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Relationship Between IPO Issue Price, Listing Day Pricing and Subsequent Stock Pricing with Risk Factor Disclosure in IPO Prospectus: Evidence from Indian Market

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ABSTRACT

An initial public offering (IPO) is a process by which a company offers its shares to the public for the first time. Investors wish to have details about the issue, the history of the company, ownership information, and the firm's operating and financial performance before accepting such offerings. A prospectus is often considered as the first window for a potential investor for viewing the firm's past and; projected future performance and the risk involved in that investment. The purpose of this paper is to present an extensive literature review on the disclosure of risk factors in an IPO prospectus and its impact on IPO Issue Price and initial pricing as well as stock pricing in subsequent periods. This paper is based on a sample of 131 IPOs that occurred in India from 2013 to 2019. A content analysis of 131 Indian IPO prospectuses is conducted to know the risk factors disclosed by them. Risk factors that are mutually exclusive are discovered and regressed to determine their influence on the IPO Issue Price and IPO Stock Pricing. In the short term, the Technological and Competitive risk category has a significant positive impact on the IPO Issue Price, Listing Day Opening Price, Listing Day Closing Price, and Stock Price in Subsequent Weeks. This work will contribute to the academic disclosure literature by proposing a method for describing the risk factor section which will help in the better appraisal of initial public offerings.

Keywords: *Initial Public Offering, Prospectus, Risk Factors, Mutually Exclusive Risk Categories. Listing Day Opening Price, Listing Day Closing Pricing*

1.INTRODUCTION

Initial Public offering is a process by which a company offers its shares in the public for the first time. It is an offering of either of fresh issue of securities or an offer for sale of existing securities or both by an unlisted company. It is also a route to get a global exposure by getting listed in the Stock Exchange. In such cases, the availability of information regarding the past performance of the company and its track record is generally inadequate and may lack credibility. IPO Prospectus is the primary source through which the investors can have details about the issue, history of the company, ownership information, its operating and past financial performance and the risk factors involved in that investment *(Bhabra & Pettway,2003).* It is a legal document because it is the written proof that provides all the material information related to the offering and both issuers and insurance agent are

takes full responsibility for its accuracy. Data contained in a prospectus are often considered as the first window to a potential investor for viewing the firm's past and its projected future performance. To enable the investors to take informed decisions and protect their interests, the Companies Act 2013 and SEBI has laid down stringent norms. Section 26 of the Companies Act list out contents to be included in the prospectus out of which Risk Factors section is most important. A prospectus should contain all information about risk factors which are in general and specific. The risk factor section provides forward-looking information about future possible economic events and financial performance of an issuer's firm. Clear and meaningful risk disclosures can help investors to assess the potential risk and returns of an offer and have informed decisions *(Ding, 2015).*The IPO prospectus is a critical tool for firms and potential investors to communicate. The risk disclosures serve as catalysts for the development of the necessary due diligence, which is then required for investors to make investment decision *(Grover & Bhullar, 2021)*. The risk factors can be categorized as business risks, financial risks and market risks. The investment decision can be expressed as trade-off between expected return and market risk. There is belief that higher the risk, higher the profit. Generally investors are risk-averse; they seek to minimize the risk for the desired level of expected return. Risk disclosure in the IPO prospectus may be informative to investors. This disclosure may affect the amount of discount to offer price and thus affect the valuation of IPOs. The returns on the first day could move to either positive or negative side but it is seen that generally IPOs have provided very high returns on the first day. If closing price on the listing day for IPOs is much higher than the issue price it is termed as "under-pricing." While the price of an IPO is greater than the first day trade, then the stock is considered to be "overpriced. IPO firms should provide information to investors, not only on the risks involved, but also about the company's ability to control or influence these risks. So that the investors may take correct and informed investment decision, which may compensate for the risks they are expected to assume.

2.LITERATURE REVIEW

Around the globe, governments have mandated that any firm wishing to go public must prepare a prospectus which discloses relevant information pertaining to its background, financial performance and risk factors for potential investors to better understand the firm before they invest in it (*Beatty, 1989*).Extensive and quality information disclosed in the prospectus is found to lead to superior IPO pricing thus minimizing pricing error *(Hanley and Hoberg, 2010).*Here the review of literature in a chronological order is documented which provides a clear understanding about the objectives and findings to see the relationship between risk factors and IPO pricing. Reviews of some of the published studies are as:

Sr No.	Author(s), year, Country	Findings of the Study
1.	Aggarwal et al. (2001) USA	Strategically generated extreme underpricing leads to information momentum, which creates high demand for the stock. Managers reap the benefits of this price enhancement after lockup expiration.
2.	Lowry and Shu (2002) USA	No significant difference was found between the initial returns of sued as well as non-sued firms. Higher litigation risk bracket firms intensely underprice their IPOs to avoid future litigation costs.
3.	Bhabra and Pettway (2003) Canada	Prospectus information has significant influence on IPO's short run performance but negligible effect in the long run. Firms which reissued equity or merged earned significantly superior stock return while poor performer

		failed subsequently.
4.	Loughran and Ritter (2004) USA	The underpricing increased more than four times in internet bubble period and then reached to normal after burst of bubble. During bubble period, market main emphasis was on maximizing IPO proceeds while it changed to research coverage in post bubble period.
5.	Cassia *et al*. (2004) Italy	Average underpricing in Italy was 21.87%, less than in US. It was because of change from fixed pricing to book building pricing, introduction of main board in stock exchange and inclusion of more negative information in IPO offer document.
6.	Chong et al. (2004) Hong Kong	IPOs were initially issued at high prices, with massive trading within the first five minutes of the issue's debut, but this quickly fell until the end of the day. Following the Asian financial crisis, the degree of underpricing also decreased.
7.	Abdou and Dicle (2007) USA	Not all but some risk factors have significant impact on the IPO pricing of both hi-tech and retail firms. VC and underwriters have a considerable effect on risk factors and risk factors affect the deal attributes
8.	Nam et al. (2008) USA	A negative relationship was found between information disclosures and underpricing but positive relationship with percent premium. The study found no evidence of an inverted-U shape in terms of the level of information disclosed and firm performance.
9.	Deumes (2008) Netherlands	Dutch firms' prospectuses contain adequate risk-relevant information which can predict well the volatility and sensitivity of future stock price. Risk predicted according to disclosure in prospectus is more accurate than those based on past market based information.
10.	Hanley and Hoberg (2008) USA	Detailed disclosure in the prospectus' Summary Section and Use of Proceeds Section reduces asymmetry of information and improves the efficiency of IPO prices. The information in the MD&A section has no bearing on IPO price. However, the section on risk factors has a positive impact on the change in offer price.
11.	Kothari et al, (2009) USA	The firm's risk declines with the favourable disclosure by the management and analysts. Negative disclosures by business press increases the cost of capital and return volatility while their favourable reporting reduce the cost and return volatility.
12.	Spindler (2009) USA	More negative information in risk factors is negatively correlated with underpricing. The relationship between disclosure and standard deviation of subsequent returns was also negative. So heavy risk bracket firms disclose less positive but more negative risk information.
13.	Arnold et al. (2010) USA	A significant relationship was observed between the soft information on risk and initial and ex post measures of returns.Firms disclosing more ambiguous information in their prospectuses experience higher initial underpricing.

14.	Huang et al. (2011) China	Proportionately more risk disclosure improves the quality of IPO information and it enhances the efficiency of pricing in the primary market. But the time variable is negatively related to underpricing.
15.	Kravet and Muslu (2011) USA	More risk disclosure in 10-K filing is positively associated with changes in daily stock return volatility, changes in volatility, trading volume relatively before and after two months of the filing, changes in dispersion of outstanding forecasts, and volatility of forecast revision.
16.	Campbell et al. (2013) USA	Risk proxies are positively related with risk factor disclosure, and this relationship differs between firm risk subcategories. Risk factor disclosures are likewise linked with post-disclosure market-based measures of firm risk, although they are adversely associated with abnormal returns at the offer release date.
17.	Loughran and McDonald (2013) USA	More vague text and negative words lead to higher initial returns and larger aftermarket volatility. It tends to upward offer price revisions, but changes in tone between the S-1 and 424 filings have limited impact on upward revisions in the offer price.
18.	Mousa et al. (2014), USA	Legal liability and market risk as a proxy of external risk factors have negative influence on short-term investor valuations and on post-IPO long-term survival of firm, whereas influence of the internal risk factors was not so significant.
19.	Fishe et al. (2015) USA	The study created a novel approach to determine the association between risk factors particular words used in IPO prospectus and IPO underpricing. It also looked at how different parts of speech affected market sentiment. The findings revealed that nouns had a greater effect on IPO performance than other components of speech.
20.	Ding (2016), Australia	The quantity of disclosures in the risk factor section has no significant impact on initial underpricing. However, the informative risk disclosure is inversely associated with underpricing. Unique content of risk factor disclosures and IPO valuation is positively related
21.	Brau et al. (2016) USA	IPO document's strategic tone is positively correlated with the initial return but negatively correlated with the long-run return. Prospectus soft information can predict initial price rather than closing price. The researchers created new content-analysis library of 2,349 strategic words and word-weighting system.
22.	Crain et al. (2017) USA	The study revealed a relationship between prospectus information and share price volatility. High uncertainty regarding the firm's share price increases reliance on the book-building process for creating a conservative IPO price range. The IPO offer price has a considerable influence on the degree of underpricing of the IPO.
23.	Jain and Vasudeva (2018)	Generally disclosure of risk factors has no impact on underpricing on first day and even after four weeks.

	India	Except management risk category other risk categories have no impact on underpricing.
24.	Wasiuzzamn et al. (2018) Malaysia	Overall and investment risks listed in the prospectus have a significant positive impact on the initial returns of an IPO. Internal and external risks have little impact on it individually. The findings support the ex ante uncertainty model and the signalling theory in explaining the influence of risk disclosures on IPO initial performance.
25.	Hussein et al. (2019) China	Disclosure of current 'litigation risks' has significant positive impact on opening and closing price underpricing. Disclosure of 'government policy changes on taxation and subsidy', 'higher rate of amortization' and 'piracy risks' have negative effect on closing price return. But none of these factors have impact on pricing after 3 weeks.

Source:(Grover & Bhullar, 2022)

Existing studies such as Bhabra and Pettway (2003) , Hanley and Hoberg (2008), Chhabra et al. (2010), Rashid et al., 2012; Ding (2016), Komenkul *et al.* (2016), Wasiuzzaman *et al*. (2017), Gumanti *et al*. (2017) and Hussein *et al.* (2017) present extensive empirical evidence from international markets to show that Initial Public Offerings (IPOs) outperform in the short run, especially on the first day of trading. Hawaldar et al. (2018)finds that IPOs in India are underpriced based on their performance on the first trading day. However, the positive return documented on the listing day is not sustained thereafter.While,Shi et al. (2007) observed a significant negative association between IPO under-pricing and disclosure regulation, corroborating the argument that more extensive disclosure requirements reduce information asymmetry in IPO markets and consequently lower IPO under-pricing. Most of the studies have used regression analyses which reveal a direct relationship between the IPO initial returns and the disclosure of risk. The risk factor section provides forward-looking and valuation-relevant information. The dependent variable is IPO under-pricing which is defined as the percentage return from the offer price to the Closing price. Different studies have used two or more Control variables such as age of the firm, IPO offer size, the natural logarithm of issue proceeds, underwriter's reputation, R&D intensity, use of proceeds and the founders etc. Further, on the basis of content or textual analysis of prospectuses of sample 131 Indian firms of different sectors, it was observed that most of the firms have disclosed risk factors in two categories as internal risk and external risk and some firms have shown as risk related to equityi.e. investment risk. Internal risk refers to the risks faced by the firm as aresult of its internal conditions such as its management, personnel, operations-related risk,among others. This risk is within the control of the firm. External risk factors are those riskfactors resulting from the external environment and are not within the control of the firmsuch as competition, government policies and legislation and the economic environment.Investment risk refers to the risks faced by the shareholders such as the non-payment of dividends, dilution of shareholdings and the failure of the IPO. The internal risk factors shown ranges from 20-40 forms, 15-30 forms of risk are identifiedas external risks and 5-7 forms of risk are depicted as investment risks. Despite the large number of studies conducted on IPO initial performance, very few have looked at the influence of risk disclosures on IPO Issue Price and initial returns. Very rare researches have been undertaken in Indian stock market. Present study is an attempt to examine the impact of mutually exclusive risk categories in IPO Issue Price, Listing day initial and subsequent stock pricing in short run.

3.OBJECTIVES OF THE STUDY

The study is carried out with the following objective in mind:

1. To determine the relationship between the risk factor categories and the IPO Issue Price.
2. To determine the association between risk factor categories and the IPO Initial Price on the opening of the listing day.
3. To determine the association between risk factor categories and the IPO Price at time of closing of the listing day.
4. To discover the association between risk factor categories and stock prices over the next few weeks/months.

4. RESEARCH METHODOLOGY

A sample of 131 IPOs of Indian firms listed on the main-board from 2013 to 2019 is taken to meet the goal of this study. Content analysis of the risk factor section of the prospectuses of sample firms is undertaken. The Red Herring Prospectuses (RHP) are retrieved from the SEBI website. There were 255 risk statements generated, which were then divided into 15 groups of homogeneous risk statements. Each company's 15 group statements are graded on a five-point Likert scale (1 = Strongly Not-Followed, 2 = Not Followed, 3 = Neutral, 4 = Followed, 5 = Strongly Followed). Further Five Point Likert Scale data is analysed using the Factor Analysis approach. By applying Principal Component Analysis to Factor Analysis, latent components were identified and loaded into six factors*(Krishan Lal & Bhullar,2021.)*. The six risk categories that are recognized through factor analysis, namely operating risk, compliance risk, managerial risk, equity risk, financial risk, and technological and competitive risk, along with three control variables, are used as independent variables in the regression analysis. The impact of risk factor disclosure on the IPO issue price, initial day pricing as well as stock pricing in subsequent weeks is measured through Regression Analysis. The following OLS Regression Equations are modelled:

$$ISSP = \alpha + \beta(1)\,FAGE + \beta(2)\,ISSIZE + \beta(3)\,PRCHGSENSX + \beta(4)\,OPRRISK + \beta(5)\,COMPRISK + \beta(6)\,MNGRRISK + \beta(7)\,EQRISK + \beta(8)\,FINRISK + \beta(9)\,TECHCMPRISK + \varepsilon \quad \ldots\ldots\ldots\ldots (i)$$

$$LDOP = \alpha + \beta(1)\,FAGE + \beta(2)\,ISSIZE + \beta(3)\,PRCHGSENSX + \beta(4)\,OPRRISK + \beta(5)\,COMPRISK + \beta(6)\,MNGRRISK + \beta(7)\,EQRISK + \beta(8)\,FINRISK + \beta(9)\,TECHCMPRISK + \varepsilon \quad \ldots\ldots\ldots\ldots (ii)$$

$$LDCP = \alpha + \beta(1)\,FAGE + \beta(2)\,ISSIZE + \beta(3)\,PRCHGSENSX + \beta(4)\,OPRRISK + \beta(5)\,COMPRISK + \beta(6)\,MNGRRISK + \beta(7)\,EQRISK + \beta(8)\,FINRISK + \beta(9)\,TECHCMPRISK + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots (iii)$$

$$PA1W = \alpha + \beta(1)\,FAGE + \beta(2)\,ISSIZE + \beta(3)\,PRCSENSX1W + \beta(4)\,OPRRISK + \beta(5)\,COMPRISK + \beta(6)\,MNGRRISK + \beta(7)\,EQRISK + \beta(8)\,FINRISK + \beta(9)\,TECHCMPRISK + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots (iv)$$

$$PA2W = \alpha + \beta(1)\,FAGE + \beta(2)\,ISSIZE + \beta(3)\,PRCSENSX2W + \beta(4)\,OPRRISK + \beta(5)\,COMPRISK + \beta(6)\,MNGRRISK + \beta(7)\,EQRISK + \beta(8)\,FINRISK + \beta(9)\,TECHCMPRISK + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots (v)$$

$$PA3W = \alpha + \beta(1)\,FAGE + \beta(2)\,ISSIZE + \beta(3)\,PRCSENSX3W + \beta(4)\,OPRRISK + \beta(5)\,COMPRISK + \beta(6)\,MNGRRISK + \beta(7)\,EQRISK + \beta(8)\,FINRISK + \beta(9)\,TECHCMPRISK + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots (vi)$$

PA1M= α + β (1) FAGE + β (2) ISSIZE + β (3) PRCSENSX1M + β (4) OPRRISK + β (5) COMPRISK + β (6) MNGRRISK+ β (7) EQRISK + β (8) FINRISK + β (9) TECHCMPRISK+ε …….(vii)

PA3M= α + β (1) FAGE + β (2) ISSIZE + β (3) PRCSENSX3M + β (4) OPRRISK + β (5) COMPRISK + β (6) MNGRRISK+ β (7) EQRISK + β (8) FINRISK + β (9) TECHCMPRISK+ε ……(viii)

In addition to the dependent and independent variables, β_1 to β_{10} are the regression coefficients, which indicate how a change in a predictor variable impacts the dependent variable when all other predictors are held constant. The 'α' denotes the constant, the intercept of the regression model, which suggests that what will be the dependent variable considering all of the independent variables as zero. 'ε' represents the residuals.

5. DATA ANALYSIS

To investigate whether the risk factor disclosure in the prospectus has an impact on IPO pricing, the following short-run market pricing hypotheses have been developed:
$H0_1$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and the IPO Issue Price.

$H0_2$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and IPO Listing Day Opening Price.

$H0_3$: There is no significant relationship between the extent of risk factors disclosure in different risk categories and IPO Listing Day Closing Price.

$H0_4$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and the IPO stock price after one week (PA1W).

$H0_5$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and the IPO stock price after two weeks (PA2W).

$H0_6$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and the IPO stock price after three weeks (PA3W).

$H0_7$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and the IPO stock price after one month (PA1M).
$H0_8$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and IPO stock price after 3 months (PA3M).

Eight dependent variables have been used to measure the impact of risk factor categories on IPO pricing. The first variable is the' Issue Price' (ISSP) or percent premium. This price reflects the price at which the firm's stock will be offered to initial investors on the first day of trading. It is measured as the natural log value (LnIssuePrice) of the issue price of firms. The second dependent variable is 'Listing Day Opening Price' (LDOP), measured as the natural log value (LnOpeningPrice) of the listing day opening price of firms. The opening price is the price at which newly issued shares begin trading on an exchange on its first trading day. This price reflects the opening price performance in the primary market, whereas the third dependent variable, 'Listing Day Closing Price' (LDCP), measures the first day IPO performance in the secondary market. It is measured as the natural log

value (LnClosingPrice) of the listing day closing price of firms. The post-first day performance after every week is measured as "Stock Price After One Week" (PA1W), "Stock Price After Two Weeks" (PA2W), "Stock Price after Three Weeks" (PA3W), "Stock Price after One Month" (PA1M) and "Stock Price after Three Months" (PA3M). These stock prices are considered as fourth, fifth, sixth, seventh, and eighth dependent variables respectively and measured as the natural log value of the post-day stock price for the same interval. These variables are LnPA1W, LnPA2W, LnPA3W, LnPA1M and LnPA3M.

The control variables used in the regression equation are 'Age of the IPO Company' (FAGE)-the natural logarithm of one plus the number of years since the firm was established (LnFirmAge), and 'Issue Size' (ISUSIZE)-the natural log value (LnIssueSize) of the issue size offered by the firms.

Percentage change in Market Sensex (PRCHGSENSX)-it is calculated as the natural log of the percentage change in the market index (Nifty50) from the day of offer to the closing market index price on the first day of listing (LnPrchgsensx). The post-day percentage change in the market index is also calculated as the natural log of the percent change from the issue day index for the same interval as the dependent variables (LnPrcsensx1w, LnPrcsensx2w, LnPrcsensx3w, LnPrcsensx1m and LnPrcsensx3m).

The independent variables are labelled for use in regression analysis in SPSS as F1-Operational Risk (OPRRISK), F2-Compliance Risk (COMPRISK), F3-Managerial Risk (MNGRRISK), F4-Equity Risk (EQRISK), F5-Financial Risk (FINRISK), and F6-Technological & Competitive Risk (TECHCMPRISK).

Overall Model Fit

The overall model fit can be accessed through (adjusted) R^2 and significance of the F-value.The table 1 labelled Models Summarygives an overview of the regression results. Firstly, R-value, R Square and Adjusted R Square values are of particular concern. The association between the dependent and independent variables is represented by the R-value (Coefficient of correlation). Table shows that all the regression models (1-8) used in the present study are having R values as .608, .595, .587, .540, .538, .531, .522 and .522 respectively, which is good.The R^2 (coefficient of determination)statistics of the model is a measure to know how close the data are to the regression line *(Frost, J. 2013)*. It represents the proportion of the variationin the dependent variable (LnIssuePrice, LnOpeningPrice, LnClosingPrice)that can be explained by variation in the independent variables(LnPrchgsensx, LnFirmAge, LnIssueSize, F6, F5, F4, F3, F2 and F1). R^2 for the overall models (1-3) is 36.9%, 35.4% and 34.5% with adjusted R^2 of 32.2%, 30.6% and 29.6 % respectively for Model 1 to Model 3 which shows that more than 34% variation in issue price, listing day opening price and listing day closing price can beexplained by differences in dependent variables, representing a medium size effect being reported by the models. Regression models (4-8) measuring the impact of risk factors on IPO performance after initial day in subsequent period show R^2 as 29.2% for Price after 1 week (PA1W), 29.0% for Price after 2 weeks (PA2W) with adjusted R^2 of 23.9% and 23.7 % respectively depicting that the ability of explaining the variance by independent variables are reducing in subsequent period as it reached up to 27.2% in Model 8.

Table-1: Models Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.608[a] (.567)	.369 (.321)	.322 (305)	.72706 (.73640)	.369 (.321)	7.875 (20.014)	9 (3)	121 (127)	.000 (.000)	1.977 (1.932)
2	.595[a] (.543)	.354 (.294)	.306 (.278)	.73845 (.75359)	.354 (.294)	7.383 (17.664)	9 (3)	121 (127)	.000 (.000)	1.984 (1.973)
3	.587[a] (.234)	.345 (.285)	.296 (.268)	.75396 (.76850)	.345 (.268)	7.070 (16.903)	9 (3)	121 (127)	.000 (.000)	1.974 (1.964)
4	.540[a]	.292	.239	.90592	.292	5.546	9	121	.000	2.078
5	.538[a]	.290	.237	.90739	.290	5.484	9	121	.000	2.072
6	.531[a]	.281	.228	.90611	.281	5.266	9	121	.000	2.043
7	.522[a]	.273	.219	.90536	.273	5.039	9	121	.000	2.037
8	.522[a]	.272	.218	.93001	.272	5.031	9	121	.000	2.019

Predictors-Model (1-3) a. Predictors: F6, F5, F4, F3, F2, F1, LnFirmAge, LnPrchgsesx, LnIssueSize Model4 a. Predictors: (Constant), LnPrcsensx1w, LnFirmAge, LnIssueSize, F1, F3, F2, F4, F5, F6. Model5 a. Predictors: (Constant), LnPrcswnsx2w, LnFirmAge, LnIssueSize, F1, F3, F2, F4, F5, F6. Model6 a. Predictors: (Constant), LnPrcsensx3w, LnFirmAge, LnIssueSize, F1, F3, F2, F4, F5, F6. Model7 a. Predictors: (Constant), LnPrcsensx1m, LnFirmAge, LnIssueSize, F1, F3, F2, F4, F5, F6.Model8 a. Predictors: (Constant), LnPrcsensx3m, LnFirmAge, LnIssueSize F1, F3, F2, F4, F5, F6. **Dependent Variables**-Model1 b. Dependent Variable: LnIssuePrice, Model2 b. Dependent Variable: LnOpeningPrice, Model3 b. Dependent Variable: LnClosingPrice, Model4 b. Dependent Variable: LnPA1W, Model5 b. Dependent Variable: LnPA2W, Model6 b. Dependent Variable: LnPA3W, Model7 b. Dependent Variable: LnPA1M, Model8 b. Dependent Variable: LnPA3M

The ANOVA table-2 values show that we have a significant linear regression and the models as a whole are significant at predicting dependent variables, namely Issue Price: F (9, 121) = 7.875, p <.001, Listing Day Opening Price: F (9, 121)= 7.383, p < .001 and Listing Day Closing Price: F (9, 121)= 7.070, p < .001. All other models also have p values less than .001, proving that the variance in all the dependent variables is accounted for by the linear combination of the predictor variables (Constant, LnPrchgsensx, LnFirmAge, LnIssueSize, F6, F5, F4, F3, F2 and F1). The F-ratio represents an improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. The test statistic's F-value is the result of a one-way ANOVA.

Table-2 :ANOVA Statistics of Model 1 to Model 8

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.467	9	4.163	7.875	.000[a]
	Residual	63.963	121	.529		
	Total	101.430	130			
2	Regression	36.234	9	4.026	7.383	.000[a]
	Residual	65.982	121	.545		
	Total	102.216	130			
3	Regression	36.171	9	4.019	7.070	.000[a]
	Residual	68.783	121	.568		
	Total	104.954	130			
4	Regression	40.964	9	4.552	5.546	.000[a]
	Residual	99.304	121	.821		
	Total	140.268	130			

5	Regression	40.659	9	4.518	5.488	.000[a]
	Residual	99.609	121	.823		
	Total	140.268	130			
6	Regression	38.914	9	4.324	5.266	.000[a]
	Residual	99.345	121	.821		
	Total	138.259	130			
7	Regression	37.176	9	4.131	5.039	.000[a]
	Residual	99.181	121	.820		
	Total	136.357	130			
8	Regression	40.811	10	4.081	4.754	.000[a]
	Residual	103.010	120	.858		
	Total	143.821	130			

Table- 2 also reflect that all the regression models have $p < .001$ showing the sufficient evidence to conclude that regression model fits the data better than the intercept-only model and all of the predictor variables are jointly significant. Hence, the regressioneffect is statistically significant indicating that prediction of the dependent variable is accomplished better than can be done by chance.

The Influence of Risk Factor Categories on Issue Price:

The issue price is the price at which the initial public offering (IPO) is first made available to the general public. In compliance with the Book Building Process and the Red Herring Prospectus, this price is determined and set in consultation with the offering's Lead Managers and Underwriters. In general, an underwriter takes into account a variety of variables that may affect the IPO price. An underwriter, for example, evaluates a company's present worth as well as its potential prospects. In addition, the IPO price takes into account the investment and industry risk profile and compensates investors for it. Finally, the IPO price takes into account the supply and demand forces prevailing in the market. So an underwriter tries to balance the IPO price in a way that is high enough to raise sufficient capital for a company while low enough to stimulate the interest of potential investors in purchasing the shares. Maintaining the balance is critical to ensure the execution of a successful IPO. The risk factors have an impact on the issue/offer price, and the offer price further has an impact on the market performance of IPOs, which is also a key component of determining the under-pricing. So, to analyse the impact, the following hypothesis is formulated:

$H0_1$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and the IPO Issue Price.

H_1: There is a significant relationship between the extent of risk factor disclosure in different risk categories and the IPO Issue Price.

Further, to test the first hypothesis, the following ordinary least squares regression equation is formed for the Model 1:

$$ISSP = \alpha + \beta\,(1)\,FAGE + \beta\,(2)\,ISSIZE + \beta\,(3)\,PRCHGSENSX + \beta\,(4)\,OPRRISK + \beta\,(5)\,COMPRISK + \beta\,(6)\,MNGRRISK + \beta\,(7)\,EQRISK + \beta\,(8)\,FINRISK + \beta\,(9)\,TECHCMPRISK + \varepsilon \quad \text{……..(i)}$$

While examining the impact of risk variables on the Issue Price by category (each regression coefficient), the null and alternative hypotheses for each parameter must be analysed. The unstandardized and standardised regression coefficients (β) should be looked upon. The effect of a 1-unit increase in the predictor on the dependent variable is represented by the unstandardized beta (β). It shows how a single predictor and the dependent variable have a partial relationship. If there are

multiple independent variables in the regression equation, each unstandardized beta coefficient indicates the consequence of raising the independent variable by one unit while maintaining the other predicators constant.

Table-3: Coefficients(Dependent Variable: LnIssuePrice)

	Unstandardized Coefficients		Standardized Coefficients		
Model 1	B	Std. Error	Beta	t	Sig.
(Constant)	**2.628*** **	.649		4.053	.000
LnIssueSize	**.441*** **	.063	.539	7.047	.000
LnAge	**.201** **	.079	.189	2.528	.013
LnPrchgsesx	-.096	.200	-.036	-.480	.632
F1	.051	.064	.057	.786	.434
F2	-.032	.066	-.036	-.485	.629
F3	-.033	.065	-.038	-.509	.612
F4	-.020	.065	-.023	-.305	.761
F5	-.089	.065	-.101	-1.363	.176
F6	**.161** **	.065	.182	2.490	.014

Note- ***Indicates significance at 1% level, **indicates significance at 5% level and *indicates significance at 10% level

Model1 shows the effect of risk factors on the IPO Issue Price. Overall, the model is statistically significant at the 1% level.Table-1 reflects R^2 as.369 and adjusted R^2 value as.322, showing that 32% of the variation in issue price can beexplained by differences in dependent variables. It can be noticed from the table-5.3 that the control variable-IPO Issue Size has a significant positive effect on the Issue Price at 1% level of significance ($p < .001$). Firm age is another control variable that has a significant impact at the 5% level of significance (p.05).However, there is no evidence that the third control variable (Percentage change in Market Sensex) is related to the issue price. The risk factor categories have shown limited effect. The null hypothesis is accepted for the majority of risk categories (F1, F2, F3, F4, F5), indicating that there is no significant relationship between the extent of risk factor disclosure in different risk categories and issue price, but it is rejected for risk category F6 (p.05) at a 5% level of significance. Hence, individually, 'Technological and Competitive Risk Factors' have a significant impact on the IPO Issue Price.

The Impact of Risk Factor Categories on Listing Day Opening Price

Listing day Opening price is the price at which any IPO stock is listed on the stock exchange on its initial day. It is called listing price or opening price. To measure the impact of risk factor on the opening price, the following hypothesis is formulated:

$H0_2$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and the IPO Listing Day Opening Price.

H_2: There is a significant relationship between the extent of risk factor disclosure in different risk categories and the IPO Listing Day Opening Price.

Table -4: Coefficients (Dependent Variable: LnOpeningPrice)

Model 2	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	**2.630*** **	.659		3.992	.000
LnIssueSize	**.425*** **	.063	.518	6.693	.000
LnAge	**.158***	.081	.148	1.954	.053
LnPrchgsesx	.039	.203	.015	.195	.846
F1	.079	.065	.089	1.208	.229
F2	-.007	.067	-.008	-.104	.918
F3	-.029	.066	-.032	-.433	.666
F4	-.027	.066	-.030	-.406	.685
F5	-.083	.066	-.094	-1.261	.210
F6	**.183*** **	.066	.206	2.781	.006

***Indicates significance at 1% level, **indicates significance at 5% level and *indicates significance at 10% level

As already mentioned, summary statistics shown in table-1 prove that overall regression fits for Model 2 and significantly explains the impact of variations in predictors on Listing Day Opening Price, i.e., 30.6 % variations. The table-5.4 highlights that the same control variables, i.e., Issue Size ($p< .001$) and Firm Age ($p<.10$) which were significantly related to Issue Price (as shown in Model 1), are also showing a significant positive impact on the Opening Price. For the Technological and Competitive Risk Factors Category (F6), the alternate hypothesis is accepted, rejecting the null hypothesis ($p<.01$) at a 1% level of significance. All other risk factor categories (F1, F2, F3, F4 and F5) proved to have no impact on the Listing Day.

Impact of Risk Factor Categories on Listing Day Closing Price

Closing Price is the price at which the IPO closes its trading on its first listing day. There may be fluctuations in the price during the whole day but trading stops at this price. This is the price which is used relatively to Issue Price for calculating the under-pricing or over-pricing on the initial day. This price has a significant impact on the performance of the IPO. For investigating the impact of risk factors in prospectus on Listing Day Closing Price (market performance), the following OLS Regression equation is formulated

LDCP= α + β (1) FAGE + β (2) ISSIZE + β (3) PRCHGSENSX + β (4) OPRRISK + β (5) COMPRISK + β (6) MNGRRISK+ β (7) EQRISK + β (8) FINRISK + β (9) TECHCMPRISK+ + ε

Totest this equation the null hypothesis is assumed as

$H0_3$: There is no significant relationship between the extent of risk factor disclosure in different risk categories and the IPO Listing Day Closing Price.

H3: There is a significant relationship between the extent of risk factors disclosure in different risk categories and the IPO Listing Day Closing Price.

The Model 3 also uses the same predictors as used in the earlier models, but the dependent variable is the Listing Day Closing Price. The results are also the same but produce different regression coefficients. The results shown in table-5.5 indicate that Issue Size ($p< .001$), Firm Age ($p< .10$) and Technological and Competitive Risk Factors Category ($p< .01$) are significantly positively related to the Listing Day Closing price. All the risk factors jointly have a significant impact on the Listing Day Closing price. But individually, all other risk factor categories except the F6 risk category have no impact on the dependent variable. The coefficient tells us that a one percent increase in technological and competitive risk factors leads, on average, to a.185 percent (Unstandarised Coefficient) increase in Listing Day Closing Price. The standarised coefficient reports that a single standardised deviation increase in Technological and Competitive Risk Factors effects a.188%

increase in the Closing Price. Here the null hypothesis is rejected for the Technological and Competitive Risk Factor category. Total risk factors are not significantly related to the Listing Day Closing Price.

Table-5:Coefficients(Dependent variable-:LnClosingPrice)

Model 3	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	**2.648*** **	.673		3.937	.000
LnIssueSize	**.424*** **	.065	.509	6.537	.000
LnFAge	**.157***	.082	.146	1.908	.059
LnPrchgsesx	.038	.207	.014	.186	.853
F1	.077	.067	.086	1.158	.249
F2	-.006	.069	-.006	-.082	.935
F3	-.024	.068	-.026	-.348	.728
F4	-.024	.068	-.027	-.359	.720
F5	-.080	.068	-.089	-1.186	.238
F6	**.188*** **	.067	.209	2.798	.006

***Indicates significance at 1% level, **indicates significance at 5% level and *indicates significance at 10% level

Impact of Risk Factor Categories on Subsequent Stock Prices

For investigating the impact of risk factor categories on subsequent stock prices, the following hypotheses are assumed:

H4: There is a significant relationship between the extent of risk factor disclosure in different risk categories and the IPO Price after 1 Week (PA1W).

H5: There is a significant relationship between the extent of risk factor disclosure in different risk categories and the IPO stock price after 2 weeks (PA2W).
H6: There is a significant relationship between the extent of risk factor disclosure in different risk categories and the IPO stock price after 3 weeks (PA3W).

H7: There is a significant relationship between the extent of risk factor disclosure in different risk categories and the IPO stock price after 1 month (PA1M).

H8: There is a significant relationship between the extent of risk factor disclosure in different risk categories and the IPO stock price 3 months (PA3M)

Table-6: Coefficients (Dependent Variables: subsequent stock prices)

Variables	Model 4		Model 5		Model 6		Model 7		Model 8	
	B	S. E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
1 (Constant)	**1.878***	1.083	**2.126****	1.088	**2.254****	1.070	**2.456****	1.032	.792	.989
LnIssueSize	**.482*** **	.078	**.481*** **	.079	**.470****	.078	**.458*** **	.078	**.429*** **	.080
LnAge	.051	.099	.051	.099	.058	.099	.062	.099	.097	.102
F1	.079	.080	.081	.081	.077	.080	.076	.080	.081	.082
F2	-.097	.082	-.095	.083	-.091	.083	-.093	.083	-.122	.085
F3	-.041	.080	-.042	.080	-.047	.080	-.047	.080	-.042	.082
F4	-.073	.081	-.072	.082	-.074	.081	-.071	.081	-.057	.084
F5	-.058	.082	-.062	.082	-.067	.082	-.070	.081	-.054	.084

F6	**.174****	.079	**.174****	.080	**.167****	.080	**.166****	.079	**.171****	.083
LnPrcsensx 1w/2w/3w/ 1m/3m	.223	.271	.147	.266	.128	.259	.086	.250	**.596*****	.230

Model4 a. Predictors: (Constant), LnPrcsensx1w, LnFirmAge, LnIssueSize, F1, F3, F2, F4, F5, F6, Model5 a. Predictors: (Constant), LnPrcswnsx2w, LnFirmAge, LnIssueSize, F1, F3, F2, F4, F5, F6, Model6 a. Predictors: (Constant), LnPrcsensx3w, LnFirmAge, LnIssueSize, F1, F3, F2, F4, F5, F6, Model7 a. Predictors: (Constant), LnPrcsensx1m, LnFirmAge, LnIssueSize, F1, F3, F2, F4, F5, F6, Model8 a. Predictors: (Constant), LnPrcsensx3m, LnFirmAge, LnIssueSize F1, F3, F2, F4, F5, F6,**Dependent Variables-**, Model4 LnPA1W, Model5 LnPA2W, Model6 LnPA3W, Model7 LnPA1M, Model8 LnPA3M

***Indicates significance at 1% level, **indicates at 5% level and *indicates significance at 10% level.

Models 4 through 8 examine the impact of risk factor categories on subsequent stock prices, i.e., stock prices after one week, two weeks, three weeks, one month, and three months.Two control variables, namely Issue Size and Firm Age are the same as used in previous models. But the third control variable-'Percentage Change in Market Sensex' changes according to the spread of time. Model 4 to 8 uses it as a percentage change in the market sensex from the date of the issue of the IPO to one week after the issue trading date, two weeks after the issue trading date, three weeks after the issue trading date, one month after the issue trading date and three months after the issue trading date, respectively. All these regression models are overall significant in predicting the impact of risk factors on their respective dependent variables. The adjusted R square values (table-1) show that more than 21% variation is being explained by these models. Table-5.6 shows the positive significant relationship between Issue Size and subsequent stock prices at 1% level of significance. No evidence of a relationship between the Percentage Change in Market Sensex and subsequent Stock Prices up to 1 month was noticed, but surprisingly, this Percentage Change in the Market Sensex showed a positive impact on stock prices after three months (PA3M) at a 5% level of significance. Firm age has also shown no relationship with stock prices taken as dependent variables. Analysing the impact of each risk factor category individually on subsequent stock prices, it was noticed that only one 'Technological and Competitive Risk Factor Category' had a significant positive relationship with each subsequent stock price after one week, after two weeks, after three weeks, after one month and after three months, each at 5 % level of significance. Hence the alternate hypothesis is accepted for this risk factor category. All other risk factor categories have shown no relationship with subsequent stock prices and performance.

VI. SUMMARY AND CONCLUSION

The risk factor categories have shown the limited effect on IPO Issue Price. Only one risk category (F6) category labeled as 'Technological and Competitive Risk Factors' have shown significant impact on IPO Issue Price. While other risk categories (F1, F2, F3, F4, F5) and Percentage change in Market Sensex found to have insignificant impact on Issue Price. The following regression equation has been developed to predict the impact of risk factors on IPO issue price:

Ln (ISSP) = 2.628+ .201 Ln (FAGE) + .441Ln (ISSIZE) - .096 Ln (PRCHGSENSX) - .051 (OPRRISK) -.032 (COMPRISK) -.033 (MNGRRISK)-.020 (EQRISK) -.089 (FINRISK) + .161 (TECHCMPRISK)

The same risk category I.e.Technological and Competitive Risk Factors (F6) have shown significant positive impact on the Opening Price. Here also remaining other risk factor categories (F1, F2, F3, F4 and F5) proved to be insignificant in influencing the Listing Day Opening Price of IPOs and the Regression equation was resulted as:

Ln (LDOP) = 2.630+ .158 Ln (FAGE) + .425 Ln (ISSIZE) + .039 Ln (PRCHGSENSX) + .079

(OPRRISK) -.007 (COM0PRISK) -.029 (MNGRRISK) -.027 (EQRISK) -.083 (FINRISK) + .183 (TECHCMPRISK)

Listing Day Closing Price is also positivelyinfluenced by the Technological and Competitive Risk Factors Category. Similarly, individually all other risk factor categories except F6 risk category have no impact on stock price on the end of listing day, stock price after one week from listing day, after two weeks, after three weeks, after two one month and stock price after three months from the listing day. The regression equations showing the impact of risk factors on different dependent variables are resulted as under:

Ln (LDCP) = 2.648+ .157 Ln (FAGE) + .424 Ln (ISSIZE) + .038 Ln (PRCHGSENSX) + .077 (OPRRISK) -.006 (COM0PRISK) -.024 (MNGRRISK) -.024 (EQRISK) -.080 (FINRISK) + .188 (TECHCMPRISK)

Ln (PA1W) = 1.878+ .051 Ln (FAGE) + .482 Ln (ISSIZE) + .223 Ln (PRCSENSX1W) + .079 (OPRRISK) -.097 (COM0PRISK) -.041 (MNGRRISK) -.073 (EQRISK) -.058 (FINRISK) + .174 (TECHCMPRISK))

Ln (PA2W) = 2.126 + .051 Ln (FAGE) + .481 Ln (ISSIZE) + .147 Ln (PRCSENSX2W) + .081 (OPRRISK) -.095 (COM0PRISK) -.042 (MNGRRISK) -.072 (EQRISK) -.062 (FINRISK) + .174 (TECHCMPRISK)

Ln (PA3W) = 2.254 + .058 Ln (FAGE) + .470 Ln (ISSIZE) + .128 Ln (PRCSENSX3W) + .077 (OPRRISK) -.091 (COM0PRISK) -.047 (MNGRRISK) -.074 (EQRISK) -.067 (FINRISK) + .167 (TECHCMPRISK)

Ln (PA1M) = 2.456 + .062 Ln (FAGE) + .458 Ln (ISSIZE) + .086 Ln (PRCSENSX1M) + .076 (OPRRISK) -.093 (COM0PRISK) -.047 (MNGRRISK) -.071 (EQRISK) -.070 (FINRISK) + .166 (TECHCMPRISK)

Ln (PA3M) = .752 + .097 Ln (FAGE) + .429 Ln (ISSIZE) + .596 Ln (PRCSENSX3M) + .081 (OPRRISK) -.122 (COM0PRISK) -.042 (MNGRRISK) -.057 (EQRISK) -.054 (FINRISK) + .171 (TECHCMPRISK)

Technological and Competitive risk shed the light on the fears of investors related to the company's decision regarding inculcating new technology, innovations in the company's products, IT policies, and companies' policies related to handling various issues.Increased productivity and investment potential may be a result of technological advancements, pushing firms to go public in order to generate funding for future investments in response to improved product market circumstances. According to Chemmanur and Fulghieir (1999), positive productivity shocks will cut the information production costs of becoming public, leading more enterprises to go public. Hsu, Reed, and Rocholl (2010) argue that technological innovation may compel enterprises in increasingly competitive industries to go public in order to obtain a competitive edge over competitors. Hence, Technological and Competitive risk Category in most significant risk factor which have impact on IPO Issue Price, Listing Day Opening Price, Listing Day Closing Price and subsequent Stock pricing in the short-run. The findings may give useful information on risk factors and help in the better appraisal of initial public offerings.

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