined. Overall, table 8 reveals that as the level of risk increases the survival rate of IPOs falls whereas the non-survival rate moves upward. Such association is found to be significant in chi square test. This signifies that risky IPOs find it difficult to maintain their identity on the exchange and with the passage of time this risk proves to be detrimental for the endurance of an issue in the market (Jain and Kini, 1999; Chi et al., 2010; Jain and Kini, 2008; Li et al., 2006).

Survival Pattern of Initial Public Offerings  
in India: An Empirical Study

Table 5: Post-IPO state by Subscription

Subscription	N	Survivors	Percent	Non survivors	Percent
SB<=1	584	213	36.47	371	63.53
1<SB<=5	1733	847	48.87	886	51.13
5<SB<=10	372	205	55.11	167	44.89
10<SB<=20	338	185	54.73	153	45.27
20<SB<=50	275	179	65.09	96	34.91
SB>50	72	52	72.22	20	27.78
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	89.767 (0.000)				

Note: SB stands for Subscription (times)

Table 6: Post-IPO state by Lead Manager Reputation

Average LM Reputation (size)	N	Survivors	Percent	Non survivors	Percent
LM<=1	2560	1218	47.58	1342	52.42
1<LM<=5	389	178	45.76	211	54.24
5<LM<=10	317	199	62.78	118	37.22
LM>10	108	86	79.63	22	20.37
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	66.048 (0.000)				

Note: LM stands for Lead Manager's reputation

Table 7: Post-IPO state by List delay

List Delay	N	Survivors	Percent	Non survivors	Percent
LD<=30	119	117	98.32	2	1.68
30<LD<=90	1989	1080	54.30	909	45.70
90<LD<=180	801	318	39.70	483	60.30
LD>180	465	166	35.70	299	64.30
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	197.82 (0.000)				

Note: LD stands for List delay

Survival Pattern of Initial Public Offerings  
in India: An Empirical Study

Table 8: Post-IPO state by Risk

Risk	N	Survivors	Percent	Non survivors	Percent
R<=0.10	1916	1087	56.73	829	43.27
0.10<R<=0.20	1128	480	42.55	648	57.45
0.20<R<=0.50	290	94	32.41	196	67.59
R>0.50	40	20	50.00	20	50.00
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	95.597 (0.000)				

Note: R stands for risk

Post-IPO state by Market level: The analysis of IPO survival pattern across the returns on the Sensex at the time of issue (i.e. Market level) reveals that there is a significant deceleration in the survival rate of IPO with the high market level. This supports window of opportunity hypothesis which alleged that when the returns on market the high, many low quality firms enter the market but such issue do not possess the ability to face the adverse market conditions in future and hence they fail to sustain their identity on the exchange (Hensler et al., 1997; Goot et al., 2011).

Post-IPO state by IPO Activity: The pattern of IPO survival categorized on the basis of IPO activity clearly indicates that when number of issues in a quarter is very low (upto 50), survival rate of IPOs is quite high (91.95%). However, as the IPO activity start increasing, large percentage of IPOs become non-survivors (52.22%) (See table 10). This finding corroborates with Raju and Prabhudesai, 2012; Demers and Joos, 2006; Kooli and Meknassi, 2007; Chi et al., 2010, who advocate the negative consequence of hot issue period on the post issue duration of IPOs. Hence, fierce competition in the market due to high entrants negatively influences the endurance of IPO in the aftermarket (Kauffman and Wang, 2003).

Post-IPO state by Age: The association between age and survival pattern of IPOs is found to be in line

with the hypothesis. Table 11 shows that majority of IPOs of the firms which have very short operating history, i.e. less than or equals to 5 years, fail to survive in the aftermarket (52.65%), whereas, experienced firms exhibit higher survival rate in the aftermarket (89.66%). This pattern is found to be highly significant in chi square test and confirms the general proposition that older firms captures the advantage of learning by doing and demonstrate a strong fit to the environment by surviving for relatively longer duration than younger firms (Hensler et al., 1997; Carpentier and Suret, 2009; Audretsch and Lehmann, 2005; Demers and Joos, 2006).

Post-IPO state by Industry: Table 12 shows the survival pattern across various industry dummies. The survival and non-survival rate shows that sectors such as agriculture, administration & support services, manufacturing, mining and wholesale and retail trade exhibit higher percentage of non-survivors as compared to survivors, whereas, sectors such as information & communication, construction, accommodation, transport and storage, finance and insurance and other sectors exhibit significantly higher survival rate in India. This indicates that IPOs of industries with high growth, small entry barriers and adequate competitive level, perhaps have a high potential to survive in the aftermarket as compared to IPOs of other industries.



# Survival Pattern of Initial Public Offerings in India: An Empirical Study

Table 9: Post-IPO state by Market Level

Market Level	N	Survivors	Percent	Non survivors	Percent
ML<=0	1760	907	51.53	853	48.47
0<ML<=10	1123	553	49.24	570	50.76
10<ML<=20	392	179	45.66	213	54.34
ML>20	99	42	42.42	57	57.58
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	7.093 (0.069)				

Note: ML stands for Market level

Table 10: Post-IPO state by IPO activity

IPO Activity	N	Survivors	Percent	Non survivors	Percent
ACT<=50	261	240	91.95	21	8.05
50<ACT<=100	301	120	39.87	181	60.13
100<ACT<=150	221	83	37.56	138	62.44
ACT>150	2591	1238	47.78	1353	52.22
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	214.87(0.000)				

Note: ACT stands for IPO activity

Table 11: Post-IPO state by Age

AGE	N	Survivors	Percent	Non survivors	Percent
Age<=5	1795	850	47.35	945	52.65
5<Age<=10	887	414	46.67	473	53.33
10<Age<=50	663	391	58.97	272	41.03
Age>50	29	26	89.66	3	10.34
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	48.511(0.000)				

## Survival pattern through Life table

In order to empirically examine the event on yearly basis as well as to comprehend the year on year terminal behavior of IPOs in India, life table has been constructed. It is a non-parametric survival analysis technique which generates the duration distribution of entire data (Garson, 2012). For this, the data has

been classified into 12 intervals so as to know the terminating and surviving pattern from the start till the end of each year.

Table 13 exhibits that actual number of companies terminates during the first year is 550, whereas after adjusting the effect of censored observations, i.e. 63 IPOs, companies exposed to risk came out to be

# Survival Pattern of Initial Public Offerings in India: An Empirical Study

Table 12: Post-IPO state by Industry

Sectors	N	Survivors	Percent	Non Survivors	Percent
Agriculture	97	17	17.53	80	82.47
Mining	57	27	47.37	30	52.63
Manufacturing	1995	877	43.96	1118	56.04
Construction	113	80	70.80	33	29.20
Wholesale & Retail trade	175	87	49.71	88	50.29
Transport & storage	39	23	58.97	16	41.03
Accommodation	37	24	64.86	13	35.14
Information & Communication	245	191	77.96	54	22.04
Finance & Insurance	483	279	57.76	204	42.24
Administrative and support service activities	48	14	29.17	34	70.83
Others	85	62	72.94	23	27.06
Total	3374	1681	49.82	1693	50.18
Chi square (p value)	208.7113 (0.000)				

3342.5. The overall probability of surviving in a span of first 12 months is 0.84 and probability of terminating is 0.16. In the next year, the cumulative proportion of companies surviving declines to 0.71, followed by 0.62, 0.56 and so on. This decline persists till the end of 60th month wherein only 50% of companies continue to operate and rest fail in the initial years of IPO. After this period, much stability has been observed in the IPO survival rates. The median survival time came out to be around 75 months. This shows that initial 5 to 6 years are very crucial for the success of an IPO wherein most of the firms failed to sustain on the exchange. However, after this period, the proportion of termination becomes very negligible and large proportion of companies continues to operate on the trading exchange.

## Survival pattern through Kaplan-Meier estimation

Another non-parametric technique that is useful in examining the survival pattern of IPOs is 'Kaplan-Meier (K-M) estimation' or 'Product-limit method' (Kaplan and Meier, 1958). This method computes the probability of happening of an event at a certain point of time and generates table and plots of survival as well as hazard function for event history data (Garson, 2012). Table 14 shows that on an average survival time is higher but actually median survival time of the companies is around 75 months.

Further, K-M method utilizes the information of survived and non-survived IPOs and constructs the plot of survival and hazard function over time. Figure 2 exhibits the survival curve that has been

Survival Pattern of Initial Public Offerings  
in India: An Empirical Study

formed by plotting the survival probability of IPOs against the trading months, wherein the percentage of cumulative survival at any given time signifies the probability of survival of IPOs at that time (Garson, 2012). Figure 2 demonstrate the significant fall in survival probability for the first 50 months of IPO.

For 50-60 months, an elbow is formed and after 60 months the decline rate becomes relatively stable. The hazard curve is presented in figure 3. This clearly shows cumulative force of mortality of IPOs is very high for the initial 50-60 months wherein the hazard probability is around 0.6-0.7. However, after this period the hazard rate becomes much stable.

Table 13: Life table

Interval Start Time	Number Entering Interval	Number Withdrawing during Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Terminating	Proportion Surviving	Cumulative Proportion Surviving at End of Interval
0	3374	63	3342.500	550	.16	.84	.84
12	2761	79	2721.500	421	.15	.85	.71
24	2261	84	2219.000	280	.13	.87	.62
36	1897	89	1852.500	185	.10	.90	.56
48	1623	82	1582.000	84	.05	.95	.53
60	1457	143	1385.500	57	.04	.96	.50
72	1257	123	1195.500	41	.03	.97	.49
84	1093	121	1032.500	22	.02	.98	.48
96	950	129	885.500	16	.02	.98	.47
108	805	129	740.500	13	.02	.98	.46
120	663	114	606.000	7	.01	.99	.45
132	542	115	484.500	5	.01	.99	.45
144	422	86	379.000	5	.01	.99	.44
156	331	77	292.500	1	.00	1.00	.44
168	253	94	206.000	4	.02	.98	.43
180	155	65	122.500	2	.02	.98	.43
192	88	53	61.500	0	.00	1.00	.43
204	35	26	22.000	0	.00	1.00	.43
216	9	9	4.500	0	.00	1.00	.43
The median survival time is 75.0116							

Table 14: Life table

Mean				Median			
		95% Confidence Interval				95% Confidence Interval	
Estimate	Std. Error	Lower Bound	Upper Bound	Estimate	Std. Error	Lower Bound	Upper Bound
116.206	1.810	112.659	119.753	75.048	8.415	58.554	91.541

Survival Pattern of Initial Public Offerings  
in India: An Empirical Study

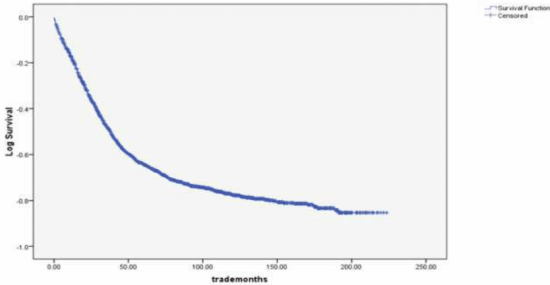


Figure 2: Survival Function

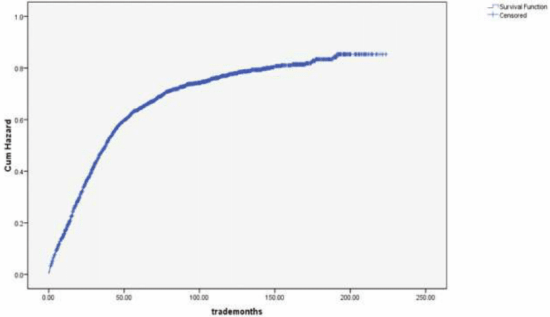


Figure 3: Hazard Function

CONCLUSION

This paper empirically examines the survival pattern of IPOs in India from 1992 till 2011. For this, the suitable statistical tools including non-parametric survival analysis methodology have been employed. Firstly, the survivorship comparison revealed the significant differences between survivors and non-survivors across various factors. Thereafter, in order to explore the survival pattern in more detail, the survival and non-survival rates have been analyzed for each of the issue, market and company specific factors. The study

found that IPOs which are larger in size, highly demanded and backed by reputed lead managers have higher survival rate in the aftermarket. However, higher initial returns, more delay in listing and higher risk significantly deteriorate the survival rate of IPOs. Market related variables, i.e. higher market level as well as IPO activity at the time of issue decelerate the endurance of IPOs in India. In company specific variables, the findings corroborates with Hensler et al., 1997; Demers and Joos, 2006; Rath, 2008; Audretsch and Lehmann, 2005 and revealed that older firms demonstrate a stronger fit the market due to which it has higher survival rate than younger firms. Also, the survival



rates of IPOs vary as per different sectors. Further, non-parametric survival analysis techniques, i.e. Life table and Kaplan-Meier estimation revealed a significant deterioration in survival rates of IPOs in India.

The study contributes to IPO literature in general and survival in particular and holds the practical significance for the issuers, investor, regulators and the entire capital market. Based upon the analysis of survival pattern of IPOs, issuers can critically evaluate the factors that influence the survivability of their IPOs and can build such strategies for the issue that would ensure its long term endurance on the exchange. In other words, an understanding of the relation between the issue, market and company specific characteristics at the offering and the survivability of an IPO in the aftermarket allows the issuing firm to make better decisions about proceeding with their IPO and provide an initial estimate of survival of the firms for trading exchange (Hensler et al., 1997). On the other hand, investors can evaluate the issue, market and company specific factors in order to ensure that their decision to invest in an issue should turn out to be profitable in the aftermarket (Jain and Kini, 1999; Howton, 2006; Yang and Sheu, 2006). Further, the regulators can ascertain the probable chances of the long run survival of IPOs and can frame such laws that would ensure that only good quality issues should enter the market at the best possible time (Raju and Prabhudesai, 2012). Hence, the findings of this study are beneficial for all the associated parties of an IPO.

Although efforts have been made to cover the majority of issue, market and company specific variables, still there is a scope for future research. Evaluating the impact of additional variables such as financial and corporate governance variables in explaining the aftermarket survival of IPOs is likely to be more fruitful that would enhance the conclusiveness of the results. Further, semi-parametric and parametric survival methodologies can be employed to make more sophisticated analysis of survival profile of IPOs in India.

## REFERENCES

- Adjei, F., Cyree, K.B. and Walker, M.M. (2008), "The determinants and survival of reverse mergers vs IPOs", *Journal of Economics and Finance*, Vol. 32 No. 2, pp. 176-194.
- Ahmad, W. (2012), "Lockup agreements and survival of IPO firms", available at: <http://efmaefm.org/0efmameetings/efma%20annual%20meetings/2012-Barcelona/phd/Lockup%20Agreements%20and%20Survival%20of%20IPO%20Firms.pdf> (accessed 13 November, 2012).
- Allen, F. and Faulhaber, G. (1989), "Signaling by underpricing in the IPO market", *Journal of Financial Economics*, Vol. 23, pp.303-323.
- Audretsch, D.B. and Lehmann, E.E. (2005), "The Effects of experience, ownership and knowledge on IPO survival: Empirical evidence from Germany", *Review of Accounting and Finance*, Vol. 4 No. 4, pp.13-34.
- Bhabra, H. and Pettway, R. (2003), "IPO prospectus information and subsequent performance", *The Financial Review*, Vol. 38, pp. 369-397.
- Bhattacharya, U., Borisov, A. and Yu, X. (2011), "Do financial intermediaries during IPOs affect longterm mortality rates?", available at: <http://ssrn.com/abstract=1781242> (accessed 17 December, 2012).
- Boubakri, N., Kooli, M. and L'Her, J.F. (2005), "Is there any life after going public? Evidence from the Canadian market", *The Journal of Private Equity*, Vol. 8 No.3, pp.30-40.
- Carpentier, C. and Suret, J.M. (2009), "The survival and success of Canadian penny stock IPOs", *Small Business Economics*, Vol.36 No.1, pp.101-121.
- Chakrabarty, B. and Ghosh, S. (n.d.), "Designing an efficient IPO mechanism: Evidence from e-IPOs", available at: [http://www.igidr.ac.in/money/mfc\\_08/Designing%20an%20Efficient%20IPO...Bidisha%20&%20Saurabh%20Ghosh.pdf](http://www.igidr.ac.in/money/mfc_08/Designing%20an%20Efficient%20IPO...Bidisha%20&%20Saurabh%20Ghosh.pdf) (accessed 21 July, 2014).
- Chancharat, N., Krishnamurti, C. & Tian, G. (2012), "Board structure and survival of new economy IPO Firms", *Corporate Governance: An International Review*, Vol.20, pp.144-163.
- Chancharat, N. and Krishnamurti, C., Tian, G. (2008), "When the going gets tough: Board capital structure and survival of new economy IPO firms", working paper, 21st Australian Finance and Banking Conference, Australia.
- Chi, J., McWha, M. and Young, M. (2010), "The performance and survivorship of New Zealand IPOs", *International Review of Financial Analysis*, Vol.19, pp.172-180.
- Chou, T., Cheng, J. and Chien, C. (2007), "Does the involvement of expert intermediaries improve the aftermarket survivability of IPO Firms? Evidence from industry specialist auditors and reputable venture capitalists", paper presented at Accounting Theory and Practice Conference, available at: <http://www.fim>

- ntu.edu.tw/~conference/conference2006/proceedings/proceeding/16/16-3(A122).pdf (accessed 4 April, 2012).
- Chou, T., Cheng, J. and Chien, C. (2013), "How useful is the venture capital prestige? Evidence from IPO survivability", *Small Business Economics*, Vol. 40 No. 4, pp.843-863.
- Cockburn, I.M. and Wagner, S. (2007). Patents and the survival of internet related IPOs. Working Paper [13146], The National Bureau of Economic Research, Cambridge, June 2007.
- Demers, E.A. and Joos, P. (2006), "IPO failure risk", available at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=656542](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=656542) (accessed 29 October, 2011).
- Espenlaub, S., Khurshed, A. and Mohamed, A. (2012), "IPO survival in a reputational market", *Journal of Business Finance & Accounting*, Vol. 39 No. 3-4, pp. 427-463.
- Fama, E. F., & French, K. R. (2004), "New lists: fundamentals and survival rates", *Journal of Financial Economics*, Vol. 73, pp. 229-269.
- Fischer, H. M. and Pollock, T. G. (2004), "Effects of social capital and power on surviving transformational change: The case of initial public offerings", *Academy of Management Journal*, Vol. 47 No. 4, pp.463-481.
- Garson, G.D. (2012), "Life tables & Kaplan-Meier Analysis", Blue Book Series, North Carolina State University: Statistical Associates Publishing.
- Goot, T.V.D, Geirsbergen, N.V and Botman, M. (2011), "What determine the survival of internet IPOs?", *Applied Economics*, Vol.41 No.5, pp. 547-561.
- Hamza, O. and Kooli, M. (2010), "Does venture capitalists reputation improve the survival profile of IPO firms?", paper presented at Symposium EFM 2010, Canada.
- Handa, R. (2014), "Corporate Governance and underpricing of initial public offerings in India" PhD thesis, Guru Nanak Dev University, India.
- Hensler, D.A., Rutherford, R.C. and Springer, T.M. (1997), "The survival of initial public offerings in the aftermarket", *The Journal of Financial Research*, Vol. 20 No.1, pp. 93-110.
- Howton, S.W. (2006), "The effect of governance characteristics on the state of firm after an initial public offerings", *The Finance Review*, pp. 419-433.
- Jain, B.A. and Kini, O. (1999), "The life cycle of initial public offering firms", *Journal of Business Finance & Accounting*, Vol. 26 No.9 & 10, pp.0306-686X.
- Jain, B.A. and Kini, O. (2000), "Does the presence of venture capitalists improve the survival profile of IPO firms?", *Journal of Business Finance and Accounting*, Vol. 27 No.9 & 10, pp. 1139-1176.
- Jain, B.A. and Kini, O. (2008), "Impact of strategic investment choices on post issue operating performance and survival of US IPO firms", *Journal of Business Finance and Accounting*, Vol. 35 No.3 & 4, pp.459-490.

- Jain, B.A. and Martin, C.L. (2005), "The association between audit quality and post-IPO performance: A survival analysis approach", *Review of Accounting and Finance*, Vol. 4 No.4, pp.50-76.
- Kaplan, E.L. and Meier, P. (1958), "Non parametric estimation for incomplete observations", *Journal of the American Statistical Association*, Vol. 53 No. 282, pp. 457-481.
- Kauffman and Wang (2003), "A survival theory of internet firm duration", Working Paper, Information and Decision Sciences, Carlson School of Management, University of Minnesota, Minneapolis.
- Kleinbaum, D.B. and Klein, M. (2005) "Survival analysis: A self learning text", Second edition, Springer, US.
- Kooli, M. and Meknassi, S. (2007), "The survival profile of US IPO Issuers 1985-2005", *The Journal of Wealth Management*, Vol. 10 No.2, pp.105-119.
- Kooli, M. and Suret, J. (2004), "The aftermarket performance of initial public offerings in Canada", *Journal of Multinational Financial Management*, Vol.14, pp. 47-66.
- Lee, E.T. and Wang, J.W. (2003), "Statistical methods for survival data analysis", Third edition, John Wiley & Sons, US.
- Lehmann, E. E. and Boschker, K. (2002), "Venture Capital Syndication in Germany: Evidence from IPO Data", Available at: <http://ssrn.com/abstract=361880> (accessed 14 January, 2014).
- Li, J., Zhang, L. and Zhou, J. (2006), "Earnings Management and Delisting Risk of Initial Public Offerings", Simon School, University of Rochester, Research Paper Series; AAA 2008 Financial Accounting and Reporting Section (FARS) Paper, Available at: <http://ssrn.com/abstract=641021> (accessed 14 June, 2013).
- Loughran, T. and Ritter, J. (1995), "The new issues puzzle", *Journal of finance*, Vol. 50, pp. 23-51.
- Lowry, M. and Schwert, G. W. (2002), "IPO market cycles: bubbles or sequential learning?", *Journal of Finance*, Vol. 57 No.3, pp. 1171-1198.
- Mata, J. and Portugal, P. (1994), "Life duration of new firms", *The Journal of Industrial Economics*, Vol. 42 No.3, pp. 227-245.
- Mayur, M. and Mittal, S. (2011), "The Relationship between Underpricing and Post IPO performance: Evidence from Indian IPOs", Working Paper, The National Bureau of Economic Research, Cambridge.
- Meggison, W. L. and Weiss, K. A. (1991), "Venture capitalist certification in initial public offerings", *Journal of Finance*, Vol. 46 No.3, pp.879-903.
- Mills, M. (2010), "Fundamentals of survival and event history analysis" Sage Publications, available at : [http://www.sagepub.in/upm-data/39847\\_9781848601017\\_Mills.pdf](http://www.sagepub.in/upm-data/39847_9781848601017_Mills.pdf) (accessed 19 April 2013).
- Miloud, T. (2009), "Operating measures, IPO valuation and the aftermarket performance: Perspective from internet bubble

---

## Survival Pattern of Initial Public Offerings in India: An Empirical Study

---

period", *Global Economy and Finance Journal*, Vol. 2 No.1, pp.154-171.

Peristiani, S. and Hong, G. (2004), "Pre-IPO financial performance and aftermarket survival", *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, Vol.10 No.2, pp.1-7.

Raju, G.A and Prabhudesai, H. (2012), "A tale of two decades (1990-2010): The survival profile of Indian initial public offering issuers", *The Journal of Wealth Management*, Vol. 14, No. 4, pp. 109-121.

Rath, S. (2008), "The survival of initial public offerings in Australia", paper presented at Oxford Business & Economics Conference program, UK, available at: [http://www.gcbe.us/2008\\_OBEC/data/confcd.htm](http://www.gcbe.us/2008_OBEC/data/confcd.htm) (accessed 30 August, 2012).

Reutzel, C.R (2012), "Institutional investor portfolio stability and Post-IPO firm survival", *International Journal of Business and Management*, Vol.7, No.5, pp. 1-13.

Ritter, J.R. (1991), "Initial public offerings", *Contemporary Financial Digest*, Vol.2 No.1, pp. 5-30.

Ritter, J.R. (1991), "The long run performance of initial public offerings", *The Journal of finance*, Vol. 46 No.1, pp.3-27.

Rock, K. (1986), "Why new issues are underpriced", *Journal of Financial Economics*, Vol.15 No.1-2, pp.187-212.

Seguin, P. J. and M. M. Smoller (1997), "Share price and mortality: An empirical evaluation of newly listed Nasdaq stock", *Journal of Financial Economics*, Vol. 45 No. 3, pp.333-363.

Sehgal S. and Singh, B. (2008), "Determinants of initial and long-run performance of IPOs in Indian stock market", *Asia-Pacific Business Review*, Vol.4 No.4, pp. 24-37.

Shah, A. (1995), "The Indian IPO market: Empirical Facts", Centre for Monitoring Indian Economy, Mimeo, pp.1-29.

Shultz, P. (1993), "Unit initial public offerings", *Journal of Financial Economics*, Vol. 34, pp.199-229.

Sun, C. (2004), "The long run performance and survival patterns of Canadian IPOs", MBA thesis, Eric Sprott School of Business, Carleton University, Ottawa, Ontario.

Welbourne, T.M and Andrews, A.O (1996), "Predicting the performance of Initial Public offerings: Should human resource management be in equation?", *Academy of Management Journal*, Vol. 39 No. 4, pp. 891-919.

Yang, C.Y and Ding,X. (n.d ), "The survival of initial public offerings in China", available at <http://asianfa2012.mcu.edu.tw/fullpaper/10319.pdf> (accessed 25 March, 2013).

Yang, C.Y. and Sheu, H.J. (2006), "Managerial ownership structure and IPO survivability", *Journal of Management and Governance*, Vol. 10, pp.59-75.

Zhao, X. (2005), "What causes Initial Public Offerings to be unsuccessful? An Empirical Analysis", PhD thesis, Mississippi State University, Mississippi.

---

### BRIEF PROFILE OF THE AUTHORS

**Garima Baluja** is an Assistant Professor in Finance area at DAV University, Jalandhar, India. She is pursuing Ph.D on "The Aftermarket survival of Initial Public Offerings in India" from Guru Nanak Dev University, Amritsar. She did her MBA in Finance from Apeejay Institute of Management Technical Campus, Jalandhar and Bachelor of Commerce from P.C.M S.D College for Women, Jalandhar. She qualified UGC-NET with JRF and worked as a full time research scholar for three years in Guru Nanak Dev University, Amritsar. She has about two years of teaching experience. She has published papers on IPO grading and its performance, FII and stock market volatility, Mutual funds and stock market volatility and Inflation-growth nexus. Her research interests are in the areas of Survival Analysis of IPOs, Volatility in Stock market, Banking and Capital market.

**Balwinder Singh**, Ph.D is an Associate Professor in the area of Finance at Guru Nanak Dev University, Amritsar, India. He completed his doctorate from Kurukshetra University on the topic "Performance Evaluation of Initial Public Offerings in India". He has about twenty years of teaching experience. His research interests are in the area of core issues of finance with special interests in the field of Banking and Capital market. He has significantly contributed in the area of Initial Public offerings, Capital market efficiency, Internet banking, Corporate disclosure and Derivatives market. He is Editor-in-Chief of the quarterly international journal with recognized listings and impact factor. His research contribution includes research articles (more than 70) in the journal of international repute, conference papers (more than 100) and contribution as prominent chapters in edited books.