

# Diaspora between Asymmetric and Behavioral Theories in the Indian IPO Markets

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Underpricing of the IPO's and market efficiency play a crucial role in the primary markets as suggested by asymmetric information models. Under pricing is where issuers intentionally offer the share prices in the primary markets below their fair value. Market Efficiency helps in identifying the fair value of the shares. On the first day of trading if the prices of the respective company's shares increase it is evidence of undervaluation or vice versa. This paper tries to ascertain the relevance of the asymmetric information models for the IPO's listed on National Stock Exchange (NSE) between periods 2001-2010. The second aspect of study in this paper is on the interpretation of several alternative behavioral theories of IPO pricing and their extent of relevance in the Indian primary market. The results agree with the asymmetric information models and strongly disagree with the hypothesis suggested by various behavioral theories.

## 1.0 Introduction

Rationalization is always the link between profit and loss in today's world. What seems efficient may be deficient in several aspects curbing the rationalization to pierce through. Risk-Return tradeoff is usually the key term most often used in literature in describing one's exposure and in defining one's risk taking characteristic. Information plays a key role in determining a difference between different type of investors like the speculator, arbitrator, rational investor and institutional investors. Primary markets play a vital role in gaining access to necessary money for the companies and at the same time to the investors having trust in making money either in very short term (minutes or hours or a day), mid-term (a week or month) or in long term periods.

Positioning oneself well in the primary markets requires the necessary skills gained mainly through information which can be well researched but which is accessible to few and in some cases, though information is available to masses it has to be customized through rigorous research by individual investors or through information provided by rating agencies with little research of their own. So success can be achieved by one's access to timely, well researched information. Compartmentalization of information accessibility is believed to be the key factor when it comes to taking advantage in the primary markets and studying the trend over a period of 10 years on the IPO'S listed in NSE with credit ratings becomes important and it is hoped to get some insights on these aspects with the current study.

## 2.0 Theoretical Background

Underpricing of Initial Public Offerings (IPOs) has been a topic of wide research and discussion among the academic community. Underpricing is the situation wherein issuers intentionally offer the share prices in the primary markets below their fair value. Ibbotson (1975) claimed underpricing to be a mystery and this mystery was unfolded to little extent by Rock's (1986) Asymmetric Information Hypothesis. According to the hypothesis underpricing was explained as a direct result of the 'Winner's Curse' problem faced by the uninformed investors when submitting purchase orders for the new issues. Ibbotson (1975), Ritter (1984) and Welsh (1989) provided evidence of the underpricing to the extent of 22% in the average initial returns in the US markets. Dimson (1989), Buckland *et.al* (1981) and Bank of England provided evidence of the underpricing in the London Stock Exchange to

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the extent of average initial returns of 8.5% to 17%. In our study, totally 43 IPOs out of 317 IPOs (issued and listed during the period 2001 to 2010) at NSE were graded by the credit rating agencies based upon their fundamentals and the average initial returns on the first day was found to the extent of 15.28%.

### 3.0 Review of Literature

Revitalization is the key term used in order to bring changes in either one's mindset or the entire organization success. IPO's over the years have played a key role in the innovation and revitalization of the companies by providing the necessary monetary assistance. But over several years there existed curiousness regarding the overvaluation and the undervaluation of the IPO issuers among the investor communities.

The mystery surrounding the underpricing and the reason for underpricing of the IPO's to a large extent was unraveled by Rock's (1986) Asymmetric Information Model (AIM). The AIM model was based on the assumption that there are two groups of potential investors in the IPO market namely informed investors and uninformed investors. AIM promulgated that informed investors with time and money would gather well researched information. With the necessary information, informed investors were expected to oversubscribe for the IPO's thought to be undervalued by them. Whereas, uninformed investors do not have the time, money and commitment to gather and interpret the information while making purchasing decision of the IPOs. Thus, uninformed investors tend to apply invariably for every issue coming into the market. There exists exhaustive literature on behavioral theories trying to understand the behavior of the undervalued and overvalued stocks over the longer period of time (might be few days, months or year). Barberis, Shleifer, and Vishny(1998), Hong and Stein(1999) initially found the unique behaviour of the

the investors in response to the pricing of the IPOs. If the IPOs were initially undervalued it was seen that it was followed by overvaluation and reversals. Similarly Delong, Shleifer, Summers and Waldmann(1990), Daniel, Hirshleifer and Subramanyam(1998) proposed overvaluation and reversals.

### 4.0 Objective

- a. To study the performance of the IPO's listed on NSE from 2001 to 2010.
- b. To test Asymmetric Information Model
- c. To test the behavioral theories in NSE for the period 2001-2010

### 5.0 Data and Sources

Key data on the IPO's were retrieved from NSE website. Totally 317 IPO's issued and listed during the period 2001 to 2010 were considered for the study. Out of 317 IPO's, only 43 IPO's rated by the credit rating agencies were considered as our study focused on AIM model. The issue price and the subscription times of the IPO were retrieved from <http://www.chittorgarh.com>. The share price (open, high, low, and closing price) of 43 IPO's was downloaded from Capitaline databases.

### 6.0 Research Methodology

Out of the 317 IPO's obtained, only 43 IPO's were considered for the study. Firstly the 43 IPOs were sorted based on the ratings given by the credit ratings agencies. IPOs listed on the NSE are rated by various credit rating agencies such as CARE, CRISIL, ICRA, Fitch Ratings India Pvt Ltd, Brickworks Rating India Pvt Ltd to name a few. The IPOs were so rated based on their strengths in fundamentals and usually a rating of 1 to 5 is given indicating poor fundamentals to above average fundamentals respectively.

In order to measure the initial returns obtained by the investors on the first day we used the method given below:

$$R_t = (\ln P_c - \ln P_i) * 100 \quad (1)$$

Where  $R_t$  is the initial day return on the time  $t$ ,  $P_c$  and  $P_i$  is the issue price and closing price (or open price/ high price/ low price) of the first day of IPO. Based on the first day initial returns the IPOs were designated as undervalued, overvalued or perfectly valued.

In order to understand the performance of the share prices over a period of time, we followed the equation given below:

$$R_t = (\ln P_t - \ln P_{t-1}) * 100 \quad (2)$$

Where  $R_t$  is the return obtained in the period  $t$ ,  $P_t$  and  $P_{t-1}$  are the daily closing prices of the stocks at time  $t$  and  $t-1$  respectively. Based on the returns, the companies were rated overvalued, undervalued or mean reversion over a period of 7 days, 14 days, 21 days and 30 days.

In order to know the degree of association between subscription times issued by qualified institutional investors (QIBs), Non-Institutional investors (NIIs) and Rational investors (RIs), Correlation analysis was done using the equation given below:

$$r^2 = 1 - \frac{\sum (Y - \hat{Y})^2}{\sum (Y - \bar{Y})^2}$$

Where the two variations mainly, variation of  $Y$  values around the regression line is represented by the numerator  $\sum (Y - \hat{Y})^2$  and the variation of the  $Y$  values around their own mean is represented by the denominator of the equation  $\sum (Y - \bar{Y})^2$  one minus the ratio between these two variations is the coefficient of determination ( $r^2$ ) and the square root of  $r^2$  is the coefficient of correlation.

### 7.0 Results

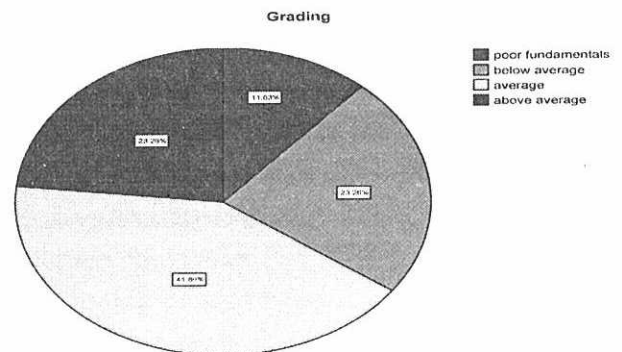
Out of the 317 IPOs considered for the study, only 43 IPOs qualified based on whether they were graded by the ratings agencies or not. As indicated in the table 1

and figure 1, we observe that out of 43 IPOs majority (41.9%) were graded average by the credit rating agencies. The companies graded below 3 (average and below average) formed 34.9 percentage of the total IPOs and only 23.3 percentage of the companies received grading of 4 and above. With respect to the quality of the IPOs over a decade (2001-2010), we can clearly come to consensus that the companies had very strong fundamentals and prospectus for growth in the future.

Table 1: Rating of IPOs listed in NSE

Performance Indicators	Frequency	Percent	Valid Percent	Cumulative Percent
poor fundamentals	5	11.6	11.6	11.6
below average	10	23.3	23.3	34.9
average	18	41.9	41.9	76.7
above average	10	23.3	23.3	100.0
Total	43	100.0	100.0	

Figure 1: Pie chart showing the IPOs categorized based on the ratings given by the credit rating agencies



Out of the 43 IPOs, majority of them belonged to power generation (with 5 IPOs), computers (with 4 IPOs), construction (with 4 IPOs), and entertainment (with 4 IPOs) industries which by itself signifies the tremendous growth of the respective industries in the Indian markets. Table 2 clearly gives the classification matrix of the IPOs.

**Table 2 : Classifications of Companies according to Industries**

IPDs	Frequency
Breweries	1
computers	4
Construction	4
diamond cutting	1
dyes and pigments	1
electric equipment	1
electronics	1
engineering-turnkey services	1
Entertainment	4
finance/lending	1
food and dairy products	1
glass sheet	1
Hotels and resorts	2
Investments	1
IT-enabled services	1
mining	1
Oil exploration	1
packaging	2
pesticide	1
pharmaceuticals	1
Plastics	1
Power generation	5
Ship breaking	1
solvent extraction	1
Telecommunications	2
textiles spinning	1
Travel agency	1
Total	43

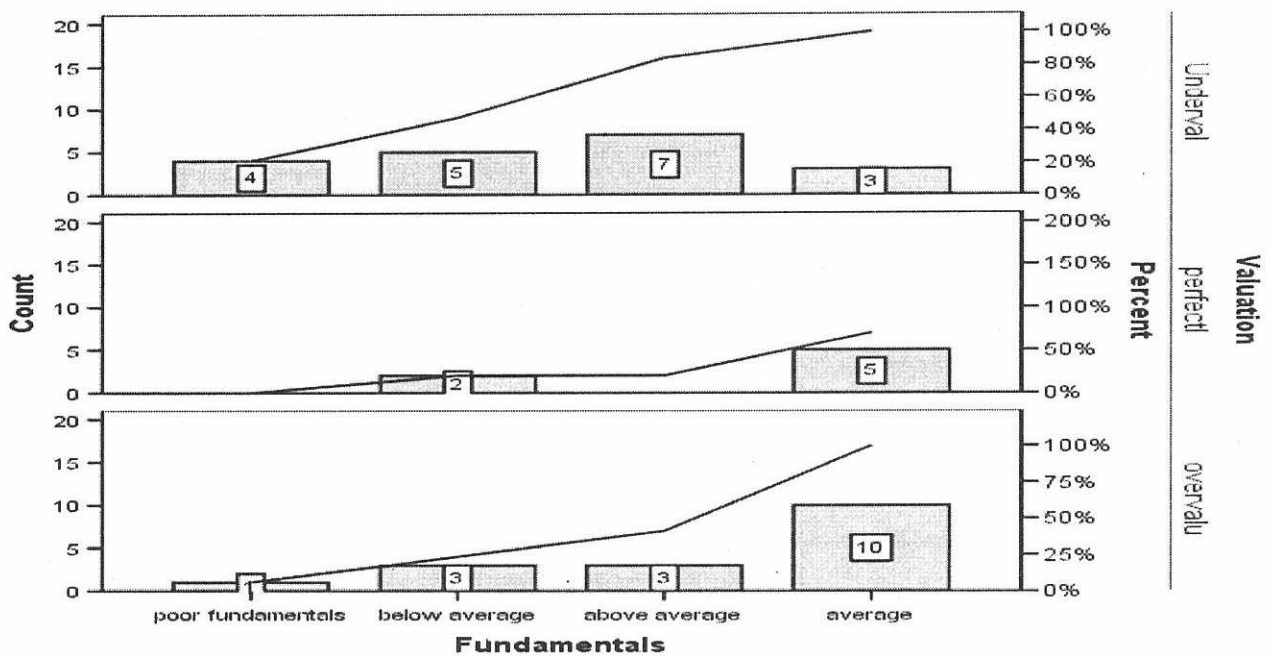
Asymmetric information models by Rock (1986), Benveniste and spindt (1989), Grinblatt and Hwand (1989), Welch (1989) tried to explain the phenomenon of underpricing. Underpricing in the Indian Primary markets has been found for the most part. In the table 3 and figure 2, we can find that, out of 43 IPOs listed in NSE, 44.2% of them were undervalued. Of the IPOs, ratings of one indicating poor fundamentals

was given to 11.6% of the total IPOs and around 80% of these IPOs were undervalued during the initial day and 20% of the IPOs were overvalued. Of the IPOs having below average fundamentals (grade 2 by credit rating agencies), about 50%, 30% and 20% were undervalued, overvalued and perfectly valued during the initial day.

**Table 3: Valuation of IPOs based on the rating given by the credit rating agencies**

Grading and Valuation			Valuation			Total
			Overvaluation	Perfectly Valued	Undervaluation	
Grading	poor fundamentals	Count	1	0	4	5
		% within VAR00005	20.0%	.0%	80.0%	100.0%
		% within VAR00003	5.9%	.0%	21.1%	11.6%
		% of Total	2.3%	.0%	9.3%	11.6%
	below average	Count	3	2	5	10
		% within VAR00005	30.0%	20.0%	50.0%	100.0%
		% within VAR00003	17.6%	28.6%	26.3%	23.3%
		% of Total	7.0%	4.7%	11.6%	23.3%
	average	Count	10	5	3	18
		% within VAR00005	55.6%	27.8%	16.7%	100.0%
		% within VAR00003	58.8%	71.4%	15.8%	41.9%
		% of Total	23.3%	11.6%	7.0%	41.9%
above average	Count	3	0	7	10	
	% within VAR00005	30.0%	.0%	70.0%	100.0%	
	% within VAR00003	17.6%	.0%	36.8%	23.3%	
	% of Total	7.0%	.0%	16.3%	23.3%	
Total	Count	17	7	19	43	
	% within VAR00005	39.5%	16.3%	44.2%	100.0%	
	% within VAR00003	100.0%	100.0%	100.0%	100.0%	
	% of Total	39.5%	16.3%	44.2%	100.0%	

**Figure 2: Valuation of IPOs based on the rating given by the credit rating agencies**



The IPOs graded 3 for average fundamentals were found to camouflage themselves as superior companies in terms of the fundamentals and thus were usually found to be overvalued (about 55.6%) and around 27.8% of the IPOs were found to be perfectly valued. Only 16.7% of the IPOs were found to be undervalued.

Surprisingly companies with above average fundamentals were undervalued (about 70%) in order to entice the rational investors to take a share in the IPOs.

### 7.1 Asymmetric Information Model

Table 4: Correlation between subscriptions made by informed and uninformed investors for undervalued IPOs

<i>Subscription Frequency</i>	<i>SUBSCRIPTION (No of times issue is subscribed)</i>	<i>Times subscribed by Qualified Institutional buyers</i>	<i>Times subscribed by Non-Institutional investors</i>	<i>Times subscribed by Retail individual investors</i>
<i>SUBSCRIPTION (No of times issue is subscribed)</i>	1			
<i>Times subscribed by Qualified Institutional buyers</i>	0.9736472	1		
<i>Times subscribed by Non-Institutional investors</i>	0.968710492	0.905404648	1	
<i>Times subscribed by Retail individual investors</i>	0.620938469	0.490952418	0.58827314	1

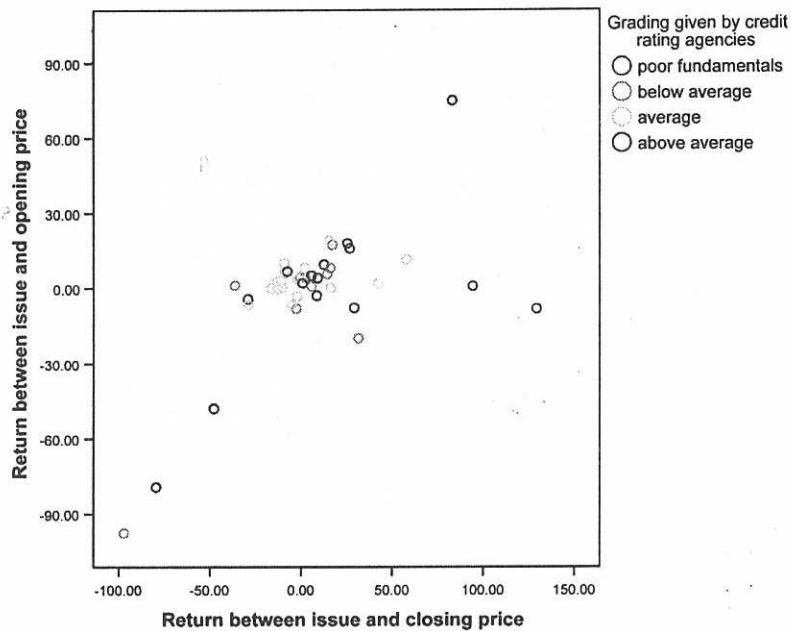
The asymmetry in the available information according to Rock's (1986) model proposes that subscriptions to issues are tilted towards the informed investors by leaving only a limited number of shares in the underpriced issues to the uninformed investors. Whereas, in case of overpriced issues informed investors also gain by leaving a huge chunk of the issues untouched and thus guaranteeing allocation of full amount of application to uninformed investors. Thus uninformed investor's would tend to hold up disproportionately large portion of overpriced IPOs. From Table 4, we can conclude that uninformed investor's subscriptions tend to be less correlated than

subscription of other informed investors with respect to subscription times and they tend to be easily guaranteed allocation of full amount of their subscription in the overpriced issues.

If grades provided by various credit ratings agencies are considered to be a critical source of information for the rational investor in making purchase decisions, the initial day returns tend to pinpoint key observations as shown in figure 3 namely:

- 1) The initial day returns between issue price and closing price (or opening price) seem to cluster around the small intervals indicating the profit/loss that can be made on the initial day.
- 2) The companies graded with below average fundamentals (GRADE 1) seem to be undervalued below market expectations thus giving higher returns on the initial day.
- 3) The Grade 2 companies are also seemed to be undervalued but the returns obtained are found to be comparatively less than Grade 1 companies.
- 4) The companies Graded 3 are found to imitate/camouflage themselves by being overvalued most of the times in the IPO market. These companies with average fundamentals try to draw more attention by mimicking themselves to have characteristics of Grade 4 companies. This wrong pricing decision by the companies can be the main reason for these companies to make low/negative returns on the first day of the issue.
- 5) In summary although IPO grading can play a crucial role in making decision on buying an IPO, they fall short of being the predictor for valuation of a company on the listing day

Figure 3: Cross sectional analysis between the returns obtained and credit ratings



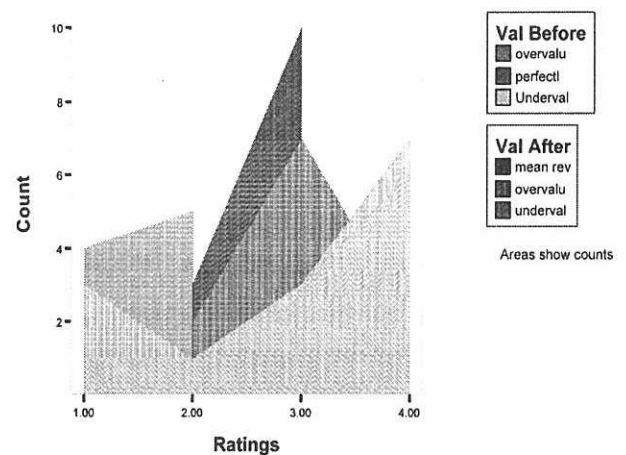
**7.2 Behavioral Theories**

From the figure 4, we can observe that the behavioral theory by Barberis, Shleifer, and Vishny(1998), Hong and Stein(1999) does not hold good to the IPOs listed on NSE. Majority of the IPOs listed were found to be undervalued and over a certain period tend to remain undervalued and do not exhibit timely mean reversals. This characteristic clearly pinpoints the fact that the informed investors try to reap the benefits of buying and even holding underpriced shares for a longer period of time. Another important feature to notice is that undervalued shares try to show mean reversion towards the fair value which was not observed in the previous behavioral theories.

Similarly behavioral theories proposed by DeLong, Shleifer, Summers and Waldmann(1990), Daniel, Hirshleifer and Subramanyam(1998) of overvaluation and reversals does not hold in India. The overvalued shares try to remain overvalued for a long period of time, showing the repulsion effect of the majority(uninformed) investors who invested in these

stock due to asymmetric information proposed by Rock(1989). Like undervalued IPOs, the overvalued stocks show mean reversion effect and thus try to normalize themselves for the losses incurred to the initial day returns.

Figure 4: Behavioral response of the IPOs in the Indian primary market initially and after



### 8.0 Conclusion:

From the study it is clear that information plays a crucial role in making investment decisions in primary markets. Though credit ratings play a crucial role in keeping rational investors well-informed about the prospects of the companies they fail as good predictors of valuation on the day of listing and they fail in protecting the investments of investors from stochastic market risks. Thus, alerting the investor not to rely solely only on credit rating as criteria in decision making related to investment in IPOs.

Differences exist between informed and uninformed investors and therefore, the study provides support for AIM hypothesis by rock. The rejection of the behavioral theories as applied to the IPOs listed in NSE leaves us with no doubt in the mind regarding the existence of efficiency and transparency in the Indian primary markets.

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#### Softwares and Databases

1. Capitaline
2. SPSS