

CHAPTER-6

ANALYSIS OF IMPACT OF RISK CATEGORIES ON IPO PERFORMANCE ACROSS VARIOUS SECTORS

In this chapter the impact of risk categories on IPO performance is analysed across the various sectors. The impact is analysed in the form under-pricing on the first day of listing, after 1 week, after 2 weeks, after 3 weeks, after 1 month and after 3 months. Various sectors includes; Financial Sector, Non-Financial Sector, Consumer durables and Consumer Non-durables, Construction. Engineering & Infrastructure Sector, Health Care Sector and Producer/Manufacturing Sector

6.1 INTRODUCTION

Regression analysis is also carried out independently for each sector. This sector level regression will show us how independent variables behave across various sectors. The sample of 131 IPO firms includes 27 firms from the Finance sector, 15 firms from Healthcare, 20 Consumer Durable and Non-durable firms, 12 Consumer Services sector firms, 7 firms from the Commercial Service sector and 7 firms from the Software & IT sector, 13 firms from the Construction, Engineering, and Infrastructure sector, 6 firms from the Transportation & Logistics sector, 14 firms from Producer Manufacturing firms, and 10 Miscellaneous firms. In order to analyse the impact of risk categories on IPO performance across various sectors, the following sectors are analysed empirically.

6.2 IMPACT OF RISK CATEGORIES ON IPO PERFORMANCE IN THE FINANCE SECTOR

The finance sector comprises firms and institutions that provide financial services to commercial consumers as well as retail customers. This industry includes a diverse range of businesses such as banks, investment firms, insurance firms, and real estate corporations. The banking sector is a good choice for value investors. Investors look for stocks that trade for less than their intrinsic value. Risk and return in investing are highly connected. Greater risk typically goes hand in hand with an increased potential return on investment. Project-specific risk, industry-specific risk, competitive risk, international risk, and market risk are all examples of different sorts of risks in the finance sector.

6.2.1 Descriptive Statistics of Finance Sector

Twenty-seven IPOs in the finance sector were examined. Table 6.1 shows that the level of initial day under-pricing in this sector varies between 14.41% and 75.57%. This range of under-pricing widened and varied between -20.17% and 198.19% after 2 weeks. The average under-pricing on the initial day was 19.07%, after 1 week it was 19.12%, and it reached up to 25.97% after 3 months. The level of under-pricing is depicted in Fig. 6.1. The percentage change in the market sensex from the market price on the offer date to the listing day market sensex was 0.15%. It was negative after 1 week, after 2 weeks, and after 3 weeks, and started increasing after one month and reached up to 27.49% after 3 months on an average basis. The issue size ranges from Rs. 270.39 crores issued by Repco Home Finance Ltd in 2013 to Rs. 11175.84 crores issued by the General Insurance Corporation of India in 2017. The firm's age ranges between 20 months and a maximum life of 1187 months during the study period.

Table-6.1: Finance Sector-Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
UP	27	-14.40	75.57	19.0722	27.07522	.666
UP1W	27	-19.40	97.25	19.1215	28.90880	.924
UP2W	27	-20.17	198.19	21.4633	43.07661	2.798
UP3W	27	-26.00	150.74	21.2822	38.59781	1.607
UP1M	27	-29.83	150.70	17.0530	38.22759	1.743
UP3M	27	-30.43	129.36	25.9689	38.05429	.818
LnIssueSize	27	5.60	9.32	7.4481	1.04936	.023
LnFirmAge	27	.00	4.58	2.7093	1.14875	-.361
F1	27	-1.55	1.75	-.5493	.96074	1.168
F2	27	-1.84	2.58	-.0485	1.10924	.362
F3	27	-2.67	1.55	-.1926	1.10194	-.299
F4	27	-1.82	1.60	-.2900	.79045	.428
F5	27	-1.33	2.49	.7333	1.17711	-.159
F6	27	-2.28	1.07	-.5759	.81600	.071
Prchsensx	27	-6.50	8.84	.1511	3.05114	.594
Prchsensx1w	27	-25.53	8.26	-.8993	5.87448	-3.090
Prchsensx2w	27	-26.67	9.79	-.6041	6.38598	-2.710
Prchsensx3w	27	-26.61	8.34	-.0811	6.45336	-2.872
Prchsensx1m	27	-33.35	148.20	17.1263	37.97965	1.651
Prchsensx3m	27	-23.44	134.44	27.4896	39.20715	1.006

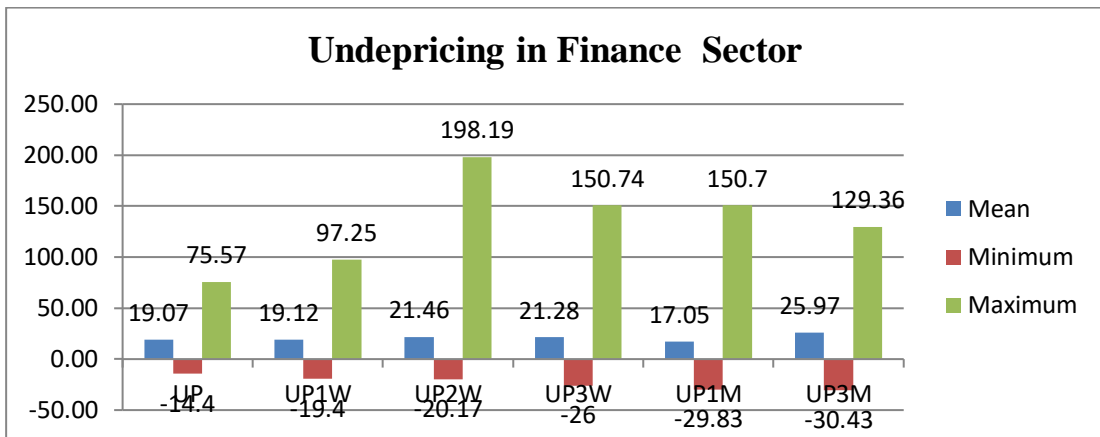


Figure 6.1: The level of under-pricing in Finance Sector (Source: Author’s own compilation)

The raw returns are used as performance measures to evaluate the short-run IPO market performance. Further, these raw returns on listing day, after 1 week, after 2 weeks, after 3 weeks, after 1 month, and after 3 months are used as dependent variables for the regression models employed to identify the significant impacts of the risk factor categories along with control variables. The following OLS Regression Equations/Models are developed:

$$UP_{fs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (xix)$$

$$UP1W_{fs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (xx)$$

$$UP2W_{fs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX2W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (xxi)$$

$$UP3W_{fs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (xxii)$$

$$UP1M_{fs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (xxiii)$$

$$UP3M_{fs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (xxiv)$$

Table 6.2: Model Summary and ANOVA Statistics of Regression Models of Finance Sector

Model		Sum of Squares	df	Mean Square	R	R ²	Adj. R ²	S.E. Estimate	F	Sig
19	Regression	13166.548	9	1462.95	.831	.691	.527	18.619	4.220	.005
	Residual	5893.212	17	346.66						
	Total	19059.760	26							
20	Regression	7.562	9	.840	.719 ^a	.517	.261	.645	2.022	.101
	Residual	7.064	17	.416						
	Total	14.626	26							
21	Regression	4.104	9	.456	.703 ^a	.494	.225	.498	1.841	.133#
	Residual	4.211	17	.248						
	Total	8.316	26							
22	Regression	15308.267	9	1700.92	.629 ^a	.395	.075	37.122	1.234	.338#
	Residual	23426.296	17	1378.02						
	Total	38734.562	26							
23	Regression	36977.462	9	4108.61	.987 ^a	.973	.959	7.737	68.638	.000
	Residual	1017.607	17	59.859						
	Total	37995.069	26							
24	Regression	36382.764	9	4042.53	.983 ^a	.966	.948	8.6	54.173	.000
	Residual	1268.582	17	74.622						
	Total	37651.346	26							
<p>Mode 19: a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, , Prchsensx, b. Dependent Variable: UP_{fs}. Mode20: a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prchsensx1w, b. Dependent Variable: LnUPIW_{fs}, Model 21: a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcswnsx2w b. Dependent Variable: UP2W_{fs}, Mode 1 22: a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3w, b. Dependent Variable: UP3W_{fs}, Model 23: a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1m, b. Dependent Variable: UP1M_{fs}, Model 24: a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3m, b. Dependent Variable: UP3M_{fs}.</p> <p># indicates Model 21 and Model 22 exhibits lack -of- fit.</p>										

The results of multiple linear regressions testing in all the above-mentioned models are presented in Tables 6.2 and 6.3. Models 19, Model 23, and Model 24 have a good goodness of fit with a Prob > F value significant at the 1% level, while Model 20 is overall significant at the 10% level. The Model 1 as a whole is significant to predict the level of under-pricing on initial day of listing $F(9, 17) = 4.220, p < .005$ as shown by ANOVA Table-6.2. The R^2 for overall model is 69% and adjusted R^2 is 53%, a

medium size effect is reported by the model, variation in the initial performance of IPO can be predicated the linear combination of predictors-risk factors and issue size, firm age and percentage in market sensex. Model 20 gives R^2 as 52 % and adjusted R^2 is 26% showing a moderate effect of risk factors on the level of under-price after 1 week. Model 23 and Model 24 produces R^2 as 97% and adjusted R^2 as 95% showing high strength of both the models, variation in the posting listing day's under-pricing after 1 month and after 3 months respectively can be estimated by the linear combination of independent variables.

Table 6.3: Results of OLS Regression Models related to Finance Sector

Variables	Model 19		Model 20		Model 23		Model 24	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.
(Constant)	92.706**	.015	3.663***	.005	7.769	.595	17.837	.298
LnIssueSize	-6.272	.181	.102	.515	-1.429	.450	-2.158	.328
LnFirmAge	-5.833*	.099	-.250**	.046	.698	.624	-.680	.665
F1	6.751	.266	-.068	.716	-1.304	.565	-.223	.929
F2	-2.393	.537	-.271*	.055	1.827	.260	-.181	.918
F3	-1.219	.788	-.149	.345	-1.081	.573	-.440	.834
F4	-.376	.943	-.179	.314	-.646	.759	2.463	.302
F5	4.104	.263	.146	.256	.497	.740	2.147	.211
F6	19.832***	.001	.368**	.044	.393	.864	1.259	.588
Prchsensx/1 W/1M/3M	3.610**	.020	.013	.591	.985***	.000	.935***	.000

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

According to the results of the OLS-Regression Model 19, the hypothesis has to be rejected. Table 6.3 shows an indication of the relationship between risk disclosure and initial day stock returns. At a 10% level of significance, firm age is significantly negatively associated. It adversely affects initial market returns. The percentage change in the NSE Market Sensex on the date of listing from the date of issue of the IPO does have a positive impact on the degree of initial under-pricing at a 5% level of significance. Technological & Competitive Risk Factors (F6) category has a significant positive effect on the level of under-pricing at 1% significance level. Other risk categories found to be insignificant in influencing IPO the initial returns.

As per Regression Model 20 results, Technological & Competitive Risk Factors (F6) have a positive influence on IPO return after 1 week at a 5% level of significance, while Compliance Risk Factors (F2) show a negative impact on the same at a 10% significance level. In this model, firm age is also negatively associated ($p < .05$). Model 23 and Model 24 also show significant relationships between under-pricing (after 1 month and after 3 months) and linear combinations of predictors, but this is due to Percentage Change in Market Sensex only at a 5% level of significance.

6.3 IMPACT OF RISK CATEGORIES ON IPO PERFORMANCE IN THE NON-FINANCIAL SECTOR

The following OLS Regression Models are used to analyse the impacts of risk factor categories on returns on listing day, after 1 week, after 2 weeks, after 3 weeks, after 1 month and after 3 months.

$$UP_{nfs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxv)$$

$$UP1W_{nfs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxvi)$$

$$UP2W_{nfs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX2W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxvii)$$

$$UP3W_{nfs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxiii)$$

$$UP1M_{nfs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxix)$$

$$UP3M_{nfs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxx)$$

6.3.1 Descriptive Statistics of Non-Financial Sector

104 IPOs in the non-financial sector were analysed. Table 6.4 shows that the level of initial day under-pricing in this sector varies from (-) 21.56% to 75.57%. After two weeks, the range of under-pricing widened to (-) 20.17% to 198.19%, and after three months, it increased to (-) 63.39% to 207.94%. The under-pricing on the initial day was 15.11% on an average basis and reached up to 23.89% after 3 months. The average percentage change in the market sensx from the market price on the offer date to the listing day market sensx was (-) 0.34% and it reached up to 25.53% after 3 months on an average basis. After three months, the range of percentage change in the market sensx corresponding to the change in stock price was at its maximum, measuring (-) 77.50% to 214.75%. However, the degree of skewness is greatest, with a percentage change in the market sensx of 2.107 after one month.

Table 6.4: Non-Financial Sector- Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
UP	104	-21.56	143.06	15.1102	30.68987	2.279	.237
UP1W	104	-33.75	143.48	14.2163	31.08095	1.808	.237
UP2W	104	-38.55	175.97	15.1409	32.74895	1.874	.237
Ln2W	104	.00	5.37	3.8288	.65635	-1.831	.237
UP3W	104	-27.29	175.47	16.1534	34.24007	2.096	.237
UP1M	104	-31.56	182.41	15.6173	33.19327	2.137	.237
UP3M	104	-63.39	207.94	23.8906	48.60062	1.404	.237
LnIssueSize	104	3.14	8.33	6.1694	.92376	-.753	.237
LnFirmAge	104	.00	4.43	2.7057	.73647	-.645	.237
F1	104	-1.76	2.11	.1426	.96469	-.118	.237
F2	104	-1.72	3.32	.0129	.97556	1.012	.237
F3	104	-2.14	2.62	.0504	.97169	.226	.237
F4	104	-1.91	3.23	.0754	1.03763	.674	.237
F5	104	-2.28	2.64	-.1900	.85744	.630	.237
F6	104	-1.96	2.20	.1496	.99259	-.261	.237
PRCHSENSX	104	-11.18	4.58	-.3421	2.71510	-1.137	.237
PRCHSENSX1W	104	-7.03	10.24	-.1845	2.33064	.909	.237
PRCHSENSX2W	104	-5.95	10.02	-.0483	2.67853	.517	.237
PRCHSENSX3W	104	-9.05	11.06	-.1698	3.09664	-.133	.237
PRCHSENSX1M	104	-32.88	179.18	15.3637	32.72202	2.107	.237
PRCHSENSX3M	104	-77.50	214.75	25.5312	50.44677	1.316	.237
Valid N (listwise)	104						

The degree of under-pricing in this sector is figured in Fig. 6.2

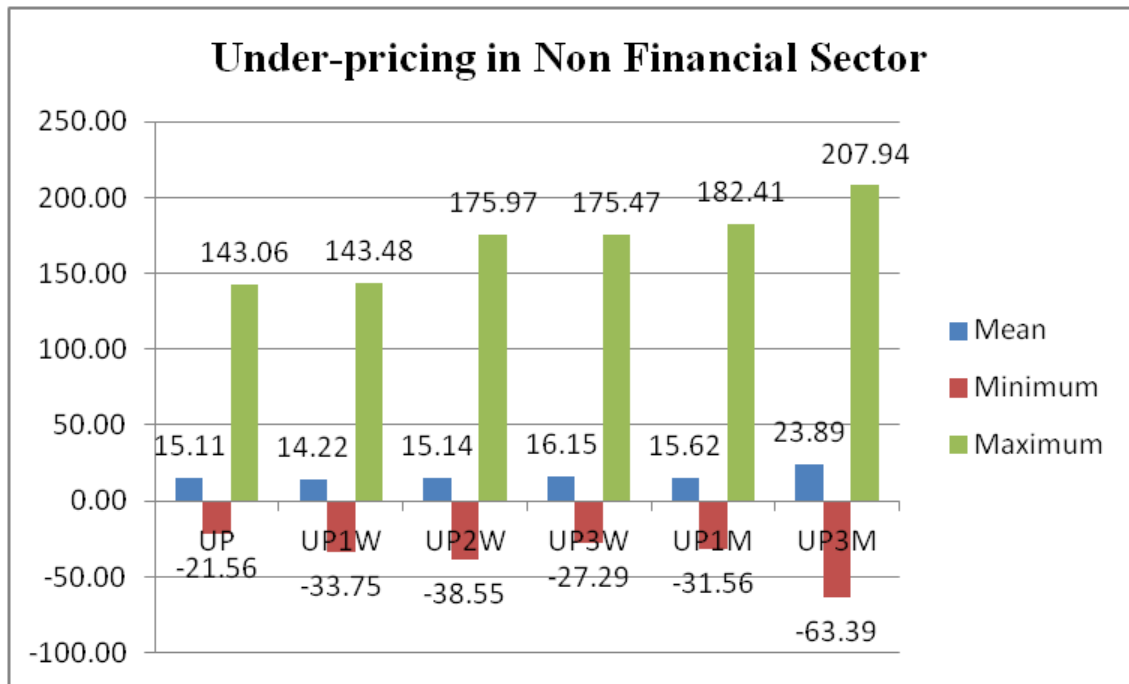


Figure 6.2: The level of under-pricing in Non-financial Sector

(Source: Author's own compilation)

The results of testing of multiple linear combinations of predictors used for Regression Model 25 to Model 30 are presented in Table 6.5. All the models have a goodness of fit with different significance levels. Model 25 [$F(9, 94) = 2.015$], Model 27 [$F(9, 94) = 2.451$] and Model 28 [$F(9, 94) = 2.234$] are significant at a 5% level of significance, while Model 26 [$F(9, 94) = 1.733$] is significant at a 10% level of significance. The strength of model 25 to model 28 is weak, as it shows R-Squared values of less than 20% and adjusted R-Square values of 8.1%, 6.0%, 11.3%, and 9.7% respectively. Models 29 [$F(9, 94) = 994.829$] and 30 [$F(9, 94) = 836.839$] produce R square values greater than 98%, indicating the models' high predictability, and these models are significant at the 1% level of significance. It can be noticed from the OLS regression results tabulated in Table 6.5 that all the models are significant in establishing the relationship between risk disclosure and initial day as well as post-day stock returns. All the models are linear-log models, as Issue Size and Firm Age are log-transformed.

Table 6.5: Model Summary and ANOVA Statistics of Regression Models used for Non-Financial Sector

Model		Sum of Squares	df	Mean Square	R	R ²	Adj. R ²	S.E. Estimate	F	Sig
25	Regression	15687.368	9	1743.041	.402 ^a	.162	.081	29.414	2.015	.046
	Residual	81325.068	94	865.160						
	Total	97012.436	103							
26	Regression	14157.176	9	1573.020	.377 ^a	.142	.060	30.132	1.733	.092
	Residual	85343.476	94	907.909						
	Total	99500.652	103							
27	Regression	20994.331	9	2332.703	.436 ^a	.190	.113	30.852	2.451	.015
	Residual	89472.511	94	951.835						
	Total	110466.842	103							
28	Regression	21280.112	9	2364.457	.420 ^a	.176	.097	32.530	2.234	.026
	Residual	99475.264	94	1058.247						
	Total	120755.376	103							
29	Regression	112305.598	9	12478.40	.995 ^a	.990	.989	3.542	994.83	.000
	Residual	1179.066	94	12.543						
	Total	113484.664	103							
30	Regression	240289.124	9	26698.792	.994 ^a	.988	.986	5.648	836.84	.000
	Residual	2999.006	94	31.904						
	Total	243288.130	103							

Mode 25 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, , Prcsensx, b. Dependent Variable: UP. Mode 26 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1w, b. Dependent Variable: UP1W Model 27 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcswnsx2w b. Dependent Variable: UP2W, Model 28 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3w, b. Dependent Variable: UP3W, Model 29 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1m, b. Dependent Variable: UP1M, Model 30 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3m, b. Dependent Variable: UP3M.

Table 6.6 shows that Issue Size is negatively associated with the initial day underpricing at a 10% level of significance. The significant negative Issue Size coefficient in Model 25 implies that the larger the issue size, the less there will be underpricing on the initial day of listing in the secondary market. A one-unit increase in the logarithm of Issue Size will produce an expected decrease in Underpricing of 6.267.

Table 6.6: Results of OLS Regression Models related to Non-Financial Sector

Variables	Model 25		Model 26		Model 27		Model 28		Model 29	Model 30
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	B
(Constant)	61.102***	.011	43.408*	.076	56.549**	.024	41.762	.111	-.231	3.609
LnIssueSize	-6.267*	.075	-3.703	.305	-5.609	.128	-3.523	.363	.197	-1.190*
LnFirmAge	-3.270	.450	-3.130	.479	-3.353	.459	-2.119	.657	-.342	1.021
F1	8.064***	.011	4.892	.131	3.346	.312	3.864	.267	.232	.607
F2	6.564**	.041	8.568***	.010	11.583***	.001	8.452**	.018	-.241	.125
F3	-.411	.785	-2.008	.523	-1.640	.610	-1.127	.740	.443	-.423
F4	.798	.373	3.753	.212	4.886	.118	4.916	.131	-.468	.778
F5	-3.280	.425	-6.248*	.099	-6.596*	.087	-7.218*	.075	.203	-.499
F6	2.609	.046	1.655	.614	1.612	.631	-.056	.987	.131	1.661***
Prchsensx/1W/1M/3M	2.239**		1.637	.218	2.811**	.021	2.798***	.009	1.013***	.955***

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

The Percentage Change in Market Sensex on the date of listing from the date of issue of the IPO has a positive impact on the degree of initial under-pricing at a 5% level of significance. Operating Risk Factors (F1) and Compliance Risk Factors (F2) have a significant positive impact on the level of under-pricing on the initial day of listing at 1% and 5% level of significance, respectively. Other risk categories were found to be insignificant in impacting the IPO's initial returns.

Model 26 shows the association between the risk factor categories and the percentage change in share price from the issue price after one week, i.e., under-pricing after one week. Compliance Risk Factors (F2) reflect a positive impact on the level of under-pricing after 1 week at a 1% significance level, while Financial Risk Factors (F5) show a negative impact on the same at a 10% level of significance. Other risk categories and none of the control variables showed any significant impact on the UP after 1 week. The same risk factors, Compliance Risks and Financial Risks show an impact on the level of under-pricing after 2 weeks as well as after 3 weeks, in the same direction as reported by Regression Model 27 and Model 28. The percentage change in Market Sensex after 2 weeks and after 3 weeks from the offer date also shows a significant positive influence on the stock prices, with a percentage change from the offer price for the same period at a 1 % significance level.

The Regression coefficient of Model 29 reports that there is only one variable (the percentage change in Market Sensex after 1 month from the issue date of the IPO), which has a significant positive influence on the stock prices, namely the percentage change from the offer price after 1 month at a 1% significance level. In addition to this variable, in Model 30, Technological & Competitive Risk Factors (F6) have a positive influence at a 5% level of significance, while Issue Size shows a negative impact on IPO return after 3 months at a 10% significance level.

6.4 IMPACT OF RISK CATEGORIES ON IPO PERFORMANCE IN THE CONSUMER DURABLE AND NON-DURABLE SECTOR

Consumer durable stocks are those of companies that manufacture and sell durable goods. Consumer durable last long enough and we buy them occasionally. These product items include furniture, appliances, electronics, machinery, toys, tools, jewellery, sporting goods, etc., and are generally known as objects that endure more than three years. In contrast to the Consumer Durables Sector, the Consumer Non-Durable Sector is comprised of companies that produce consumer goods that are either consumable in one use or used up over a short period of time. Consumer non-durable are generally lower-growth businesses with above-average dividend yields. Consequently, even though there are many well-known brands comprising this sector; very few produce long-term returns that are greater than the S&P 500's average long-term total returns.

6.4.1 Descriptive Statistics- Consumer Durables and Non-Durables Sector

19 IPOs belonging to Consumer Durables and Non-Durables firms occurred during 2013 to 2019 were analysed. Descriptive statistics of this sector are shown in Table-6.7. It shows that the level of initial day under-pricing in this sector ranges from (-) 20.67% to 63.73%. This range of under-pricing continuously stretched and touched the range of (-) 22.69% to 139.31% after three months with a standard deviation of 40.34. The level of under-pricing on the closing of the listing day of the IPO was 13.55% on an average basis, and after three months it was 25.81%. The average percentage change in the market sensex from the market price on the IPO offer date to the listing day market sensex was (-) 0.11% and it reached up to 26.57% after 3 months on an average basis. After three months, the percentage change in the market sensex corresponding to the change in stock price was at its peak, ranging from (-)

20.70% to 145.22%. However, the degree of skewness is greatest, with a percentage change in the market sensex of 1.58 after one month.

Table 6.7: Descriptive Statistics of Firms related to Consumer durables and Consumer Non-durables Sector

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
UP	19	-20.67	63.73	13.5468	21.25546	.657	.524
UP1W	19	-15.78	54.60	14.5679	20.95374	.417	.524
UP2W	19	-16.10	85.51	17.2811	23.74037	1.274	.524
UP3W	19	-20.72	66.31	15.9495	20.45034	.580	.524
UP1M	19	-13.19	93.09	18.0979	24.46418	1.560	.524
UP3M	19	-22.69	139.31	25.8084	40.33941	1.444	.524
LnIssueSize	19	4.09	7.05	5.9916	.87284	-.870	.524
LnFAGE	19	1.39	3.81	2.6563	.69997	-.259	.524
F1	19	-1.06	1.54	.7942	.68107	-1.276	.524
F2	19	-.92	1.52	-.0095	.54356	.854	.524
F3	19	-1.52	1.20	.0379	.77778	-.341	.524
F4	19	-1.09	2.34	.0284	.83912	1.177	.524
F5	19	-.97	1.00	-.0963	.55924	.438	.524
F6	19	-1.96	1.81	.1247	1.03822	-.481	.524
Prchsensx	19	-4.97	3.19	-.1121	2.37725	-.655	.524
Prchsensx1w	19	-4.34	2.76	-.5579	2.04230	-.348	.524
Prchsensx2w	19	-5.95	3.33	-.3547	2.71459	-.687	.524
Prchsensx3w	19	-6.76	4.28	-.4821	3.34258	-.510	.524
Prch1m	19	-11.91	91.05	17.7521	24.02430	1.583	.524
Prc3m	19	-20.70	145.22	26.5658	42.37812	1.421	.524
Valid N (listwise)	19						

The level of under-pricing on listing day and post days is figured in Fig.6.3

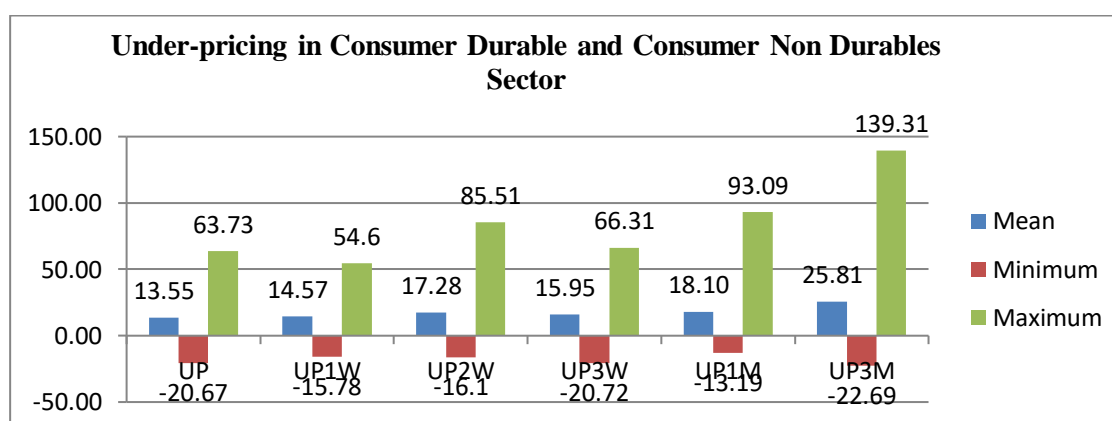


Figure 6.3: The level of under-pricing in Consumer durable and Non-durable Sector
(Source: Author's own compilation)

The following OLS Regression Models are used to analyse the impacts of risk factor categories on returns on listing day, after 1 week, after 2 weeks, after 3 weeks, after 1 month and after 3 months in the Consumer Durables and Non-Duration Sector:

$$UP_{cdns} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxxix)$$

$$UP1W_{cdns} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxxix)$$

$$UP2W_{cdns} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX2W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxxix)$$

$$UP3W_{cdns} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxxix)$$

$$UP1M_{cdns} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxxix)$$

$$UP3M_{cdns} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xxxix)$$

Model summary and ANOVA statistics mentioned in table 6.8 show that all the regression models (31 to 36) are significant at predicting the dependent variables with a high degree of predictability, with the linear combination of predictors at a 5% level of significance. In Model 31, the predictors account for 91.9% of the variation in the initial day IPO under-pricing. Here, $F(9, 9) = 11.363$, and p is 0.00101, which shows the goodness of fit of Model 31 at 1% level of significance. Model 32 has a high degree of predictability ($R^2 = 0.855$) in assessing under-pricing after 1 week at a 1% level of significance. At a 5% significance level, Model 33 and Model 34 also have R square values of 78.9% and 83.2%, respectively, showing the high strength of the prediction of under-pricing after 2 weeks and after 3 weeks, respectively. Similarly, Model 35 and Model 36 also have the ability to estimate the variation in under-pricing after 1 month and after 3 months with more than 98% precision. These models are also significant at a 1% level of significance.

Table 6.8: Regression Model Summary and ANOVA Statistics– Consumer Durables and Non-durables Sector

Model		Sum of Squares	df	Mean Square	R	R ²	Adj. R ²	S.E. Estimate	F	Sig
31	Regression	7474.515	9	830.502	.959 ^a	.919	.838	8.549	11.363	.001 ^a
	Residual	657.790	9	73.088						
	Total	8132.306	18							
32	Regression	6758.683	9	750.965	.925 ^a	.855	.710	11.276	5.906	.007 ^a
	Residual	1144.383	9	127.154						
	Total	7903.066	18							
33	Regression	8005.404	9	889.489	.888 ^a	.789	.578	15.418	3.742	.031 ^a
	Residual	2139.491	9	237.721						
	Total	10144.895	18							
34	Regression	6260.416	9	695.602	.912 ^a	.832	.663	11.867	2.234	.026 ^a
	Residual	1267.482	9	140.831						
	Total	7527.899	18							
35	Regression	10633.05	9	1181.450	.993 ^a	.987	.974	3.9424	76.014	.000 ^a
	Residual	139.882	9	15.542						
	Total	10772.93	18							
36	Regression	29108.28	9	3234.253	.997 ^a	.994	.988	4.5036	159.46	.000 ^a
	Residual	182.54	9	20.283						
	Total	29290.82	18							

Mode 31 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, , Prcsensx, b. Dependent Variable: UP. Mode32 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1w, b. Dependent Variable: UP1W Model 33 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcswnsx2w b. Dependent Variable: UP2W, Mode 34 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3w, b. Dependent Variable: UP3W, Model 35 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1m, b. Dependent Variable: UP1M, Model 36 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3m, b. Dependent Variable: UP3M

Table 6.9 summarises the results of the OLS regressions related to the consumer durables and non-durables sectors. As per Model 31, Compliance Risk Factors (F2) and Technological & Competitive Risk Factors (F6) have significant positive impacts, while Financial Risk Factors (F5) show a significant negative impact on the level of under-pricing on the initial day of listing at 1% level of significance. Other risk categories as well as control variables were found to be insignificant in impacting the IPO's initial returns.

Model 32 shows the association between the risk factor categories and the percentage change in share price from the issue price after one week, i.e., under-pricing after one week. The issue size is negatively associated with the under-pricing after 1 week at a 1% level of significance. It implies that the larger the issue size, the less there will be under-pricing. Compliance Risk Factors (F2) and Technological & Competitive Risk Factors (F6) have significant positive impacts, while Financial Risk Factors (F5) show a significant negative impact on the level of under-pricing after 1 week of listing also. The remaining three risk categories showed insignificant impacts.

Table 6.9: Results of OLS Regression Models related to Consumer Durables and Non-Durables Sector

Variables	Model 31		Model 32		Model 33		Model 34	Model 35	Model 36
	B	Sig.	B	Sig.	B	Sig.	B	B	B
(Constant)	52.066*	.058	113.096***	.005	139.213***	.012	137.945***	16.734	6.228
LnIssueSize	-11.328	.031	-19.482***	.005	-19.743**	.043	-21.702***	-2.697	-.819
LnFirmAge	8.991	.056	3.655	.470	-3.504	.632	-.171	-.836	.144
F1	2.682	.650	6.122	.407	4.226	.706	7.178	2.355	-.707
F2	34.270***	.001	30.257**	.015	25.717*	.072	27.880**	1.613	.601
F3	-1.762	.630	5.677	.242	4.936	.492	2.678	2.417	-2.286
F4	-.811	.849	6.077	.312	8.724	.277	7.540	-1.451	3.030
F5	-20.038***	.003	-22.337**	.015	-21.814**	.045	-21.298***	.203	1.184
F6	14.100***	.001	12.567***	.004	8.471	.117	10.715***	.578	3.660**
Prchsensx/1w/ 2w/3w/1m/3m	-.621	.660	.350	.852	2.931	.200	1.352	1.002***	.916***

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

At a 10% significance level, Compliance Risk Factors (F2) show a positive impact on the level of under-pricing after 2 weeks, while Financial Risk Factors (F5) show a negative impact on the same at a 5% level of significance. The issue size shows a negative impact on under-pricing after 2 at a 5% level of significance in the Model 33.

Model 34's results are also the same as those of Model 32. Compliance Risk Factors (F2) and Technological & Competitive Risk Factors (F6) have significant positive impacts, while Financial Risk Factors (F5) show a significant negative impact on the level of under-pricing after 3 weeks of listing. Here also, issue size shows a negative impact on under-pricing after 3 weeks at a 1% level of significance.

In Model 35, only one variable-Percentage Change in Market Sensex after 1 month from the issue date of the IPO, has a significant positive influence on the level of under-pricing after 1 month. Technological & Competitive Risk Factors (F6) have a positive influence on the IPO return after 3 months at a 5% level of significance, while changes in the market sensex after 3 months from the issue date of the IPO have a positive impact on the degree of under-pricing after 3 months at a 1% level of significance.

6.5 IMPACT OF RISK CATEGORIES ON IPO PERFORMANCE IN THE CONSTRUCTION, ENGINEERING & INFRASTRUCTURE SECTOR

Construction, Engineering & Infrastructure Sector companies build large buildings, bridges, dams, pipelines, road networks, ports, railways, and aqueducts. There are a number of segments within the infrastructure and construction industry, ranging from home-builders to companies who support massive government-funded projects. Home-building projects are not included in this category and are instead classified as consumer durable. This sector comprises firms involved in the most complex projects, which might take years to complete and last decades.

6.5.1 Descriptive Statistics

A sample of 14 IPOs that occurred from 2013 to 2019 related to the construction, engineering, and infrastructure sectors are examined. Table 6.10 shows the descriptive statistics for the data which is used in the regression analysis. The average initial day under-pricing for IPOs in the sample is 9.98%, and after 3 months of the listing of the IPO, this average under-pricing is 23.94%. In this sector, the initial return ranges from (-) 20.67% to 143.06%. After three months, the range of under-pricing was (-) 2.06% to 173.29%, with the highest standard deviation of 49.44. The average percentage change in the market sensex from the IPO offer date to the listing day market sensex was (-) 1.96%, rising to 26.48% after 3 months on average. After three months, the range of percentage change in the market sensex corresponding to the change in stock price was at its peak, measuring (-) 10.25% to 145.22%. The coefficient of skewness is also measured at a maximum of 2.24 for the same period. The coefficient of skewness is highest in the level of under-pricing on the initial day of listing.

Table 6.10: Descriptive Statistics of Firms related to Construction, Engineering & Infrastructure Sector

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Err.
UP	14	-20.67	143.06	9.9764	40.58159	3.110	.597
UP1W	14	-14.29	135.51	14.6093	37.85177	2.846	.597
UP2W	14	-24.01	112.41	11.6100	33.24540	2.355	.597
UP3W	14	-22.61	112.04	14.3986	33.26980	2.133	.597
UP1M	14	-27.04	86.39	10.7700	27.90556	1.500	.597
UP3M	14	-12.06	173.29	23.9400	49.44223	2.384	.597
F1	14	-1.06	1.62	.6121	.80206	-1.054	.597
F2	14	-1.72	.34	-.8164	.50547	.833	.597
F3	14	-1.60	2.12	.3464	1.11461	-.062	.597
F4	14	-1.91	3.23	.0014	1.45831	.980	.597
F5	14	-2.11	.40	-.6107	.64317	-.899	.597
F6	14	-1.89	.21	-.8750	.67110	.201	.597
Prchsnsx	14	-11.18	2.39	-1.9579	3.99544	-1.384	.597
Prchsnsx1w	14	-5.17	10.24	.3164	4.38715	1.346	.597
Prchsnsx2w	14	-3.25	10.02	1.2914	3.97111	1.385	.597
Prchsnsx3w	14	-9.05	11.06	.4907	4.34499	.307	.597
Prchsnsx1m	14	-18.91	87.46	10.4321	26.98176	1.866	.597
Prchsnsx3m	14	-10.25	176.14	26.4793	50.51548	2.240	.597
Valid N (listwise)	14						

The level of under-pricing on listing day and post days is figured in Fig.6.4

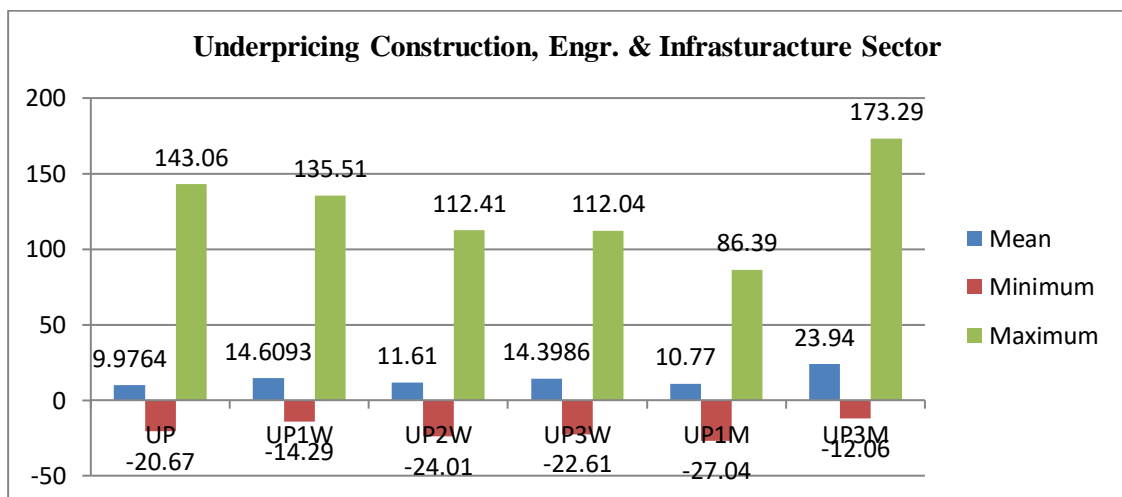


Figure 6.4: The level of under-pricing in Construction, Engineering & Infrastructure Sector

(Source: Author's own compilation)

In order to investigate whether the risk factor categories had a significant influence on the IPO returns in the construction, engineering, and infrastructure sector, the following regression models are used:

$$UP_{ceis} = \alpha + \beta (1) \text{ ISSIZE} + \beta (2) \text{ FAGE} + \beta (3) \text{ PRCHSENSX} + \beta (4) \text{ OPRRISK} + \beta (5) \text{ COMPRISK} + \beta (6) \text{ MGTRISK} + \beta (7) \text{ EQRISK} + \beta (8) \text{ FINRISK} + \beta (9) \text{ TECHCMPRISK} + \varepsilon \quad \text{..... (xxxvii)}$$

$$UP1W_{ceis} = \alpha + \beta (1) \text{ ISSIZE} + \beta (2) \text{ FAGE} + \beta (3) \text{ PRCHSENSX1W} + \beta (4) \text{ OPRRISK} + \beta (5) \text{ COMPRISK} + \beta (6) \text{ MGTRISK} + \beta (7) \text{ EQRISK} + \beta (8) \text{ FINRISK} + \beta (9) \text{ TECHCMPRISK} + \varepsilon \quad \text{..... (xxxviii)}$$

$$UP2W_{ceis} = \alpha + \beta (1) \text{ ISSIZE} + \beta (2) \text{ FAGE} + \beta (3) \text{ PRCHSENSX2W} + \beta (4) \text{ OPRRISK} + \beta (5) \text{ COMPRISK} + \beta (6) \text{ MGTRISK} + \beta (7) \text{ EQRISK} + \beta (8) \text{ FINRISK} + \beta (9) \text{ TECHCMPRISK} + \varepsilon \quad \text{..... (xxxix)}$$

$$UP3W_{ceis} = \alpha + \beta (1) \text{ ISSIZE} + \beta (2) \text{ FAGE} + \beta (3) \text{ PRCHSENSX3W} + \beta (4) \text{ OPRRISK} + \beta (5) \text{ COMPRISK} + \beta (6) \text{ MGTRISK} + \beta (7) \text{ EQRISK} + \beta (8) \text{ FINRISK} + \beta (9) \text{ TECHCMPRISK} + \varepsilon \quad \text{..... (xl)}$$

$$UP1M_{ceis} = \alpha + \beta (1) \text{ ISSIZE} + \beta (2) \text{ FAGE} + \beta (3) \text{ PRCHSENSX1M} + \beta (4) \text{ OPRRISK} + \beta (5) \text{ COMPRISK} + \beta (6) \text{ MGTRISK} + \beta (7) \text{ EQRISK} + \beta (8) \text{ FINRISK} + \beta (9) \text{ TECHCMPRISK} + \varepsilon \quad \text{..... (xli)}$$

$$UP3M_{ceis} = \alpha + \beta (1) \text{ ISSIZE} + \beta (2) \text{ FAGE} + \beta (3) \text{ PRCHSENSX3M} + \beta (4) \text{ OPRRISK} + \beta (5) \text{ COMPRISK} + \beta (6) \text{ MGTRISK} + \beta (7) \text{ EQRISK} + \beta (8) \text{ FINRISK} + \beta (9) \text{ TECHCMPRISK} + \varepsilon \quad \text{..... (xlii)}$$

Data contained in Table 6.11 argues that Model 37 and Model 40 are overall significant, and their respective R^2 of .937 and .944 implies that vast variation, i.e. 94% of the initial day's returns and returns after 3 weeks, can be explained by the explanatory variables of the respective models at a 5% level of significance. Models 41 and 42 have a good goodness of fit at 1% significance [$F(9, 4) = 39.611$ p.01 and $F(9, 4) = 173.484$ p.01, respectively]. These models can explain 99% of the variation in under-pricing after 1 month and after 3 months. Model 38, having p as $0.179 > 0.05$, and Model 39, with p as $0.107 > 0.05$, show that both the models are not significant at predicting the dependent variables, i.e., under-pricing after 1 week as well as under-pricing after 2 weeks.

Table 6.11: Regression Model Summary and ANOVA Statistics- Construction, Engineering & Infrastructure Sector

Model		Sum of Squares	df	Mean Square	R	R ²	Adj. R ²	S.E. Estimate	F	Sig
37	Regression	20056.96	9	2228.551	.968 ^a	.937	.795	18.387	6.592	.043
	Residual	1352.29	4	338.073						
	Total	21409.26	13							
38	Regression	15960.73	9	1773.414	.926 ^a	.857	.535	25.812	2.662	.179#
	Residual	2665.10	4	666.275						
	Total	18625.83	13							
39	Regression	12853.12	9	1428.125	.946 ^a	.895	.657	19.463	3.770	.107#
	Residual	1515.21	4	378.802						
	Total	14368.33	13							
40	Regression	13586.75	9	1509.639	.972 ^a	.944	.819	14.166	7.523	.034
	Residual	802.69	4	200.671						
	Total	14389.44	13							
41	Regression	10011.04	9	1112.337	.994 ^a	.989	.964	5.29923	39.611	.001
	Residual	112.33	4	28.082						
	Total	10123.36	13							
42	Regression	31697.73	9	3521.970	.999 ^a	.997	.992	4.50572	173.49	.000
	Residual	81.21	4	20.301						
	Total	31778.94	13							

Mode 41 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, , Prcsensx, b. Dependent Variable: UP. Mode 42 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1w, b. Dependent Variable: UP1W, Model 43 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcswnsx2w b. Dependent Variable: UP2W, Mode 44 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3w, b. Dependent Variable: UP3W, Model 45 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1m, b. Dependent Variable: UP1M, Model 46 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3m, b. Dependent Variable: UP3M. # indicates Model 38 and Model 39 exhibits lack -of- fit.

Table 6.12 depicts the summary of the results of the OLS regression model concerning the construction, engineering & infrastructure sector. According to Model 37, Managerial Risk Factors (F3) and Technological & Competitive Risk Factors (F6) have a significant negative impact on the level of under-pricing on the initial day of listing at 1% level and 5 % level of significance. Other risk categories were found to be insignificant in impacting the initial returns of IPOs. The Percentage Change in Market Sensex on the date of listing of IPOs from the issue date also shows a

significant negative influence on the percentage change in stock prices from the offer price on the date of listing at a 10% significance level.

Table -6.12: Results of OLS Regression Models related to Construction, Engineering & Infrastructure Sector

Variables	Model 37		Model 40 (UP3W)		Model 41(UP1M)		Model 42 (UP3M)	
	B	Sig	B	Sig	B	Sig.	B	Sig.
(Constant)	-19.140	.804	7.361	.896	13.500	.532	-18.254	.343
LnIssueSize	-6.989	.562	.080	.993	-1.679	.629	1.656	.579
LnFirmAge	12.460	.386	-12.492	.236	-.673	.859	.924	.772
F1	2.438	.824	-.910	.904	-.086	.976	.441	.854
F2	-21.219	.251	-8.248	.489	-1.132	.794	-1.623	.665
F3	-41.326***	.006	-22.274**	.016	5.485	.201	-7.397	.149
F4	1.218	.850	-.081	.985	-.724	.666	1.008	.489
F5	10.803	.421	8.411	.432	-3.408	.464	2.130	.576
F6	-38.125**	.052	-47.443***	.011	10.645	.206	-12.924	.170
Prchsensx/1 W/1M/3M	-4.375*	.096	2.172**	.089	1.238***	.001	.813***	.001

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

Managerial Risk Factors (F3) and Technological & Competitive Risk Factors (F6) also have a significant negative impact on the level of under-pricing after 3 weeks at 5% and 1% levels of significance. The Percentage Change in Market Sensex after 3 weeks from the issue date reflects a significant positive influence on the level of under-pricing after three weeks at a 5% significance level (Model 40).

Further, Model 41 and Model 42 show that only one variable, namely Percentage Change in Market Sensex after 1 month and after 3 months from the date of the issue of the IPO, has a significant positive influence on the level of under-pricing for the respective time periods at a 1% level of significance.

6.6 IMPACT OF RISK CATEGORIES ON IPO PERFORMANCE IN THE HEALTHCARE SECTOR

Healthcare is one of the largest and most complicated industries, with a diverse spectrum of businesses selling medical products and services. The healthcare sector comprises companies that offer pharmaceuticals, medical gadgets, and insurance, as well as hospitals and healthcare providers.

Table 6.13: Descriptive Statistics of Firms related to Health Care Sector

Variables	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
UP	15	-21.56	50.00	18.0040	21.51118	-.170	.580
UP1W	15	-16.83	67.18	21.1793	27.63339	.177	.580
UP2W	15	-17.16	65.99	20.5893	26.09849	.179	.580
UP3W	15	-19.82	65.22	22.6173	25.33046	-.053	.580
UP1M	15	-15.92	61.92	21.1947	23.33384	.010	.580
UP3M	15	-11.71	145.97	34.2927	41.71654	1.348	.580
ISSUESIZE	15	4.25	7.46	6.3280	.86539	-1.104	.580
AGE	15	.00	3.74	2.6060	.83853	-2.166	.580
F1	15	-1.61	1.13	-.3260	.76051	.029	.580
F2	15	-1.23	3.19	.2980	1.13427	1.228	.580
F3	15	-2.14	1.12	-.5727	.83119	.245	.580
F4	15	-1.73	1.11	-.2833	.90515	.166	.580
F5	15	-2.28	1.83	-.2020	1.18577	-.040	.580
F6	15	-1.34	1.92	.3480	.94418	-.373	.580
PRSNSX	15	-3.13	3.15	.2380	1.73265	-.094	.580
PRSNSX1W	15	-3.43	2.90	.1087	1.50384	-.449	.580
PRSNSX2W	15	-2.44	3.41	.4393	1.74629	.032	.580
PRSN3W	15	-4.85	4.08	.0020	2.41867	-.183	.580
PRSN1M	15	-20.61	63.67	21.1427	24.60864	-.091	.580
PRSN3M	15	-9.34	147.52	36.4133	40.30876	1.499	.580
Valid N (listwise)	15						

6.6.1 Descriptive Statistics related to Health Care Sector

Table-6.13 summarises the descriptive statistics of the data used in regression models applied to the healthcare sector. An IPO's first-day returns ranged from (-) 21.56% to 50.00%. This range is noticeable at its maximum level of under-pricing after 3 months from the day of listing. It varies between (-) 11.71% and 145.97%. The level of under-pricing on the initial day was 18.00% on an average basis and reached up to 34.29% after 3 months. The average percentage change in the market sensex from the market price on the offer date to the listing day market sensex was (-) 3.15% and it reached up to 36.41% after 3 months on an average basis. After three months, the range of percentage change in the market sensex from the date of the IPO was highest, measured as (-) 9.34% to 147.52%, with a degree of skewness of 1.5. The level of under-pricing is depicted in the following fig.-6.5

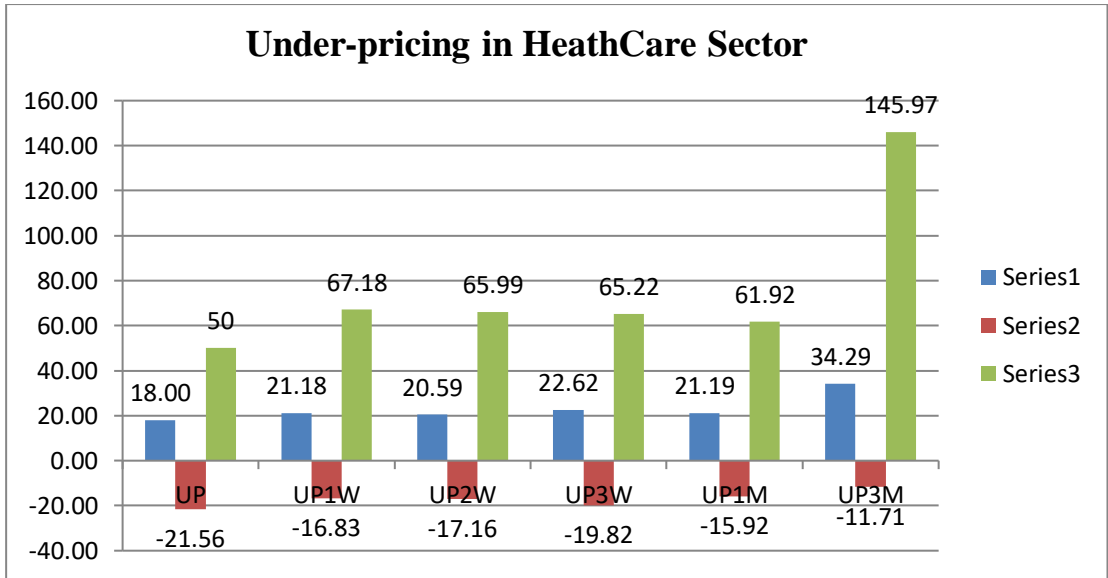


Figure 6.5: The level of under-pricing in Health Care Sector

(Source: Author's own compilation)

In order to investigate whether the risk factor categories had a significant influence on the IPO returns in Healthcare Sector, the following regression models are used:

$$UP_{hcs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xl\text{iii})$$

$$UP1W_{hcs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xl\text{iv})$$

$$UP2W_{hcs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX2W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xl\text{v})$$

$$UP3W_{hcs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xl\text{vi})$$

$$UP1M_{hcs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xl\text{vii})$$

$$UP3M_{hcs} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMPRISK + \varepsilon \quad \dots\dots\dots (xl\text{viii})$$

Table 6.14: Regression Model Summary and ANOVA Statistics –Health Care Sector

Model		Sum of Squares	df	Mean Square	R	R ²	Adj. R ²	S.E. E	F	Sig
43	Regression	13.760	9	1.529	.933 ^a	.870	.635	.6423	3.706	.082
	Residual	2.063	5	.413						
	Total	15.823	14							
44	Regression	8387.991	9	931.999	.886 ^a	.785	.397	21.459	2.024	.226#
	Residual	2302.470	5	460.494						
	Total	10690.46	14							
45	Regression	7070.704	9	785.634	.861 ^a	.741	.276	22.204	1.593	.316#
	Residual	2465.134	5	493.027						
	Total	9535.837	14							
46	Regression	5836.619	9	648.513	.806 ^a	.650	.019	25.085	1.031	.516#
	Residual	3146.230	5	629.246						
	Total	8982.849	14							
47	Regression	8632.235	9	959.137	.980 ^a	.961	.891	8.374	13.678	.005
	Residual	350.614	5	70.123						
	Total	8982.849	14							
48	Regression	24218.86	9	2690.985	.997 ^a	.994	.983	5.3835	92.852	.000
	Residual	144.908	5	28.982						
	Total	24363.77	14							

Model 43 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, , LnPrsensx, b. Dependent Variable: LnUP. Mode 44 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1w, b. Dependent Variable: UP1W Model 45 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcswnsx2w b. Dependent Variable: UP2W, Mode 46 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3w, b. Dependent Variable: UP3W, Model 47 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx1m, b. Dependent Variable: UP1M, Model 48 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcsensx3m, b. Dependent Variable: UP3M. # indicates Model 44, Model 45 and Model 46 exhibit lack -of- fit.

Table 6.14 shows the Summary and Analysis of Variance statistics of the regression models used in the healthcare sector. Regression Model 43 as a whole is significant in measuring the influence of risk categories on the level of under-pricing at a 10% level of significance only: $F(9,4) = 3.706$ and p is $.082 < .10$. The R square for the overall model is 87.0% and the adjusted R square is 63.5%, showing the good predictability strength of the model. Models 44, 45, and 46 all have poor goodness of fit because their model significance levels are greater than .05. Model 47 and Model 48 are overall

significantly better at measuring the variability in the dependent variables, showing R square as 96.1% and 99.4% for Model 47 and Model 48, respectively, at 1% level of significance.

Table 6.15: Results of OLS Regression Models related to Health Care Sector

Variables	Model 43		Model 47		Model 48	
	B	Sig.	B	Sig	B	Sig.
(Constant)	13.997**	.021	-46.530	.131	-3.719	.864
LnIssueSize	.011	.310	.064	.642	-1.229	.695
LnFirmAge	.518	.196	6.651	.139	3.331	.186
F1	-.080	.764	.684	.845	-1.235	.638
F2	-.387	.365	-3.788	.369	.305	.843
F3	.332	.113	.995	.677	-1.590	.624
F4	-.784*	.084	7.240	.251	.121	.960
F5	-.417	.182	-.116	.971	.133	.939
F6	.021	.923	-1.030	.693	-1.631	.516
Prchsensx/3W/3M	-5.908**	.038	1.204***	.001	.998***	.000

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

The results contained in Table 6.15 demonstrate that Equity Risk Factors (F4) have a negative impact on the level of under-pricing on the initial day of listing at a 10% level of significance. Other risk categories were found to be insignificant in impacting the initial returns of IPOs. Percentage Change in Market Sensex on the date of listing of IPOs from the issue date also shows a significant negative influence on the percentage change in stock prices from the offer price on the date of listing at a 1% significance level (Model 43).

According to Model 47 and Model 48, there is only one variable, i.e. Percentage Change in Market Sensex after 1 month and after 3 months from the date of the issue of the IPO, that has a significant positive influence on the level of under-pricing for the respective time period at a 1% level of significance.

6.7 IMPACT OF RISK CATEGORIES ON IPO PERFORMANCE IN THE PRODUCER/ MANUFACTURING SECTOR

Manufacturing is the process of turning raw materials into finished things using labour, equipment, tools, and chemical or biological processing or formulation.

Mining, oil and gas exploration and production, petroleum refining, pulp and paper, agricultural production, food processing, and electric products, for example, are all part of this industry.

Table 6.16: Descriptive Statistics of Firms related to Producer/ Manufacturing Sector

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
	UP	14	-12.46	37.49	8.7343	18.11541	.660
UP1W	14	-22.75	64.76	7.7886	26.17392	.932	.597
UP2W	14	-29.66	70.83	10.6550	29.93842	.644	.597
UP3W	14	-27.29	77.28	12.2879	30.24107	.731	.597
UP1M	14	-23.05	60.17	9.3850	26.78676	.587	.597
UP3M	14	-63.39	95.46	2.7100	42.74768	.375	.597
ISSUSIZE	14	4.25	8.05	6.4679	.95823	-.536	.597
AGE	14	.69	4.43	3.0379	.88129	-1.514	.597
F1	14	-1.05	1.51	.2850	.84317	-.355	.597
F2	14	-1.66	3.32	.2279	1.31854	.932	.597
F3	14	-1.65	2.62	.1664	1.19773	.240	.597
F4	14	-1.31	2.13	.4014	.97292	-.025	.597
F5	14	-1.70	2.64	.2650	.99799	.522	.597
F6	14	-1.32	2.20	.1893	.98336	.373	.597
PRCHSNSX	14	-4.63	2.60	-.4029	1.93824	-1.008	.597
PRCH1W	14	-3.11	1.47	-.4079	1.18460	-.605	.597
PRCH2W	14	-5.65	2.60	-.6229	2.26650	-.739	.597
PRCH3W	14	-4.43	2.82	-.5014	2.59263	-.255	.597
PRCH1M	14	-20.78	56.14	9.4550	25.50975	.618	.597
PRCHSENSX3M	14	-20.70	145.22	27.5400	48.17827	1.344	.597

6.7.1 Descriptive Statistics related to Producer/ Manufacturing Sector

Table-6.16 discloses the descriptive statistics of the data which were used in the regression models applied in the Producer Manufacturing Sector. The IPO's first-day returns ranged from (-) 12.46% to 37.49%. After three months, the range of underpricing was (-) 63.39% to 95.46%. The level of underpricing on the initial day was 8.73 % on an average basis. After 3 weeks, it was 12.29% and then decreased, and after 3 months, it was noticed to be 2.71%. The average percentage change in the market sensx from offer date to listing day was (-) 3.15%, rising to 27.54% after three months. After three months, the range of percentage change in the market sensx from the date of the IPO was the highest, which was measured as (-) 20.70% to

145.22%, with a degree of skewness of 1.34. The level of under-pricing is depicted in the following Fig.-6.6.

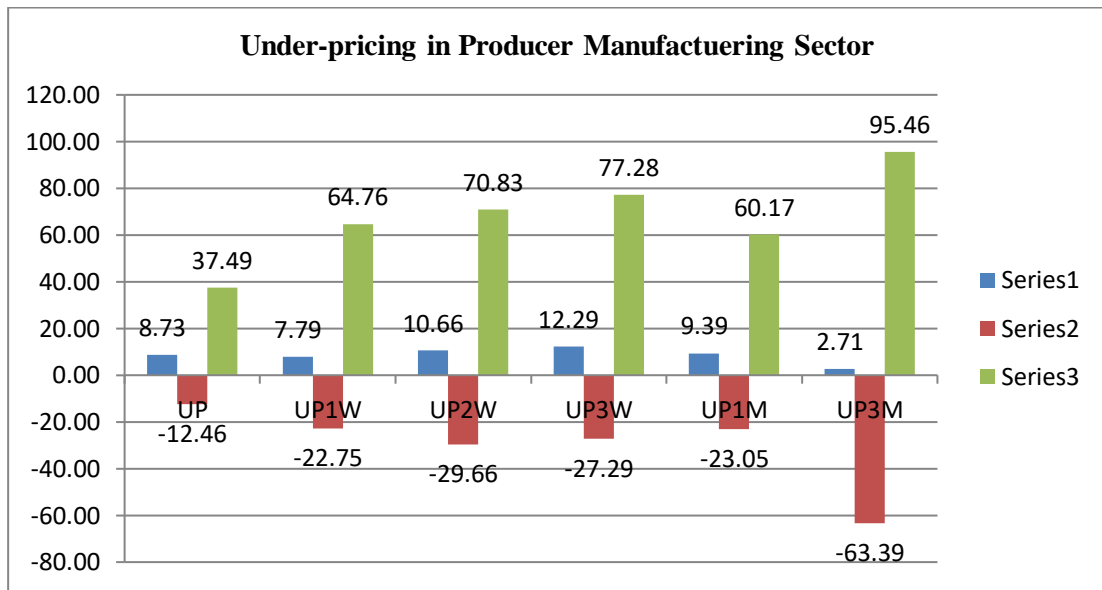


Figure 6.6: The level of under-pricing in Producer/ Manufacturing Sector

In the analysis of the impact of risk factor categories had on the IPO returns in the Producer Manufacturing Sector, the following regression models are used:

$$UP_{pms} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (xLix)$$

$$UP1W_{pms} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (L)$$

$$UP2W_{pms} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX2W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (LI)$$

$$UP3W_{pms} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3W + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (LII)$$

$$UP1M_{pms} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX1M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (LIII)$$

$$UP3M_{pms} = \alpha + \beta (1) ISSIZE + \beta (2) FAGE + \beta (3) PRCHSENSX3M + \beta (4) OPRRISK + \beta (5) COMPRISK + \beta (6) MGTRISK + \beta (7) EQRISK + \beta (8) FINRISK + \beta (9) TECHCMRISK + \varepsilon \quad \dots\dots\dots (LIV)$$

Table 6.17: Regression Model Summary and ANOVA Statistics –Producer/ Manufacturing Sector

Model		Sum of Squares	df	Mean Square	R	R ²	Adj. R ²	S.E. E.	F	Sig
49	Regression	.477	9	.053	.954 ^a	.911	.711	.1079	4.549	.079
	Residual	.047	4	.012						
	Total	.523	13							
50	Regression	.292	9	.032	.866 ^a	.749	.185	.1564	1.329	.419#
	Residual	.098	4	.024						
	Total	.390	13							
51	Regression	6586.188	9	731.799	.860 ^a	.740	.153	24.08	1.262	.441#
	Residual	2319.776	4	579.944						
	Total	8905.964	13							
52	Regression	8316.040	9	924.004	.836 ^a	.699	.023	29.89	1.03	.529#
	Residual	3572.747	4	893.187						
	Total	11888.788	13							
53	Regression	9258.990	9	1028.78	.996 ^a	.993	.976	4.151	59.720	.001
	Residual	68.906	4	17.227						
	Total	9327.896	13							
54	Regression	23555.860	9	2617.32	.996 ^a	.992	.973	7.069	52.380	.001 ^a
	Residual	199.873	4	49.968						
	Total	23755.733	13							

Mode 49 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, , LnPrsensx, b. Dependent Variable: LnUP. Mode 50 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prsensx1w, b. Dependent Variable: UP1W, Model 51 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prcswnsx2w b. Dependent Variable: UP2W, Model 52 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prsensx3w, b. Dependent Variable: UP3W, Model 53 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prsensx1m, b. Dependent Variable: UP1M, Model 54 a. Predictors: (Constant), LnFirmAge, LnIssueSize, , F1, F3, F2, F4, F5, F6, Prsensx3m, b. Dependent Variable: UP3M. # indicates Model 50, 51 and Model 52 exhibit lack -of- fit

Table 6.17 shows that Model 49 as a whole is significant in measuring the influence of risk categories on the level of under-pricing at a 10% level of significance. The R square for the overall model is 91%, and the adjusted R square is 71%, indicating the good predictability strength of the model. Models 50, 51, and 52 have poor goodness of fit because their respective p values are greater than 5%. Model 53 and Model 54 are also overall significant at measuring the variability in the dependent variables, generating their respective R square as 99% and 97% at 1% level of significance.

Table 6.18: Results of Regression Models related to Producer Manufacturing Sector

Variables	Model 49		Model 53		Model 54	
	B	Sig.	B	Sig.	B	Sig.
(Constant)	-2.047	.179	-46.530	.342	32.772	.690
LnIssueSize	.058*	.101	3.064	.373	50.616***	.008
LnFirmAge	.147	.096	3.380	.253	-1.710	.838
F1	.054	.574	-4.790	.297	-7.059	.466
F2	-.016	.885	-1.777	.945	-6.592	.631
F3	-.113*	.062	-.116	.327	-13.340*	.092
F4	.113**	.043	4.177	.352	-4.289	.487
F5	.033	.680	2.451	.519	-17.342	.128
F6	.007	.907	-1.494	.353	-6.325	.458
Prchsensx/3W/3M	.552	.133	1.121***	.000	-55.179***	.014

Table 6.18 shows that Equity Risk Factors (F4) have a positive impact at a 5% significance level, while Managerial Risk Factors (F3) reflect a negative impact on the level of under-pricing on the initial day of listing at a 10% level of significance. Issue size is influencing the initial return at a 10% significance level. Other risk categories were found to be insignificant in impacting the initial returns of IPOs (Model 49). According to Model 53, the percentage change in the market Sensex after 1 month from the date of the issue of the IPO has a significant positive influence on the level of under-pricing for the respective time period, whereas Model 54 reports that the percentage change in the market Sensex after 3 months from the date of the issue of the IPO has a significant negative impact and the issue size has a significant positive impact on the level of under-pricing after 3 months at 1% level of significance.

6.8 CONCLUDING REMARKS

While investigating the impact of mutually exclusive risk categories on IPO performance across various sectors, it was observed that these risk categories differ significantly in different sectors. This is perhaps because of the differences in the structure and operations of diverse organisations across various industries.