Investment choices
of foreign and domestic institutional investors

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Abstract

This paper examines the preferences of foreign and dometic institutional investors in Indian stock markets. Foreign and domestic institutional investors both prefer larger, widely dispersed firms and do not chase returns. However, we find evidence of strong differences in the behaviour of foreign and domestic institutional investors. Foreign investors prefer to buy private, liquid, young and globally visible firms. In contrast, domesic investors prefer less liquid, older, highly leveraged firms with large fixed assets.

JEL Codes: G1, G15.
Keywords: Foreign institutional investors; domestic institutional investors; home bias.

Contents

1   Introduction

This paper examines the choices made by foreign and domestic institutional investors in the Indian stock market. The empirical evidence in the literature on the choices of institutional investors suggests that they prefer large, liquid, well performing firms. Some of the recent literature suggests that the preferences of foreign and domestic institutional investors are quite similar, but some differences have been found. The empirical literature on this topic is still evolving, with both country specific and multi-country studies contributing to the evidence. This paper contributes to this literature by examining evidence from shareholding patterns of foreign and domestic institutional investors in an emerging market economy, India.

Using a dataset about Swedish firms, Dahlquist and Robertsson (2001) found that there is an institutional, rather than a foreign investor, bias. Both foreign and domestic investors prefer large firms, with high market liquidity and better corporate governance. In contrast to the view that these preferences were due to the "foreign" nature of the investors, they find that the holdings of foreigners are similar to the holdings of domestic institutional investors.

In more recent work, Ferreira and Matos (2008) also find similarities in the preferences of foreign and domestic institutional investors in a dataset consisting primarily of developed countries. Both prefer firms with higher firm valuations, better operating performance, and lower capital expenditures.

The early empirical literature focussed on the preferences of foreign investors. Kang and Stulz (1997); Dahlquist and Robertsson (2001); Lin and Shiu (2003); Choe *et al.* (1999) for Japan, Sweden, Taiwan and Korea respectively, and more recently Kalev *et al.* (2008) and Liljeblom and Löflund (2005) for Finland, use firm-level information for shareholding patterns available in these countries to study investor choices. Comprehensive data about ownership structure for all countries is not publicly available. Ferreira and Matos (2008) approach the question using data from a subset of institutional investors. Their dataset consists of *investors* and the firms they invest in, for a multi-country database. For each country the data includes only firms in which a certain set of institutional investors has invested.

Our study contributes to the evolving literature by analysing foreign and domestic institutional investors in India. Detailed data on ownership structure is available in India. In our dataset, we observe the behaviour of *all* foreign and domestic institutional in India. This marks an improvement over the data that has been used in multi-country studies. As an example, the

dataset used by Ferreira and Matos (2008) is limited to those firms in which a certain set of institutional investors invests. In the case of India, for example, it contains data for the investments of 2 institutional investors in 2000. By 2005 this rose to 31 investors who held USD 21 billion worth of equity assets. Further, our analysis focuses on an emerging market economy where assymetric information can play a bigger role than in advanced market economies as local investor do not have barriers of distance, language or culture (Kalev *et al.*, 2008).

We broaden the scope of empirical evidence on shareholding patterns by constructing a fairly comprehensive dataset for India. We observe firms with and without institutional investors, and firms with and without foreign investment. This dataset has 847 companies in 2001 and 1546 in 2007. The dataset contains various measures of size, liquidity, returns, age, assets, stock market prices and exports and sales. The paper presents evidence about investment by foreign and domestic institutional investors in terms of the characteristics of the firms in which they invest.

Our results show that while both foreign and domestic institutional investors prefer larger, more widely held firms and do not chase returns, there are signficant differences in their choices. Foreign institutional investors prefer to invest in large, liquid firms. Domestic institutional investors, while showing a preference for larger firms, also invest in smaller firms and avoid liquid stocks.

However, we find strong evidence of differences between these two classes of institutional investors. We find that foreign investors prefer to buy stocks of more liquid, younger, private sector firms with global visibility. These characteristics do not appear to matter to domestic institutional investors. Domesic investors prefer older firms, with a large share of fixed assets and high leverage. Unlike foreign investors, they do not have a bias against public sector enterprises. This paper thus finds striking differences between the two kinds of institutional investors in their choice of firms. These results contrast with those found in the literature where the behaviour of institutional investors – whether foreign or domestic – was largely similar. This result supports the view that assymetric information may play a bigger role in the choices made by foreign investors in an emerging economy.

The remainder of this paper is organised as follows. In Section 2 we describe the firm level dataset. Section 3 presents broad empirical facts about ownership patterns. Section 4 discusses our econometric results. Section 5 concludes.

Table 1 Foreign and domestic ownership in the Indian stock market

| Year | Number of firms | | | Overall |
	Total	Non-zero FII	Non-zero DII	Market capitalisation (Bln. USD)
2001	847	323	768	108.5
2002	857	274	755	122.7
2003	897	251	772	118.9
2004	1015	372	845	253.0
2005	1252	556	1000	353.5
2006	1400	739	1100	641.6
2007	1546	844	1216	756.1

2 Data

The dataset that we utilise is based on the firm-level database maintained by Centre for Monitoring Indian Economy (CMIE). India has a long tradition of sound accounting standards. Tax authorities exert pressure on accurate information disclosure. Publicly traded corporations face pressures from public shareholders and the securities regulator. Owing to these factors, Indian firm level data is of a high quality by the standards of emerging markets. CMIE has a well developed 'normalisation' methodology which ensures inter-year and inter-firm comparability of accounting data.[1]

Data quality is highest for firms which are members of the CMIE COSPI stock market index. To match the stock market and ownership information with accounting data, we take values for 31st March, when the financial year ends.

We drop firm-years where sales, total assets or market value are below a million dollars, so as to eliminate the smallest firms. After these deletions, we have 1546 companies in our dataset in 2007. These companies have a market cap of USD 756 billion. Table 1 shows the number of companies in our sample and their market capitalisation in each year. The Indian market opened up to foreign institutional investment in 1993, but it was only after 2000 that there was significant foreign institutional investment in the Indian equity market. We, therefore, choose 2001 as a meaningful starting date of the dataset. There are a total of 7814 observations in the dataset.

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[1]This database has encouraged an emerging empirical literature. Examples of this literature include Khanna and Palepu (2000); Bertrand *et al.* (2002); Khanna and Palepu (1999); Ghemawat and Khanna (1998).

We use the following indicators to describe firm-specific characteristics.

1. *Market capitalisation (MKTCAP)* We measure size by the market capitalisation of the firm at year end, March 31 of the year.

2. *Gross value of assets (TA)* Size of the firm is also measured by the gross value of the firm's assets.

3. *Gross value added (GVA)* Another measure of size is the gross value added by the company during a year.

4. *Sales* Size of the firm is also measured by the value of its sales.

5. *Turnover ratio (TR)* The turnover ratio measures firm liquidity in the stock market. It is defined as ratio of the total value of stocks traded over a year to the market capitalisation of the firm.

6. *Returns* Stock market returns are defined as returns on the stock market in the last 12 months.

7. *Net profit margins (NPM)* One measure of the profitability of the firm is net profit margin. This is defined as the ratio of profits after taxes to sales.

8. *Return on assets (ROA)* Return on assets is another measure of the profitability of the firm. The return on assets is measured as profits after tax divided by total assets.

9. *Return on Equity (ROE)* Profitability can also be measured by the return on equity. This is defined as the ratio of profit after tax to net worth.

10. *Leverage* This is the the ratio of total assets to net worth.

11. *Exports to sales* This is a proxy for the visibility of a company in foreign markets. It is ratio of exports to sales.

12. *Tangibility* The ratio of gross fixed assets to total assets.

13. *Capital intensity* The ratio of gross value added to value of total assets.

14. *Age* Age of the firm is measured by its year of incorportation.

15. *Promoter share* Promoter share, or insider ownership, is sometimes used as a proxy for corporate governance. Firms with large promoter shares are expected to have poorer corporate governance. In the absence of any other data on corporate governance we use this proxy.

16. *Book to market* This is a measure of the stock market valuation of the firm. It is measured as the ratio of net worth to market capitalisation of the firm.

17. *Earnings by price(E/P)* This is another measure of the stock market valuation of the firm. It is measured as the ratio of profit after tax to the market capitalisation of the company.

18. *Yield* Yield is the ratio of dividends to market capitalisation.

19. *Public sector enterprise (PSU)*

    If the percentage in equity held by the central government in a company is greater then 25% it is classified as a public sector enterprise.

20. *Domestic Institutional Investors Share (DII)*

    This is the percentage in equity held by the institutional investors. It is the total of share held by mutual funds, insurance companies, banks and other domestic financial institutions.

21. *Foreign Institutional Investors Share (FII)*

    This is the percentage of equity in a company held by foreign institutions.

22. *Sales in value*

    Sales are the total value of sales of the firm.

3 Descriptive statistics

3.1 Are FII and DII alike?

At the outset, a null hypothesis that could be maintained is that domestic and foreign institutional are largely similar.

In order to explore this null hypothesis, Figure 1 shows a scatter plot of DII and FII ownership in 2007. The size of each dot is proportional to the log market capitalisation of the firm. A non-parameteric ('loess') relationship between the two variables is superposed.

Under the null hypothesis, the the ownership share of the two kinds of investors would lie on a 45 degree line. This null hypothesis appears to be strongly rejected by the data.

Figure 1 DII and FII ownership of firms in 2007

A scatter plot of DII and FII ownership of firms in 2007 is displayed. The size of the dots is proportional to log market capitalisation. A non-parametric ('loess') estimator of the relationship between the two is superposed.
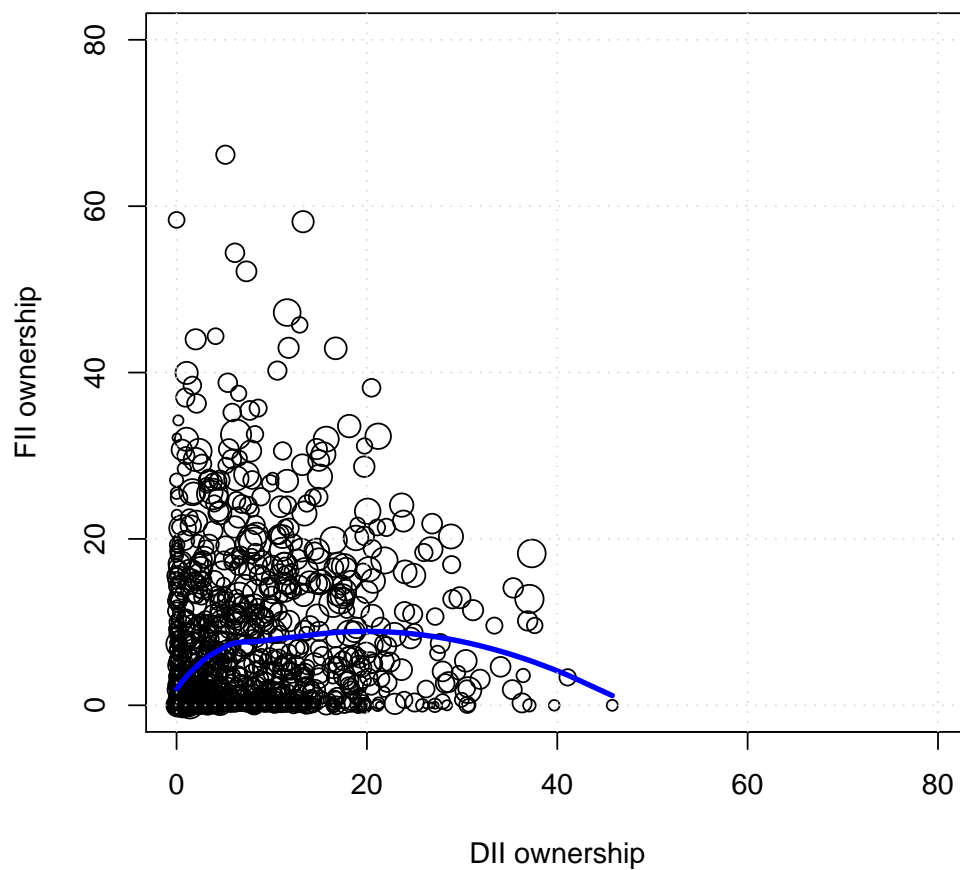
3.2 Firm characteristics and FII ownership

We present a preliminary analysis of the data seeking to explore univariate relationships between investors and firm characteristics. For each firm characteristic x of interest, the dataset is broken down into quintiles based on x, The median value of x and the median value of various institutional investor ownership measures, is obtained within each of these quintiles.

In addition, for each institutional ownership measure y of interest, a median regression of y on x is estimated, and used to compute predictions $\hat{y}$. The rank correlation between y and $\hat{y}$ is reported in the table.[2]

Table 2 analyses the relation between firm characteristics and foreign institutional ownership (FII) ownership. The table shows a strong relation between firm size and FII ownership. This is true whether size is measured by market capitalisation, gross value added, total assets or sales. The median value of FII ownership in the first three quintiles when size is measured by market capitalisation is zero. The fourth quintile has a median value of 0.45% FII ownership. The top quintile sees a median 7.28% FII ownership. The overall median ('*Overall*') market capitalisation is Rs 749.8 million. The overall median FII ownership is 0.01. There are 7814 observations covering 7 years. The rank correlation(Cor) between the predictions from the linear median regression is 0.65, indicating a strong bivariate relationship between FII ownership and firm size measured by market capitalisation. That FIIs prefer larger firms is consistent with the findings in the literature (Kang and Stulz, 1997; Dahlquist and Robertsson, 2001).

FIIs also appear to have a preference for firms with higher liquidity. The median value of FII ownership in the first two quintiles (the least liquid firms) is zero. The share of FII ownership increases as the liqudity of the firms increases. Again, this supports the findings in the empirical literature that finds the foreign institutional investors prefer more liquid firms.

Other characteristics that matter to foreign institutional investors, but do not appear to matter as much as size and liquidity are some of the financial characteristics and accounting measures. Among these, higher net profit margins, lower yields and lower book to market ratios appear to be preferred

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[2]Just as an ordinary regression predicts the mean, conditioning on a set of explanatory variables, a median regression predicts the median, conditioning on a set of explanatory variables. The estimates for a median regression correspond to minimising the sum of absolute residuals. This is less influenced by extreme observations when compared with minimising the sum of squared residuals(Koenker, 2005).

Table 2 Bivariate analysis of FII ownership

	Q1	Q2	Q3	Q4	Q5	Overall	Cor
FII ownership	0.00	0.00	0.00	0.45	7.28	0.01	0.65
MKTCAP	9.73	27.14	74.98	232.59	1527.45	74.98	
FII ownership	0.00	0.00	0.01	0.22	4.38	0.01	0.54
TA	43.05	100.83	206.80	439.97	1600.28	206.80	
FII ownership	0.00	0.00	0.00	0.21	5.22	0.01	0.55
GVA	7.39	18.11	36.31	80.19	280.17	36.29	
FII ownership	0.00	0.00	0.00	0.09	3.60	0.01	0.45
Sales	35.43	91.81	183.99	410.04	1281.84	183.99	
FII ownership	0.00	0.00	0.02	0.10	1.01	0.01	0.36
TR	2.44	14.38	35.89	79.18	238.23	35.89	
FII ownership	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Returns	−40.43	−8.91	25.08	80.28	223.50	25.08	
FII ownership	0.00	0.00	0.01	0.04	0.86	0.01	0.24
ROA	−0.01	0.02	0.05	0.08	0.14	0.05	
FII ownership	0.00	0.00	0.01	0.07	0.42	0.01	0.21
ROE	−1.66	6.55	12.21	18.83	30.64	12.21	
FII ownership	0.00	0.00	0.00	0.22	1.58	0.01	0.31
NPM	−1.48	2.41	4.88	8.60	18.00	4.88	
FII ownership	0.03	0.02	0.01	0.01	0.00	0.01	0.10
Leverage	1.30	1.84	2.37	3.12	4.78	2.37	
FII ownership	0.00	0.01	0.03	0.01	0.03	0.01	0.09
Exports to sales	0.00	1.32	7.07	20.99	68.08	7.07	
FII ownership	0.16	0.01	0.02	0.00	0.00	0.01	0.16
Tangibility	23.73	44.76	62.83	81.01	105.47	62.83	
FII ownership	0.00	0.01	0.00	0.01	0.05	0.01	0.06
Capital intensity	0.09	0.15	0.19	0.25	0.36	0.19	
FII ownership	0.00	0.00	0.01	0.01	0.05	0.01	0.03
Age	12.00	18.00	24.00	37.00	60.00	23.00	
FII ownership	0.24	0.02	0.01	0.00	0.00	0.01	0.21
Promoter share	29.71	43.83	52.97	63.16	74.98	52.96	
FII ownership	2.19	0.47	0.00	0.00	0.00	0.01	0.38
Book to mkt	0.18	0.47	0.89	1.62	3.77	0.89	
FII ownership	0.01	1.27	0.08	0.00	0.00	0.01	0.19
E/P	−0.04	0.05	0.09	0.15	0.31	0.09	
FII ownership	0.00	5.95	0.95	0.01	0.00	0.01	0.02
Yield	0.00	0.66	1.81	3.75	8.38	1.81	

by foreign investors, while stock market returns, earnings by price and age do not seem to matter.

3.3 Firm characteristics and DII ownership

Table 3 uses this identical strategy to report the empirical regularities about the behaviour of domestic institutional investors (DII). It shows that size, measured by market capitalisation, gross value added, total assets or sales matters. However, domestic institutional investors hold shares of even some of the smallest firms in this dataset. Further, we observe that liquidity of a firm does not matter in the preferences of domestic investors. While a median turnover ratio of the first quintile of 2.44% attracts a median DII share of 2.8 percent, a manyfold increase in the turnover ratio to 238.2% in the top quintile attracts a DII share of just 4.19%. This observation is in contrast to the mainstream result for developed countries where domestic and foreign institutional investors alike prefer liquid firms.

In contrast to FIIs, to whom age of a firm does not matter, DIIs appear to have a preference for older firms. The quintile with a median age of 12 years (the youngest firms) has a DII share of 1.9 percent. DII ownership rises steadily over the next few quintiles, and reaches a share of above 10 percent for the top quintile where the median age is 60 years.

Among the other firm characteristics, higher net profit margins, lower yields and lower book to market ratios appear to be preferred. Lower stock market returns and lower earnings by price are preferred.

4 Explaining ownership of foreign and domestic investors

A key feature of our dataset, as illustrated in Table 1 is the large number of firms with zero institutional ownership of both kinds. A natural modeling strategy for such a censoring mechanism is a Tobit model, as has been done by Claessens and Schmukler (2006); Dahlquist and Robertsson (2001); Lin and Shiu (2003). For an ownership measure y, the model consists of:

$$y^* = \beta' X + u \qquad u \sim N(0, \sigma^2) \tag{1}$$

Table 3 Bivariate analysis of DII ownership

	Q1	Q2	Q3	Q4	Q5	Overall	Cor
DII ownership	1.16	1.29	2.20	4.79	9.48	3.62	0.32
MKTCAP	9.73	27.14	74.98	232.59	1527.45	74.98	
DII ownership	0.21	1.08	3.49	6.77	10.70	3.62	0.49
TA	43.05	100.83	206.80	439.97	1600.28	206.80	
DII ownership	0.32	1.07	2.51	6.66	11.27	3.62	0.48
GVA	7.39	18.11	36.31	80.19	280.17	36.29	
DII ownership	0.50	1.17	2.97	6.27	10.91	3.62	0.45
Sales	35.43	91.81	183.99	410.04	1281.84	183.99	
DII ownership	2.80	3.53	3.33	4.11	4.19	3.62	0.04
TR	2.44	14.38	35.89	79.18	238.23	35.89	
DII ownership	4.45	4.47	4.04	3.08	2.28	3.56	0.10
Returns	-40.43	-8.91	25.08	80.28	223.50	25.08	
DII ownership	4.50	2.88	2.84	3.50	4.52	3.62	-0.03
ROA	-0.01	0.02	0.05	0.08	0.14	0.05	
DII ownership	4.15	3.02	2.88	3.59	4.61	3.62	0.03
ROE	-1.66	6.55	12.21	18.83	30.64	12.21	
DII ownership	4.06	2.29	2.96	4.69	4.25	3.62	-0.00
NPM	-1.48	2.41	4.88	8.60	18.00	4.88	
DII ownership	2.78	3.99	4.04	3.96	3.46	3.62	0.05
Leverage	1.30	1.84	2.37	3.12	4.78	2.37	
DII ownership	2.40	3.86	4.93	4.52	2.68	3.62	0.01
Exports to sales	0.00	1.32	7.07	20.99	68.08	7.07	
DII ownership	3.22	2.90	3.45	4.17	4.57	3.62	0.08
Tangibility	23.73	44.76	62.83	81.01	105.47	62.83	
DII ownership	3.09	3.50	3.96	3.64	3.90	3.62	-0.01
Capital intensity	0.09	0.15	0.19	0.25	0.36	0.19	
DII ownership	1.90	1.64	2.43	5.67	10.03	3.61	0.29
Age	12.00	18.00	24.00	37.00	60.00	23.00	
DII ownership	7.62	5.80	5.29	2.38	1.03	3.62	0.29
Promoter share	29.71	43.83	52.97	63.16	74.98	52.96	
DII ownership	5.46	3.82	2.15	2.57	4.55	3.62	-0.01
Book to Market	0.18	0.47	0.89	1.62	3.77	0.89	
DII ownership	3.96	5.07	3.83	2.69	2.58	3.62	0.10
E/P	-0.04	0.05	0.09	0.15	0.31	0.09	
DII ownership	2.57	5.10	4.93	3.55	3.50	3.62	0.08
Yield	0.00	0.66	1.81	3.75	8.38	1.81	

Table 4 Tobit model explaining FII and DII ownership

	FII ownership Estimate	FII ownership z value	DII ownership Estimate	DII ownership z value
Year fixed effect	Present		Present	
log(MKTCAP)	3.4697	48.06	1.7255	31.95
TR	0.0004	2.29	−0.0005	−2.96
Returns	0.0000	1.51	−0.0001	−1.10
Leverage	0.0027	0.23	0.0339	3.37
Promoter share	−0.1572	−24.01	−0.1815	−30.11
Exports to sales	0.0086	2.49	−0.0130	−4.52
Age	−0.0494	−10.37	0.1011	22.34
NPM	0.0017	9.73	−0.0008	−4.74
PSU dummy	−4.6937	−3.96	1.0425	0.81
Tangibility	−0.0180	−6.18	0.0349	11.71
Capital intensity	−1.9971	−2.66	−4.5083	−6.49
Book to market	0.1100	2.72	0.1289	2.19
Log(scale)	1.9665	97.11	2.0487	127.30

$$y = \begin{cases} 0 & \text{if } y^* \leq 0 \\ y^* & \text{if } y^* > 0 \end{cases} \tag{2}$$

Here X is a vector of firm characteristics which induces a latent variable y^* through coefficients β with a normally distributed error. If $y^* > 0$, the observed ownership is y^*, else we observe 0. We estimate this model by maximum likelihood. Accounting data is known to exhibit heteroscedasticity. In order to make robust inferences, we use heteroscedasticity consistent standard errors in the estimation procedures for the Tobit model. These are based on 'sandwich' standard errors developed in Zeileis (2004a,b).

We present the results for Tobit regressions for the dataset that consists of 7814 observations across 7 years. Year fixed effects are included, for the years from 2001 to 2007, so as to control for macroeconomic factors. The dependent variables in the regressions are the shares of ownership.

Table 4 juxtaposes the results from estimating two separate Tobit models explaining FII and DII ownership. The key variables which play a role in these models are: size measured by log market capitalisation, liquidity measured by the turnover ratio, leverage, share of promoters in ownership, exports to sales, tangibility of firm assets measured by the ratio of gross fixed assets to total assets, a dummy for public sector enterprises, current operating performance measured by net profit margin, valuation measured by the book to market ratio and the capital intensity.

4.1 Key findings

Our results show a very strong preference by FIIs for larger firms. DIIs also prefer larger firms but their preference is not as strong as that of FIIs. While both coefficients have very high t statistics, the FII coefficient is 3.4697 while the DII coefficient is 1.7255. This is consistent with the bivariate analysis presented earlier where we found that the median FII holding of small firms was zero while that of DIIs was non-zero.

FIIs have a preference for liquid firms seen in the positive and significant coefficient for the turnover ratio. DIIs in contrast have a *negative* and statistically significant coefficient for liquidity, suggesting that DIIs actually have a preference for illiquid firms.

Neither FIIs or DIIs are returns chasers; the coefficient of lagged 12 month returns is not significant.

While FIIs do not care about leverage, we find that DIIs have a strong preference for more leveraged firms.

Both FIIs and DIIs have a preference for more widely held firms. This result supports the findings in the literture.

When the exports to sales ratio of a firm rises, it makes the firm more attractive to foreign investors. On the other hand, DIIs prefer firms that sell more in the domestic market.

FIIs prefer younger firms, while DIIs have a strong preference for older firms.

FIIs prefer firms with good operating performance. In contrast, DII prefer firms with poorer current preformance.

FIIs have a bias aginst public sector enterprises, with the PSU dummy showing a negative significant coefficient. For DIIs, the null hypothesis of no effect cannot be rejected.

Among the other results, we find that FIIs prefer firms with higher book to market value. In this regression we also find that both FIIs and DIIs have a preference for lower capital intensity.

Our results for FIIs and DIIs with respect to size support the results in the literature such as in Kang and Stulz (1997) and Dahlquist and Robertsson (2001) who also find that larger firms are preferred.

In the literature there appears to be an agreement on the evidence that there is home bias due to assymetric information (Merton, 1987; Kang and Stulz,

1997). Foreigners prefer firms that they know more about. More knowledge about a firm reduces asymmetric information and home bias (Ammer *et al.*, 2004; Ahearne *et al.*, 2004; Aggarwal *et al.*, 2005). Dahlquist and Robertsson (2001) find that global visibility which is proxied by measures such as large size, higher exports to sales and listing abroad makes firms more attractive to foreign investors. In recent work, Ferreira and Matos (2008) find that foreign investors have a greater preference for firms which are cross-listed in the US or members of the Morgan Stanley Capital International World Index. The impact of cross-listing is also supported by Holland and Warnock (2003) for Chilean firms, though they find that this effect is only temporary. Lin and Shiu (2003) find that Taiwanese firms that are better known globally and have larger exports to sales ratios are more attractive to foreign investors. In our dataset the ratio of exports to sales is a proxy for the visibility of firms to foreign investors. Our results also support the evidence found in the empirical literature that foreign investors prefer firms with higher exports to sales ratio. We also find that domestic investors do not favour firms with global visibility. This also agrees with the evidence in the literature.

The evidence on stock market returns supports the findings of Dahlquist and Robertsson (2001) and Gompers and Metrick (2001) who find that institutional investors prefer firms that have had relatively low returns during the previous year.

In summary, our key results are that both foreign and domestic institutional investors prefer larger, widely dispersed firms and do not chase returns. However, foreign investors prefer to buy stocks of private sector, liquid, young and globally visible firms that show good operating performance. In contrast, domesic investors prefer less liquid, older, highly leveraged firms with large fixed assets. These results suggest that assymetric information may play a bigger role in the case of an emerging market leading to more dissimilarities between foreign and domestic investors than observed in developed countries.

4.2   Sensitivity tests and model specification

We now undertake an analysis of the robustness of these results. This section performs a sensitivity analysis in terms of the alternative measures of size, accounting performance and valuation. Further, we change the model specification by including industry dummies into the model.

Table 5 Sensitivity test: Alternative measures of size

Size measure	FII ownership		DII ownership	
	Estimate	z value	Estimate	z value
Log market capitalisation	3.47	48.06	1.73	31.95
Log gross value added	3.94	42.70	2.38	35.36
Log total assets	4.00	42.53	2.43	36.11
Log sales	3.39	37.19	2.23	33.63

Table 6 Sensitivity test: Alternative measures of operating performance

Operating performance measure	FII ownership		DII ownership	
	Estimate	z value	Estimate	z value
Net profit margin	0.00	9.73	−0.00	−4.74
Return on assets	−0.67	−0.57	−4.99	−4.62
Return on equity	−0.00	−0.85	0.00	0.26

4.2.1 Sensitivity test: size

In the above anaysis we have used the log of market capitalisation as a measure of size. This is a key variable in our results, as FIIs have a large response to size while the response of DIIs is about half the size of the response of FIIs. We consider three other measures of size: gross value added (GVA), total assets (TA) and sales.

As Table 5 shows when size is measured by logs of total assets, gross value added or sales the response of DIIs to firm size is still smaller than that of FIIs. An analysis of the detailed estimation results (available from the authors on request) finds that none of the other key results change across these four alternative measures of size.

4.2.2 Sensitivity test: operating performance

Alternative measures of operating performance include the net profit margin (NPM), return on assets (ROA) and return on equity (ROE). In the baseline estimates, we had measured performance by net profit margin and found that while FIIs are strongly influenced by the net profit margin, DIIs prefer firms with a *lower* net profit margin.

When performance is measured by return on assets (Table 6), we find that while the coefficient for FIIs is zero, DIIs continue to dislike firms with better current performance. In the case of return on equity neither of the regression

Table 7 Sensitivity test: Alternative valuation measures

	FII ownership		DII ownership	
Valuation measure	Estimate	z value	Estimate	z value
Book to market	0.11	2.72	0.13	2.19
Earnings by price	−0.63	−3.67	−0.66	−3.79
Dividend yield	−0.02	−0.72	−0.07	−3.05

results have coefficients that are sigificant.

These results thus suggest that FIIs either prefer better performing companies or are indifferent, while DIIs are indifferent or prefer companies that are not performing well in the current year.

4.2.3   Sensitivity test: valuation

The baseline results (Table 4) suggest that both kinds of institutional investors are value investors, who favour firms with a high book to market ratio. However, these results are not robust to modification of the valuation measure employed. As Table 7 shows, both kinds of investors prefer firms with lower earnings-by-price ratios which suggests that they are growth investors. And, when we measure valuation by dividend yield, both do not like higher yield. Thus, there is no conclusive evidence to support the view that FIIs and DIIs are value investors or growth investors.

4.2.4   Sensitivity test: model specification

In another sensitivity test, we introduce industry fixed effects into the model specification to check if our key results hold. Fourteen major industry groups based on the CMIE classification are included in the model. Table 8 describes the number of firms in each industry classification by year.

Table 9 shows that after the inclusion of industry dummies, our key results do not change.

Across all the sensitivity tests described above, the key results from the baseline regression results do not change when measures of size, valuation, performance or industry dummies are included[3].

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[3]The results for all the regresssions are available from the authors on request.

Table 8 Number of firms in each major industry by year

	2001	2002	2003	2004	2005	2006	2007	Sum
Chemicals	197	199	216	239	284	307	322	1764
Diversified	18	17	19	19	21	23	23	140
Electricity	5	5	5	6	6	10	11	48
Food	61	64	68	80	100	105	119	597
Machinery	126	129	125	133	171	183	193	1060
Metals	53	59	62	80	106	121	135	616
Mining	8	9	11	12	11	12	13	76
MiscManuf	26	31	28	36	52	62	70	305
NonMetalMin	54	57	59	62	70	74	79	455
Serv.Construction	28	30	28	38	41	47	62	274
Serv.Finance	4	4	7	7	7	7	13	49
Serv.IT	68	58	58	60	77	93	104	518
Serv.Other	65	63	67	73	99	122	147	636
Textiles	73	72	82	98	119	143	157	744
TransportEq	61	60	62	72	88	91	98	532
Sum	847	857	897	1015	1252	1400	1546	7814

5   Conclusions and future work

In this paper we set out to learn about the preferences of foreign and domestic institutional investors in the Indian stock market. We contribute to the evolving literature in this field by focusing on an emerging market economy and examining firm level shareholding data for companies listed in the Indian stock market.

International evidence on the question of differences and similarities among different kinds of institutional investors is limited and there is some evidence of suggest that institutional investors do not all behave similarly. We draw upon the existing literature to identify areas where the behaviour is expected to be similar or dissimilar.

We find that both foreign and domestic institutional investors prefer larger firms. Both kinds of investors do not chase returns and prefer more widely dispersed firms. At the same time, we find strong evidence about differences between the two. While foreign investors prefer to buy shares of private, liquid, younger, globally visible firms, domestic institutional investors prefer to buy stocks of older companies with large fixed assets. Liquidity or global visibility or public ownership do not appear to matter to them. We thus find that in India, an emerging market, there are significant differences in investment choices of foreign and domestic investors. This is in contrast to the empirical

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Table 9 Sensitivity analysis: Controlling for industries

	FII ownership		DII ownership	
	Estimate	z value	Estimate	z value
Industry: Diversified	0.4876	0.57	2.7053	2.92
Industry: Electricity	−2.4749	−2.55	1.2744	1.30
Industry: Food	0.2657	0.63	−0.6269	−1.81
Industry: Machinery	1.4937	5.05	1.0928	3.68
Industry: Metals	0.5125	1.30	0.6582	1.76
Industry: Mining	−5.2176	−5.47	−0.8006	−0.65
Industry: MiscManuf	0.0458	0.10	1.8502	3.49
Industry: NonMetalMin	1.2527	3.11	1.0395	2.48
Industry: Serv.Construction	2.4477	4.15	−1.6748	−3.30
Industry: Serv.Finance	−1.4171	−1.37	−0.9503	−1.11
Industry: Serv.IT	2.1677	3.95	−2.4412	−5.71
Industry: Serv.Other	1.8637	4.79	−0.0320	−0.08
Industry: Textiles	1.0194	2.63	1.0647	2.76
Industry: Transport Eq	2.1181	5.42	−0.2204	−0.63
TR	0.0003	1.79	−0.0004	−2.67
Returns	0.0000	1.24	−0.0001	−0.92
Leverage	0.0005	0.05	0.0317	3.15
Promoter share	−0.1550	−23.86	−0.1865	−30.73
Exports to sales	0.0074	2.04	−0.0085	−2.80
Tangibility	−0.0137	−4.35	0.0290	9.37
Age	−0.0454	−9.49	0.0944	20.60
PSU dummy	−4.2892	−3.83	1.1175	0.87
Capital intensity	−3.1835	−3.99	−2.8697	−3.90
log(MKTCAP)	3.5056	48.05	1.7569	31.55
NPM	0.0019	10.08	−0.0008	−5.09
Book to market	0.1207	2.92	0.1202	2.08
Log(scale)	1.9561	96.68	2.0408	126.37

evidence in the literature that pertains mainly to developed countries and finds more homogenous behaviour across institutional investors.

This paper deals with the two broad categories of foreign and domestic investors, but does not look at the different categories of domestic institutional investors such as mutual funds, banks or insurance agencies. This is a topic for further research. The next level of issues that arise are about the impact of foreign versus domestic institutional investors on firm performance. In countries which find that there is little difference betwen foreign and domestic institutional preferences, this task is more straight-forward. In the case of India there would need to be a careful analysis on the impact of firm performance controlling for the differences in the firm characteristics as well as handling the issues of endogeneity that may arise if investors choose better performing firms. These issues are left to future research.

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