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FINANCIAL ECONOMICS | LETTER

Financial strength information and institutional investor demand: Evidence from India

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Abstract: In this paper, we examine whether foreign institutional investors (FII) and mutual funds (MF) show a higher preference for fundamentally stronger firms. We employ Pitroski's F score and its constituents (profitability, efficiency, and leverage) to measure the fundamental strength of firms. Further, we examine the preferences of FIIs and MFs by conditioning on size and book-to-market ratio. Overall, the results indicate that both types of institutional investors prefer firms with higher expected profitability and are willing to take higher risks. FIIs show a higher preference for riskier firms and MFs prefer firms with higher profitability.

Subjects: Economics; Finance; Business, Management and Accounting

Keywords: institutional investors; financial strength; Pitroski's F score; emerging market; mutual funds; foreign institutional investors

1. Introduction

The institutionalization of equity holdings has made institutional investors a dominant force in the financial markets. According to the Securities and Exchange Board of India, the ratio of FII equity turnover to total turnover in the Indian market is 21 percent in financial year 2017. For most firms, they have become the price-setting marginal investor (Bennett, Sias, & Starks, 2003a; Bennett, Sias, & Starks, 2003b). The sheer[1] size of the capital managed by institutional investors, bestow them with the ability to enhance market liquidity, improve disclosures and corporate governance. Thus, the investment styles of these important investor group become a fertile place for searching mechanisms to improve informational efficiency of equity markets, especially for the relatively less efficient emerging markets. Further, insights about the decision-making process of institutional investors would be beneficial to the less sophisticated market participants such as individual investors.

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ABOUT THE AUTHOR

V. Gopikumar Venugopal is an Assistant Professor, Department of Management - Kochi, Amrita Vishwa Vidyapeetham, India. His research focuses on the investing preferences of information intermediaries such as foreign institutional investors and the impact of their trading preferences on stock performance, in an emerging market context. Characterized by less efficient firm and market information environments emerging markets pose several interesting research problems on the behavior of different investor categories. Further, high levels of insider ownership magnify the information related problems in emerging markets such as India.

PUBLIC INTEREST STATEMENT

The research reported in the paper titled "Financial Strength Information and Institutional Investor Demand: Evidence from India", exploits the relatively inferior information environments in emerging markets to investigate the preferences of mutual funds and foreign investors. The results indicate that foreign investors exhibit a risk seeking behavior and mutual funds show higher preference for profitability. The results would be useful for less informed investors such as individuals who tend to follow their more sophisticated counterparts, institutional investors. The findings would be useful for managements of firms in their pursuit to attract investors.

Institutional investors allocate substantial resources in producing and processing value-relevant information. Information processing cost has a negative relationship with stock market efficiency, due to its high cost. In relatively less transparent information environments, such as emerging markets, the negative relationship becomes more pronounced.

The economic significance of the resources allocated has attracted considerable research interest on the investment decision-making process of institutional investors. However, as noted by Krishnan and Rangan (2016), most of the studies focus on US institutions and developed markets.

In one of the early studies on institutional ownership, Gompers and Metrick (2001), investigate the relationship between institutional ownership and several firm characteristics and documents that market capitalization, share price, and share turnover are positively related to institutional ownership. They interpret these findings as the institutional preference for liquidity. In contrast, Bennett et al. (2003a) document that attractive valuations for smaller stocks and informational advantages enjoyed by large investors resulted in a shift in the preferences of institutional investors towards smaller stocks.

In a cross-country analysis, Ferreira and Matos (2008) examine the firm and country—level characteristics that attract institutional investors. They document that overall institutions prefer large and liquid stocks. Furthermore, domestic investors prefer high-dividend paying stocks whereas foreign investors tend to avoid such firms.

It is widely known that style investing characterizes the portfolios of institutional investors in the stock markets. In style investing, the investor uses a combination of style factors to pick stocks for investments, enabling in economizing on the resources needed to track individual stocks. Popular styles dimensions include growth/value stocks and size styles (small/large) (Ferreira & Matos, 2006). Style based reallocations by investors partly explain the contrasting results of Gompers and Metrick (2001) and Bennett et al. (2003a) which differs in the institutional preference for large and small capitalization stocks respectively.

Previous studies documents that institutions profit at the expense of individuals as they are better informed ((e.g., Chen, Jegadeesh, and Wermers (2000); Barber and Odean (2000)). Higher profits for institutions could be because either they are trading on better information or they can extract better information from the publicly available sources. Griffin, Shu, and Topaloglu (2008) examine the trading patterns of institutional investors before important events such as takeovers and earnings announcements. They find that, on an average, the trades of institutions does not move in the correct direction before significant events. However, they find evidence consistent with the institutions' ability to predict post—earnings returns. Their results suggest that institutional investors possess specific skills to exploit publicly available information to make profits. Choi and Sias (2012) designate such investors who exploit the remaining informational content of publicly available information as "more sophisticated."

(Fama & French, 2006, 2008), documents a positive relationship between financial strength and subsequent returns. There are two competing explanations for this phenomenon. The risk-based explanation argues that an increase in the financial strength entails higher expected profitability and higher risk. This additional risk results in investors' demanding higher required returns.

In contrast, the gradual incorporation of information hypothesis argues that investors incorporate their revisions in expectations, due to the change in financial strength, with a lag. This lag may be either due to the inertia in their investment process or due to market frictions. Over time, when investors recognize that firms with strong financials are under-valued, they would initiate purchases and sell those stocks that are over-valued.

Nevertheless, in this paper, our objective is not to resolve the competing explanations for the relationship between financial strength and subsequent returns. Our central goal in this paper is to investigate how dominant institutional investor categories such as foreign institutional investors (FII) and mutual funds (MF) incorporate publicly available financial strength information in their investment decisions. In India, FIIs means institutions incorporated outside India with an objective to make investments in India. FIIs have to mandatorily register with the Securities and Exchange Board of India (SEBI) for participating in the Indian stock markets. According to Krishnan and Rangan (2016), FIIs includes small and big financial market participants with or without the resources for rigorous information gathering and processing.

We measure the aggregate financial strength information using Pitroski' F—Score. Pitroski's F—score is the sum of nine binary signals for measuring the financial strength of a firm (Choi and Sias (2012)). These binary signals measures three areas of a firm's financial condition: profitability, financial leverage, and efficiency. The binary signals are classified as "good" or "bad" depending on their implication for future price. Furthermore, we examine whether the profitability (F-profitability), efficiency (F-efficiency) and leverage (F-risk) components of Pitroski's F-score produce additional information to understand the preferences of MFs and FIIs. However, Pitroski, (2000), cautions that the effect of these signals on future performance can be ambiguous and therefore, could negatively influence the power of these signals in discriminating between strong and weak firms.

Choi and Sias (2012) documents that institutional investor demand, partially drives the relationship between financial strength and subsequent returns. Cohen, Gompers, and Vuolteenaho (2002) investigate institutional response to cash-flow related news using a US sample for the period 1983 to 1998. They document that institutional investors exploit the under-reaction to positive cash flow news by buying shares and they weakly respond to negative cash flow news, particularly of small stocks.

Overall, previous studies have documented that firm size and value (measured using book-to-market value) influences institutional investor preferences. These variables could potentially interact with financial strength information in determining institutional demand. Given that financial strength information affects returns partly through institutional investor demand channel, it would be interesting to uncover the preferences of these important investor classes.

Our main findings are briefly summarized as follows. The empirical results indicate that the profitability and leverage components of F-score have significant discriminatory power to unearth the ownership differential (high ownership—low ownership) for both MFs and FIIs. The aggregate F-score of firms with high MF and FII ownership is not significantly different from those with low ownership. Additionally, we find that, but for the low market capitalizations stocks, the profitability component of F-score consistently shows significant ability to discriminate between high and low ownership by both types of institutions. The leverage component of F-score shows consistent ability to discriminate between high and low ownership by FIIs significantly. This indicates that, in comparison to the profitability and efficiency based metrics, foreign investors give higher weight for risk-based metrics in markets with higher degrees of information opacity. Except for the low market capitalization stocks, the profitability component of F-score shows consistent ability to significantly discriminate between high and low MF ownership.

Most of the studies on the determinants of institutional investor ownership have focused on the developed markets, especially the U.S. Further, the extant literature is skewed towards studies on the aggregate institutional behavior. However, there is a clear lack of research on the behavior of large investors in the informationally opaque emerging markets. Emerging markets pose unique challenges for large investors in gathering and processing trade relevant information. Further, challenges of the market microstructure such as liquidity and exchange rate volatility intensify the problems. In this context, our paper joins the emerging market literature that examines large

institutional investor preferences and more specifically to the information processing process of mutual funds and foreign institutional investors.

2. Data and variable construction

We obtain data for the study from the Centre for Monitoring Indian Economy's (CMIE) Prowess database for the sample period FY 2001 till FY 2017. CMIE Prowess is a widely accepted source of information for studies on Indian firms (Krishnan and Kozhikode (2015). Firstly, we filter the non-finance firms from the database and obtain 39,383 firm-year observations. Following Fama and French (2006), we exclude finance firms from the sample. We compute F-score for each financial year which begins in April and ends in March, following the definitions of Pitroski (2000) (see Appendix for details). Because institutional ownership data is available only in calendar-quarters, we average percentage ownership over the corresponding financial years.

To examine the power of F—score and its constituents in discriminating between high and low ownership by FIIs and MFs, each financial year, we rank the firms using percentage ownership into "high", "medium", and 'low" levels. Subsequently, we compare the significance of the ownership differential (high ownership—low ownership) using t-tests. Table A1 shows the results of the t-tests.

With an objective to understand the interaction of book-to-market (BM) with financial strength information, we partition the data into "high", "medium", and "low" BM firms and compare the ownership differential for F-score and its constituents. We define BM ratio as the quarterly mean for each stock.

Additionally, following the previous studies which document a positive influence of size on institutional demand (Gompers and Metrick (2001), we examine the interaction of F-score and size (market capitalization is used to proxy for size) by partitioning the observations into "high", "medium", and "low" size-buckets. Similar to BM ratio, we define size as the quarterly-mean market capitalization of a firm.

F Score Computation:

F Score is the sum of nine binary signals which is a composite measure of firm strength. Each good signal contributes one point to F Score and each bad signals contributes zero points. More specifically, firms are given one point for (i) positive net income (ii) positive cash flow from operations (iii) an increase in net income (iv) a positive difference between cash flow from operations and net income (v) a decrease in long—term debt to asset ratio (vi) an increase in current ratio (vii) not issuing any common or preferred equity in the most recent financial year (viii) an increase in gross margin (ix) an increase in asset turnover.

3. Empirical results

Tables A6 reports the average year-wise ownership patterns of mutual funds and foreign investors. Since the year 2005, on average FIIs have approximately 1.5% higher ownership percentage compared to mutual funds. Further, as shown in Table A7, foreign investors show a discernible preference for higher market capitalization stocks, with an average ownership differential between high and low market capitalization stocks being 9.34%. As reported in Table A8, on average, both investor categories show a higher preference for high BM firms.

Table A1-A5 reports the average values of F scores and its three components for high, low and medium ownership categories, for both mutual funds and foreign institutional investors. The bottom row reports the t—statistics of the null hypothesis that F scores and its components do not differ across high and low institutional demand. While, Table A1 reports the F scores and t—statistics for the entire sample, Tables A2 and A3 reports the results for the low and high book to market firms respectively. Similarly, Tables A4 and A5 report the F scores and t-stats for low and high market capitalization buckets.

The t—statistics reported in Table A1, indicate that both mutual funds and foreign investors significantly discriminate between firms based on the profitability and the risk components of the F score. Both types of investors prefer firms with high-expected profitability and are willing to take higher risks. The average F-profitability score for firms with high ownership is higher for both investor groups when compared to firms with lower ownership levels. However, the average F-risk score for firms highly owned by foreign institutions is significantly low than those that are lowly owned, suggesting that, on an average, foreign institutions are willing to trade—off risk for profitability in their investment decisions.

The book-to-market effect, well documented in the finance literature, argues that firms with low book-to-market values earn significant negative excess returns and firms with high book-to-market earn significant positive returns. There are various competing explanations for the book-to-market effect. Fama and French (1992, 1995)) attribute the cause to unobserved risk factors and Lakonishok, Shleifer, and Vishny (1994) explain using the mispricing hypothesis. Nevertheless, our objective is to interpret the results to understand the preferences of the two institutional investors groups. The results shown in Table A2 suggests that both investor groups prefer firms with higher F-profitability scores. Despite, the previously documented poor performance of high BM firms, foreign investors show a significant preference for riskier firms. One potential explanation for this could be the momentum chasing behavior of foreign investors. The impressive recent stock market performance of the low BM stocks would have attracted the momentum chasing foreign investors, resulting in higher flows to these stocks. Alternatively, it would be likely that foreign investors are naively extrapolating the prospects of these firms using the non-financial disclosures garnered from other sources.

The results shown in Table A3 indicate that mutual funds show a significant and consistent preference for higher values for the profitability component of F score. However, foreign institutional investors seem to prefer firms with low consolidated F scores and low values for the risk component. Fama and French (1992, 1995)) argue that firms with high BM ratios are highly likely that they are in financial distress. Alternatively, Griffin and Lemon (2002), argue that the firms with high distress risk exhibit the most substantial return reversals around earnings announcements. The later could potentially explain the preference of foreign investors for low average F-score and F-risk score values for low valuation stocks.

Several previous studies have documented the institutional investor preference for large stocks (e.g., Dahlquist & Robertsson, 2001; Gompers & Metrick, 2001). Ferreira and Matos (2006), notes that size may be more important for international investors, because of their concerns over liquidity and transaction costs, particularly in emerging markets. Table A4 reports the preferences of the two-investor groups among the firms in the low market capitalization bucket. The results indicate that foreign investors significantly prefer risky firms and those with weaker fundamentals as reflected by the overall F score.

Among the high market capitalization firms, both types of investor categories have a significant positive bias for firms with a high value for the profitability component. Additionally, mutual funds show a preference for firms with higher overall F scores. Foreign investors seem to be indifferent on the risk component of the F score. This could be due to the relatively better information environments in bigger firms and the consequent reduction in information asymmetry related problems.

4. Concluding remarks

In this paper, we test the information content of Pitroski's F score and its components in determining the investment choices of foreign institutional investors and domestic mutual funds. In particular, we focus on the average values of F score and its components for high, low and medium ownership by institutional investors. The results of the unconditioned analysis indicate that overall F-score does not have significant discriminatory power in determining the choices of neither types of investor categories. However, the profitability and the risk components show significant

discriminatory power in determining the high and low ownership of both mutual funds and FIIs. Overall, both FIIs and MFs show a preference for riskier firms.

Conditioning on the BM ratios, we find that FIIs show a significant preference for riskier and more profitable firms among the glamour stocks (stocks with low BM ratios). MFs prefer firms with higher F-profitability scores and are indifferent on the risk metric. Among the high BM firms, MFs have significantly higher ownership in firms with higher profitability, whereas FIIs prefer firms with higher risk.

Further, conditioning on the market capitalization variable, we find that FIIs prefer firms with higher risk and lower overall F score in the low market capitalization bucket. In the high market capitalization bucket, we find that both FIIs and MFs significantly prefer firms with higher F—profitability scores. Moreover, MFs show a significant preference for firms with higher overall F score.

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Note
1. NSE—ISMR Report,2017 (page 84), https://www.nseindia.com/content/us/ismr_full2017.pdf.

Description of the Paper
The research reported in the paper titled "Financial Strength Information and Institutional Investor Demand: Evidence from India", exploits the relatively inferior information environments in emerging markets to investigate the preferences of mutual funds and foreign investors. The results indicate that foreign investors exhibit a risk seeking behavior and mutual funds show higher preference for profitability. The results would be useful for less informed investors such as individuals who tend to follow their more sophisticated counterparts, institutional investors. The findings would be useful for managements of firms in their pursuit to attract investors.

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Appendix

Table A1. (Overall results)

	Mutual Fund				FII			
Ownership	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**
High	5.89	3.2	0.98	1.7	5.81	3.18	0.97	1.65
Medium	5.83	3.06	1.01	1.75	5.87	3.06	1.01	1.79
Low	5.83	3	1.01	1.81	5.88	3.04	1.01	1.82
High-Low	0.06	0.2	−0.03	−0.11	−0.07	0.14	−0.04	−0.17
t-Statistics	−0.885	(8.408)***	0.896	3.037***	0.872	(5.045)***	0.889	4.094***

Table A2. Growth stocks (Glamour Stocks)

	Mutual Fund (Low BM)				*FII (Low BM)*			
Ownership	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**
High	6.05	3.38	1.02	1.63	6.01	3.36	1.02	1.62
Medium	5.8	3.11	0.99	1.69	5.82	3.18	0.96	1.67
Low	5.78	3.13	0.92	1.73	5.97	3.17	0.94	1.84
High-Low	0.27	0.25	0.1	−0.1	0.04	0.19	0.08	−0.22
t-Statistics	−1.53	(3.222)***	−1.185	1.121	−0.236	(2.325)***	−0.855	3.102***

Table A3. (Value stocks)

	Mutual Fund (High BM)				*FII (High BM)*			
Ownership	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**
High	5.94	3.22	1.03	1.68	5.78	3.12	1.03	1.62
Medium	5.82	3.08	1.03	1.7	5.9	3.15	1.03	1.72
Low	5.86	3.08	1.03	1.73	6.06	3.11	1.06	1.87
High-Low	0.08	0.14	0	−0.05	−0.28	0.01	−0.03	−0.25
t-Statistics	−0.744	(2.476)***	0.019	0.556	2.659***	−0.170	0.856	3.126***

Table A4. (Low market capitalization stocks)

	Mutual Fund (Low Market Capitalization)				*FII (Low Market Capitalization)*			
Ownership	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**
High	5.72	3.08	0.97	1.66	5.59	2.99	0.98	1.61
Medium	5.75	3.05	0.98	1.72	5.85	3.12	1.02	1.7
Low	5.8	3.1	1.01	1.68	5.85	3.07	1.02	1.75
High-Low	−0.08	−0.02	−0.04	−0.02	−0.26	−0.08	−0.04	−0.14
t-Statistics	0.555	0.353	0.53	0.326	2.311**	1.693	0.562	3.270***

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Table A5. (High market capitalization stocks)

	Mutual Fund (High Market Capitalization)				*FII (High Market Capitalization)*			
Ownership	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**	**F_Score**	**F_Profitability**	**F_Effiency**	**F_Risk**
High	6.03	3.43	0.98	1.61	5.99	3.4	0.98	1.59
Medium	5.74	3.13	1.02	1.58	5.82	3.23	0.97	1.61
Low	5.43	3.01	0.92	1.49	5.38	2.63	1.15	1.59
High-Low	0.6	0.42	0.06	0.12	0.61	0.77	−0.17	0
t-Statistics	(2.496)**	(3.064)***	−0.687	−1.075	−1.692	(3.45)***	1.78*	−0.055

Table A1 reports the average overall F-score, F-Profitability score, F-Efficiency score, and F-Risk score for stocks with "High", "Medium" and "Low" ownership by mutual funds and foreign institutional investors. F-score measures the financial strength of firms using nine binary signals derived from the financial statements. Tables A2 and A3 report the values for low and high boo-to-market stocks. For this purpose, we divide stocks into three categories using book-to-market ratios. Stocks with low book-to-market ratios are growth stocks and those with high book-to-market ratios are value stocks. Similarly, Tables A4 and A5 report the values for low and high market capitalization stocks(size). The bottom row of each table reports the t-statistic, computed from the time series of seventeen cross-sectional means of the null hypothesis that means do not differ across high and low institutional ownership firms. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels respectively.

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Table A6. Mean percentage ownership over time

Year	Mutual Funds	FII
2001	2.30	2.10
2002	2.20	0.97
2003	1.78	0.79
2004	1.66	1.07
2005	1.42	1.53
2006	1.57	2.36
2007	1.77	3.32
2008	1.81	3.70
2009	1.58	3.38
2010	1.41	3.00
2011	1.33	3.20
2012	1.18	3.01
2013	1.08	3.15
2014	0.91	3.11
2015	1.10	2.99
2016	1.33	3.05
2017	1.44	3.14

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Table A7. Mean percentage ownership over time and by market capitalization

Panel A: Mutual Funds

Year	High	Medium	Low	High-Low
2001	13.85	0.03	2.15	11.70
2002	5.37	3.66	3.18	2.19
2003	4.76	3.29	2.74	2.02
2004	4.64	3.19	2.17	2.47
2005	4.85	3.12	1.35	3.50
2006	5.37	4.01	1.30	4.07
2007	5.37	5.04	1.61	3.76
2008	5.58	4.67	1.25	4.33
2009	5.49	3.16	0.78	4.71
2010	5.40	2.92	0.67	4.73
2011	5.13	2.44	0.42	4.71
2012	4.34	2.09	0.31	4.03
2013	4.33	1.74	0.22	4.11
2014	3.77	1.48	0.20	3.57
2015	4.33	2.14	0.21	4.12
2016	5.03	2.67	0.34	4.69
2017	5.99	2.69	0.13	5.86

Panel A: Foreign Institutional Investors

Year	High	Medium	Low	High-Low
2001	6.22	0.13	0.17	6.05
2002	5.23	1.54	1.03	4.20
2003	4.69	1.11	0.38	4.31
2004	7.21	2.21	0.74	6.47
2005	9.67	2.90	0.85	8.82
2006	11.58	4.88	1.37	10.21
2007	12.92	6.58	2.04	10.88
2008	13.10	7.58	2.09	11.01
2009	12.19	5.61	1.80	10.39
2010	11.68	4.70	2.09	9.59
2011	12.12	4.87	1.64	10.48
2012	11.80	3.95	1.53	10.27
2013	12.16	3.72	1.87	10.29
2014	12.67	4.16	1.54	11.13
2015	12.86	3.46	1.83	11.03
2016	12.93	3.51	1.45	11.48
2017	13.69	3.92	1.40	12.29

Table A7 reports the year-wise average percentage ownership of mutual funds and foreign institutional investors in "high", "medium", and "low" market capitalization buckets

Table A8. Mean percentage ownership over time and by book to market value

Panel A: Mutual Funds

Year	High	Medium	Low	High-Low
2001	7.76	19.94	0.00	7.76
2002	5.39	3.37	3.54	1.85
2003	4.21	3.21	3.36	0.85
2004	4.35	3.21	2.37	1.98
2005	4.96	3.08	1.51	3.46
2006	5.44	4.24	1.60	3.84
2007	5.56	4.73	2.16	3.40
2008	5.43	4.33	2.02	3.41
2009	4.77	3.53	1.44	3.33
2010	4.49	3.37	1.42	3.07
2011	4.51	2.72	1.18	3.34
2012	3.46	2.67	0.90	2.56
2013	3.58	2.20	0.82	2.76
2014	3.30	1.75	0.76	2.54
2015	3.98	2.25	0.88	3.11
2016	4.78	2.87	0.94	3.84
2017	4.78	3.56	1.09	3.69

Panel A: Foreign Institutional Investors

Year	High	Medium	Low	High-Low
2001	3.30	9.14	0.00	3.30
2002	4.91	1.71	1.40	3.51
2003	4.45	1.15	0.66	3.79
2004	6.33	2.59	1.77	4.56
2005	9.21	3.36	1.64	7.57
2006	9.62	6.55	2.55	7.07
2007	10.77	7.01	4.42	6.35
2008	11.52	7.96	3.74	7.78
2009	10.93	6.00	3.15	7.78
2010	8.69	6.33	3.98	4.71
2011	9.51	6.99	3.08	6.43
2012	8.64	6.06	3.32	5.32
2013	9.30	5.64	3.16	6.14
2014	10.07	4.72	4.52	5.55
2015	10.09	5.27	3.38	6.71
2016	10.27	5.10	3.44	6.83
2017	9.92	6.17	3.81	6.11

Table A8 reports the year-wise average percentage ownership of mutual funds and foreign institutional investors in "high", "medium", and "low" book to market value buckets

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