

# What makes home bias abate?

## The evolution of foreign ownership of Indian firms

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### Abstract

Between 2003 and 2007, the value of shares of Indian companies held by foreigners went up by roughly 13 times. This paper seeks to explain this event. A simple decomposition of changes in the value of foreign shareholding suggests a negative contribution owing to changes in insider shareholding (which actually went up), with the bulk of the change being contributed by the rise in Indian market capitalisation and the rise in foreign ownership as a fraction of outside shareholding. The exploration of foreign ownership as a fraction of outside shareholding leads to an emphasis on the set of zero-foreign-ownership companies. A selectivity model is estimated, where firms first graduate to be in the investment universe of foreign investors, and then achieve substantial foreign ownership. After controlling for firm characteristics in the context of this model, year fixed effects are largely stable. This suggests that the reduction in home bias was rooted in altered *firm* characteristics.

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# 1 Introduction

India's engagement with international equity investment began with a country fund in 1986, followed by the 'foreign institutional investor' framework initiated in 1992. From 1992 till 2001, substantial changes were made to the system of capital controls and to the institutional mechanisms of the equity market.

In March 2001, the market value of shares owned by all foreign investors stood at \$9.67 billion. This was an insignificant number whether compared with the corporate financial structure of local firms, the pool of global equity capital, of Indian macroeconomics. This number roughly stagnated till March 2003.

In March 2007, the market value of shares owned by foreign investors had risen to \$124 billion. By this time, it was a more important part of the financing of local firms. With this mass of invested capital, India was significant in the eyes of global financial firms. The capital flows associated with portfolio adjustments, and incremental decision making, on this stock of invested assets had become more important in thinking about Indian macroeconomics.

This event - an increase of roughly 13 times in 4 years - - demands explanation. It involved a significant reduction in home bias: The ICAPM weight for India in the world portfolio was 11.8 times larger than the actual weight in 2001. By 2007, it was 6.47 times larger.

Why did foreign ownership of Indian shares grow so dramatically in a short period? In this paper, we harness a unique firm-level dataset to shed light on this question. A pessimistic view of foreign capital sees portfolio flows as being driven by a country catching the fancy of global capital. This view emphasises *country* factors. In this perspective, investing in India became fashionable, leading to large capital inflows. Conversely, it is to be expected that a significant reversal of capital flows if India becomes unfashionable. Alternatively, if this change in foreign ownership reflects fundamental changes in India, then this could be interpreted as a successful engagement with globalisation.

Three classes of explanations could play a role in the change in value of foreign ownership of Indian shares. Changes in the Indian market capitalisation could induce a bigger dollar value of foreign ownership, if foreign investors retain erstwhile levels of home bias. Changes in insider control could modify the space available for foreign investors, as emphasised by Stulz (2005). Finally, the fraction of outside shareholding held by foreigners could change, reflecting characteristics of the country or of the firms.

We offer a simple accounting framework to assess the importance of these three effects which shape the change in the dollar value of foreign ownership of shares. In the years 2004 and 2005, where the bulk of the increase in foreign ownership took place, the 'Stulz effect' was a negative contribution, because insider shareholding actually went up. The bulk of the change was caused by larger market capitalisation of Indian equities, and by a bigger fraction of outside shareholding being purchased by foreigners.

Our exploration has, hence, to be focused on understanding the change in the fraction of outside shareholding held by foreigners. We approach this using firm-level data. The null hypothesis of foreigners only buying Indian index portfolios is not supported by the data. There is strong heterogeneity in foreign ownership of different companies.

We argue that an important part of the explanation lies in the phenomenon of zero foreign ownership. A large number of companies have zero foreign ownership. There appears to be a process where firms graduate into the investment universe of foreign investors, and then achieve a significant fraction of outside shareholding in foreign hands. Across consecutive years, there is an 86% chance that a zero foreign ownership firms stays in that state, and a 87% chance that a non-zero foreign ownership firm stays in that state. Changes in firms with zero foreign ownership are important in explaining the Indian experience: In 2003, 68% of the market value had non-zero foreign ownership while in 2005, this had risen to 85%.

We utilise a Heckman model of a selectivity process, which determines whether firms are part of the investment universe of foreign investors, followed by an OLS model which determines the fraction of outside shareholding that is purchased by foreigners assuming there is non-zero ownership.

For the selectivity process, we find that public sector firms are disfavoured, firms with high stock market returns in the last year are disfavoured, stock market liquidity matters, size matters and high E/P firms are disfavoured.

In the OLS equation explaining the fraction of outside shareholding purchased by foreigners, there are nonlinear effects in size and outside ownership, and high leverage depresses foreign ownership.

The most interesting feature of the results lies in year dummies on the OLS equation. These measure the year-to-year changes in foreign ownership by year after controlling for firm characteristics. The year dummies are broadly stable across all the five years. This suggests that after controlling for firm characteristics, there are no large country effects left. In other words, it was modified *firm* characteristics that led to a sharp transformation of foreign ownership of Indian firms.

## 2 The evolution of foreign ownership

As Table 1 shows, over the six-year period under examination, dramatic changes took place in foreign ownership of Indian equities. While the Indian equity market capitalisation went up by 7.04 times, the market value of foreign ownership went up by 12.84 times.

Table 2 interprets these changes from a home bias perspective. The share of Indian equity market capitalisation in world equity market capitalisation went up from 0.42% to 1.53% over this period. The actual ownership of Indian equities by foreigners went up from 0.04%

**Table 1** Expansion of foreign ownership of Indian equities

Parameter	March 2001	March 2007	Rise
	(Billion dollars)		(times)
CMIE COSPI market capitalisation	114.1	803.1	7.04
Foreign ownership	9.67	124.2	12.8

**Table 2** Change in home bias against India

	March 2001	March 2007
ICAPM weight of India	0.42	1.53
Actual weight of India	0.04	0.24
Home bias metrics		
1 - (actual/ICAPM)	0.92	0.85
ICAPM /actual	11.8	6.47

to 0.24%. While the normative share of India in the world portfolio went up by 3.64 times, the actual share of India went up by 6.64 times. As a consequence, home bias against India declined. The ICAPM weight went from being 11.8 times bigger than the actual in March 2001, to being 6.47 times bigger in March 2007.

In March 2007 also, there was a substantial home bias against India. However, home bias had come down by a significant extent over this period.

### 3 Explaining changes in home bias

It is possible to identify three sources of change in the value of shares owned by foreign investors:

**Change in market capitalisation** The simplest source of change in the value of shares owned by foreigners lies in the change in the Indian market capitalisation. Table 1 shows a seven-fold rise in the Indian equity market capitalisation over this six year period. The weight of India in the ICAPM portfolio would, then, be inevitably higher.

As a first approximation, we may treat world market capitalisation as unchanging. In this case, an increase in the value of foreign shareownership would be induced when domestic market capitalisation rises if foreign investors merely maintained their erstwhile levels of home bias.

**Change in insider ownership** Stulz (2005) has emphasised that insider ownership limits the extent to which home bias can go down. If the ICAPM weight of India is 1.5%, then foreigners should own 97.5% of Indian firms. However, if insiders find it optimal to hold substantial stakes in the firms that they control, then the elimination of

home bias is mechanically infeasible. Stulz argues that the elimination of home bias is hence infeasible until the institutional environment of a country enables a shift towards dispersed ownership.

Kho *et al.* (2006) examine the empirical evidence from two points of view. First, using aggregate data, they find that the home bias of US investors declined the most from 1994 to 2004 for countries which (a) had lower insider shareholding in 1994 and (b) had a decline in insider shareholding from 1994 to 2004. Further, using firm-level data for Korea, they document how a sharp reduction in home bias was critically enabled by a class of firms where the insider shareholding declined sharply.

Researchers examining the ownership structure of Indian firms find that a substantial extent of insider shareholding is optimal (Selarka, 2005). This suggests that the issues of optimal insider ownership, and corporate governance, are likely to play an integral role in understanding home bias.

**Change in fraction of outside shareholding owned by foreigners** The third aspect lies in changes in the fraction of outside shareholding that is in the hands of foreigners.<sup>1</sup> This may respond to traditional issues in the home bias literature, including (a) Capital controls, (b) Hedging motives, (c) Informational asymmetries and (d) Behavioural biases.

In order to obtain a quantitative sense of the role played by these three aspects of the problem, we obtain a decomposition of  $F$ , the value of foreign ownership of shares in an emerging market. Let

$$F = g(1 - p)M \quad (1)$$

where  $M$  is the market capitalisation of the country;  $p$  is the insider shareholding and  $g$  is the fraction of outsider shareholding that is held by foreigners. Total differentiation yields:

$$\Delta F \approx M(1 - p)\Delta g + g(1 - p)\Delta M - gM\Delta p \quad (2)$$

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<sup>1</sup>In order to illustrate the difference between foreign ownership as a fraction of the total as opposed to foreign ownership as a fraction of outside shareholding, we show two Indian software companies, Infosys and Wipro:

	Wipro		Infosys	
	2000	2005	2000	2005
Percent to total	2.33	3.80	28.89	42.87
Percent to outsider shareholding	14.53	22.52	40.78	54.79

Foreign ownership of Infosys (42.87% in 2005) appears enormously bigger than that in Wipro (3.8%). However, when foreign ownership is expressed as a proportion of outside shareholding, the difference between the two firms is much smaller (54.79% against 22.52%), since the insider shareholding of Wipro is much larger.

**Table 3** Features of Indian firms

Year	For. own. (fraction of outsider)	Insider own. (fraction of total)	Market capn. (Trn. Rs.)	Foreign market capn. (Trn. Rs.)
2001	0.1526	0.4421	5.32	0.45
2002	0.1452	0.4403	6.41	0.52
2003	0.1195	0.4209	6.30	0.43
2004	0.1923	0.4740	11.90	1.20
2005	0.2328	0.5217	16.40	1.82

The first term,  $M(1-p)\Delta g$ , can be interpreted as the change in  $F$  associated with a change in  $g$  holding other things constant. This corresponds to traditional home bias explanations.

The second term,  $g(1-p)\Delta M$ , measures the rise in foreign ownership owing to a higher  $M$ , holding other sources of home bias unchanged. It reflects foreign investors preserving their ownership of  $g(1-p)$  on a larger  $M$ , reflecting ICAPM-style reasoning while ignoring changes in world market capitalisation.

The third term,  $-gM\Delta p$ , may be termed a ‘Stulz effect’, reflecting the drop in foreign ownership associated with a rise in insider ownership  $p$ , while holding other things constant.

This decomposition is not an economic model explaining the dynamics of  $F$ . Rather, it represents an attempt at accounting for the changes in  $F$  and obtaining a quantitative sense of the importance of the three forces at work.

Table 3 summarises facts about Indian firms from this point of view. From March 2001 to March 2005, the overall market capitalisation of Indian firms went up from Rs.5.32 trillion to Rs.16.4 trillion. The value of foreign ownership went up from Rs.0.45 trillion to Rs.1.82 trillion. Foreign ownership rose from 11.95% of the outside shareholding (worth Rs.0.43 trillion) in 2003 to 23.28% of outside shareholding (worth Rs.1.82 trillion) in 2005.

Over this period, the insider ownership went *up* from 44.21% to 52.17%. The Stulz effect was playing against foreign shareholding.<sup>2</sup> At the same time, the fraction of outside shareholding owned by foreigners went up significantly, from 15.26% to 23.28%. This suggests that the traditional sources of home bias were being alleviated over this period.

Table 4 applies the decomposition of  $\Delta F$  in equation 2 to interpreting the Indian experience. Because  $g$ ,  $p$  and  $M$  undergo large changes, the calculus-based formula is only an approximation. In the table, the three components are shown, as is the discrepancy against the observed  $\Delta F$ . In 2004, the discrepancy is 17%, but apart from that, it attains small values of 6.4%, 2.1% and 2.2%.

<sup>2</sup>A decomposition by size (i.e. market capitalisation) shows that insider shareholding went up in all size deciles between 2001 and 2005, except for a slight decline in the 8th decile. In 2001, five out of the ten size deciles had insider ownership of below 50%. In 2005, all size deciles were above 50%.

**Table 4** Decomposition of changes in value of foreign ownership

(Billion rupees)					
Year	Components			Discrepancy	$\Delta F$
	Traditional	ICAPM	Stulz		
2002	-26.62	89.33	1.68	-4.44	68.83
2003	-93.86	-7.72	14.59	-1.82	-85.18
2004	455.62	566.03	-121.36	132.86	767.41
2005	317.43	500.86	-182.30	14.11	621.88

As an example, in 2005,  $F$  rose by Rs.621.88 billion, and the discrepancy was small. This rise in  $F$  reflects a decline of Rs.182 billion owing to the Stulz effect, for insider shareholding went *up* in 2005. There was a rise of Rs.501 billion owing to the rise in the market capitalisation of the Indian equity market. Finally, there was a rise of Rs.317 billion owing to an increase in the fraction of outside shareholding held by foreigners. Re-expressing the components as percent of  $\Delta F$ , the contributions were: +51% owing to traditional home bias explanations; +81% owing to ICAPM explanations and -29% owing to the Stulz effect.

This decomposition shows that particularly in 2004 and 2005, the years when  $\Delta F$  showed strong positive values, the Stulz effect has been weighing against  $\Delta F$  to the extent of Rs.121 billion and Rs.182 billion. The sources of significant change in these two years consist of ICAPM-explanations and traditional sources of home bias.

## 4 Fraction of outside shareholding held by foreigners

Thus, the most important element of understanding the sharp rise in foreign ownership of Indian shares lies in the sharp change in  $g$ , the proportion of outside shareholding held by foreigners. This dropped from 15.26% in 2001 to 11.95% in 2003 but rose sharply to 23.28% in 2005.

The simplest  $H_0$  that can be posed is that foreign investors, as a class, are index investors. In this world, foreign investors only do country-picking, and country characteristics are all that shape home bias. Under  $H_0$ , there should be no cross-sectional variation in foreign ownership of Indian firms. This null is strongly rejected by the evidence. Some firms have very high FII ownership, and a large number of firms have zero FII ownership. Foreign investors only invest in some firms, and there is large heterogeneity in the fraction of the shares that are bought by foreign investors.

This motivates a quest for an examination of the cross-sectional characteristics of firms, which explains the variation in foreign ownership. The unit of observation in traditional discussions about home bias has been the country. However, understanding why some

**Table 5** Counting firms with non-zero foreign ownership

Year	Zero	Nonzero	Total
2001	670	398	1068
2002	733	358	1091
2003	768	338	1106
2004	663	459	1122
2005	522	636	1158
Sums	3356	2189	5545

**Table 6** Size of firms with non-zero foreign ownership

Year	Non-zero	Zero	Total	Share
	Market capitalisation (Rs. Trn.)			(%)
2001	4.18	1.13	5.32	78.57
2002	4.73	1.68	6.41	73.70
2003	4.31	1.99	6.30	68.37
2004	9.61	2.28	11.90	80.77
2005	13.87	2.52	16.40	84.56

firms are able to have substantial foreign shareholding while others do not could give us new insights into home bias. Such results can also be useful in doing normative corporate finance, in addressing the question of an Indian firm which seeks to obtain greater foreign shareholding.

#### 4.1 The phenomenon of zero foreign ownership

In the literature, there is evidence of a large number of firms who are unable to internationalise (Claessens and Schmukler, 2006). In our dataset, the median firm has foreign ownership of 0.002%. If we think in terms of  $F = g(1 - p)M$  at the firm level, changes in insider shareholding  $p$  or market capitalisation  $M$  do not affect foreign investment in the country  $F$  when  $g \approx 0$ . In other words, when  $g = 0$  in the decomposition of  $\Delta F$  in equation 2, the ICAPM effect and the Stulz effect cease to operate.

In order to explore this phenomenon, we define a discrete variable with two cases: zero versus non-zero foreign ownership. The ‘zero’ case covers foreign ownership of below 0.05% of the outside shareholding.

Table 5 counts firms across the years, focusing on how many firms achieved non-zero foreign investment. Summing across years, 3,356 firm-years out of 5,545 firm-years had zero foreign ownership. Going by years, there was a sharp upsurge in foreign ownership going from 338 firms with non-zero foreign ownership in 2003 to 636 in 2005.

Table 6 describes the market capitalisation of the firms that fall into zero versus non-zero

**Table 7** Quartiles by size and liquidity

	0-0.045	0.045-0.18	0.18-0.65	0.65-	Sum
0.3-16.9	672	367	163	73	1275
16.9-55.5	350	391	343	244	1328
55.5-205	185	324	395	407	1311
205-	108	232	413	590	1343
Sum	1315	1314	1314	1314	5257

categories. This also shows a sharp change, where firms with non-zero foreign ownership grew from 68.37% of the overall market capitalisation in 2003 to 84.56% in 2005.

## 4.2 Role of size and liquidity

Size and liquidity are well known to affect the decision making of institutional investors, which require a certain minimum transaction size in order to justify the fixed costs of information processing, and liquidity required to obtain adequate execution costs when implementing these minimum transaction sizes. We use the “turnover ratio”, the latest one-years trading volume divided by the latest market value, as a metric of liquidity.

Table 7 shows the joint distribution of size and liquidity quartiles. The lowest size quartile has market value from Rs.0.3 crore to Rs.16.9 crore. The lowest liquidity quartile has a turnover ratio from 0 till 0.045. The table shows that while size and liquidity are correlated, there is significant off-diagonal mass.

In the case of size, liquidity and outside shareholding, a considerable nonlinearity of response is expected. We use orthogonal polynomials to model this nonlinearity.

Some preliminary evidence on the interplay of size and liquidity in influencing foreign ownership is shown in Table 8. Bigger firms and more liquid stocks are likely to attract greater FII investment; however, there is considerable off-diagonal mass in both tables. These tables use a discrete classification of foreign ownership with the following categories: foreign ownership of over 5% is termed ‘high’, “medium” foreign ownership is between 1% and 5%, “low” foreign ownership is between 0.05% and 1%, ‘zero’ foreign ownership is below 0.05%.

## 4.3 Explaining the fraction of outside shareholding owned by FIIs

Using data for all firms for all years, the transition matrix for firms achieving non-zero foreign ownership is estimated to be:

**Table 8** Variation of foreign ownership by size and liquidity quartiles

	Size quartiles				
	Q1	Q2	Q3	Q4	Sum
Zero	1165	1021	796	280	3262
Low	108	171	242	159	680
Medium	25	67	138	218	448
High	66	104	183	706	1059
Sum	1364	1363	1359	1363	5449

	Liquidity quartiles				
	Q1	Q2	Q3	Q4	Sum
Zero	1128	874	678	409	3089
Low	77	175	191	236	679
Medium	24	81	139	194	438
High	86	182	306	475	1049
Sum	1315	1312	1314	1314	5255

	Zero	Non-zero
Zero	0.8599	0.1401
Non-zero	0.1255	0.8744

There is strong on-diagonal mass in this transition probability matrix. Firms with zero foreign investment have a 85.99% probability of staying there. Once firms graduate to having foreign shareholding, there is an 87.44% chance of staying there. This suggests that a subset of Indian firms are the investment universe for foreign investors. Once a firm graduates into this investment universe, foreign investors choose what fraction of outside shareholding they seek to own.

Given the the large number of zeroes in FII ownership, and the importance of this phenomenon in inducing a change in foreign ownership across the years of interest, the modeling framework needs to integrally express these ideas. This would require first modeling entry of a firm into the FII investment universe, and then modeling the proportion of outside shareholding of the firm that is bought by FIIs.

This could be done using a Tobit model, as has been done by Claessens and Schmukler (2006). However, the distinction between a selectivity equation and a propensity equation could be an important aspect of FII ownership of firms. It could be the case that firms of certain characteristics jump to non-zero FII ownership, and then a different model induces the size of FII ownership once this threshold has been crossed. In order to capture such effects, if they should be present, we use a Tobit-2, or Heckman selectivity model:

$$y^* = \beta'X + e_1 \quad (3)$$

**Table 9** Parameter estimates

	Foreign II		Domestic II	
	Coef.	<i>t</i>	Coef.	<i>t</i>
<b>Probit</b>				
Intercept	-2.0289	-31.23	0.2815	4.15
is.SOE	-0.5812	-5.06	0.5858	2.44
1-year lagged returns	-0.0007	-3.94	-0.0011	-6.10
Poly(turnover ratio, 1)	17.8548	11.43	-2.1724	-1.02
Poly(turnover ratio, 2)	-8.4001	-5.29	-0.5654	-0.28
Log market cap.	0.4379	29.41	0.2569	14.21
E/P	-0.2624	-6.27	-0.4059	-7.13
<b>OLS</b>				
2001	11.0598	8.12	22.0609	32.06
2002	10.6447	7.46	21.2883	30.58
2003	10.0244	7.29	21.2472	30.31
2004	11.8753	8.88	16.0666	22.43
2005	11.8191	9.02	11.7231	15.92
Poly(Outside, 1)	-22.5563	-1.08	13.8626	0.71
Poly(Outside, 2)	-60.2356	-2.84	-60.8253	-3.09
Poly(Outside, 3)	24.3799	1.16	-178.3963	-9.39
Poly(Log mktcap, 1)	151.9899	3.20	381.4702	17.01
Poly(Log mktcap, 2)	236.7690	9.48	-18.3270	-0.94
Poly(Log mktcap, 3)	-47.9569	-2.49	-104.7732	-5.43
Debt/equity ratio	-0.3831	-2.04	1.5036	8.78
$\sigma$	12.4025	52.39	17.6565	83.08
$\rho$	-0.2175	-2.44	-0.2679	-4.78

$$y = 1 \quad \text{if } y^* > 0 \quad (4)$$

$$g = \gamma'W + e_2 \quad \text{if } y = 1 \quad (5)$$

$$\begin{pmatrix} e_1 \\ e_2 \end{pmatrix} \sim N \left( \begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma_1^2 & \rho\sigma_1\sigma_2 \\ \rho\sigma_1\sigma_2 & \sigma_2^2 \end{bmatrix} \right) \quad (6)$$

This model allows us to identify selectivity effects ( $X$  and  $\beta$ ) based on a probit model about firms where FIIs have non-zero investment. We also understand ( $W$  and  $\gamma$ ) what shapes the size of FII investment in the firm, given that the firm has been selected.

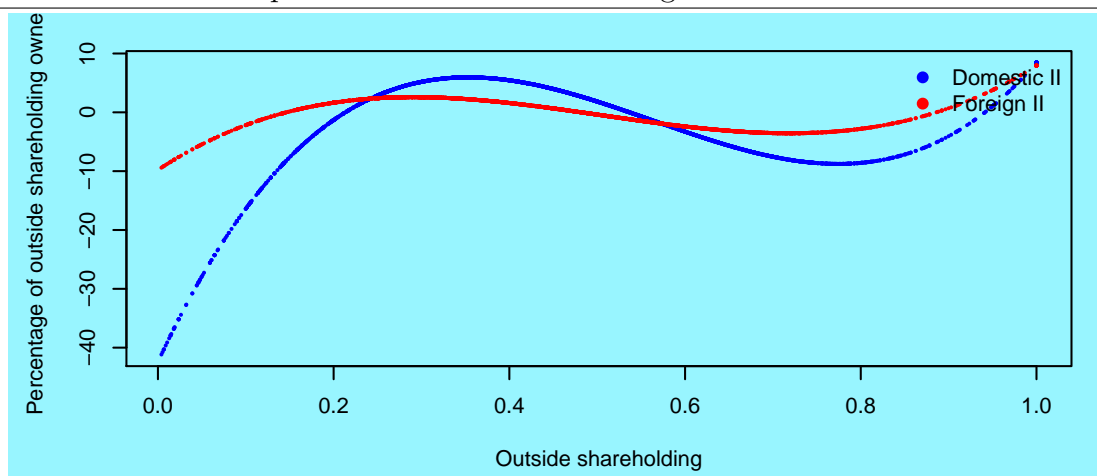
In order to identify the unique features of *foreign* institutional investors, we estimate the identical model specification for *domestic* institutional investors. The differences between the two sets of estimates will help us understand the unique characteristics of foreign institutional investors.

The FIML parameter estimates are shown in Table 9. The results clearly indicate that there are differences between selectivity and propensity. The estimated  $\rho$  is statistically significant, confirming that selectivity effects are present. Exclusion restrictions are satisfied by differences in explanatory variables (e.g. liquidity), by differences in nonlinearity

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**Figure 1** Nonlinear response to outside shareholding

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of response (e.g. log market capitalisation is present on the probit but there is a cubic in log market capitalisation on the OLS) and through identification off the nonlinearity of the tail of the normal distribution.

A dummy variable for public sector companies (SOE) shows that it is harder for a SOE to get non-zero FII shareholding. But once a SOE crosses the threshold, FIIs treat it no different in the choice of how much to invest. There is a striking difference between the behaviour of FIIs and DIIs, where the latter have an almost-identical positive coefficient for SOEs.

Both FIIs and DIIs are averse to accepting stocks with high lagged one-year returns into their investment universe. This suggests that both kinds of institutional investors play a certain stabilising role, by engaging in negative feedback trading. FIIs care strongly about stock market liquidity, as measured by the turnover ratio. Remarkably enough, both coefficients in the quadratic on turnover ratio are insignificant for DIIs.

In order to investigate biases in favour of growth or value stocks, we explored  $E/P$  and the dividend yield as explanatory variables. Growth stocks are those with a low  $E/P$  and high dividend yield. In recent work, Sabharwal and Crack (2005) find that growth beats value in Indian data over the 1990-2004 period.

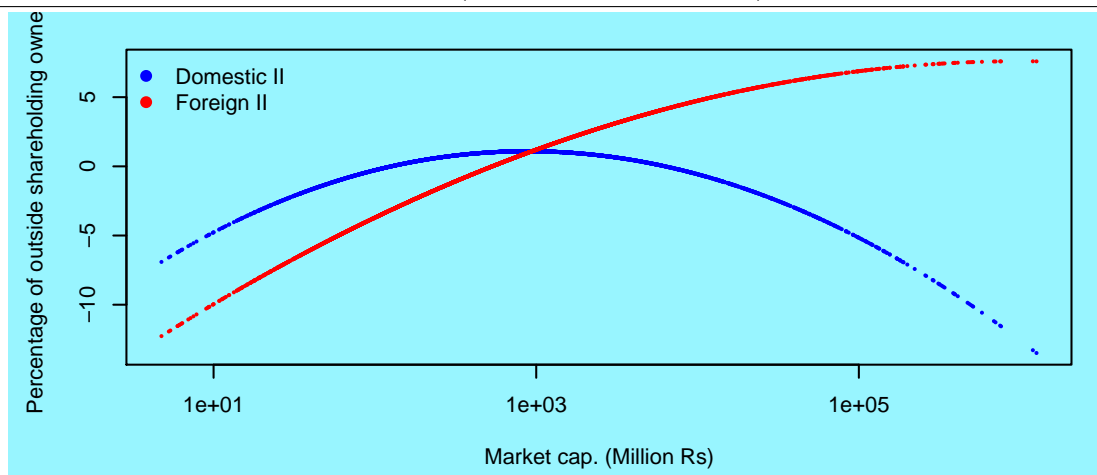
The estimates show that both FIIs and DIIs hold lower proportions of the outside shareholding of value stocks, with a negative sign on  $E/P$ . This effect is more pronounced for DIIs. This constitutes another channel through which insider shareholding affects home bias, in addition to the mechanical effect of higher insider shareholding leaving fewer shares available that foreigners could buy.

Turning to the OLS equation, the two main effects are nonlinear relationships in size and outside shareholding. These relationships are depicted graphically in Figure 1 and 2.

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**Figure 2** Nonlinear response to size (market capitalisation)

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In the case of outside shareholding, DIIs strongly back away from investing in a firm where the outside shareholding is below roughly 15%. In contrast, FIIs appear to be more willing to invest in such firms.

In the case of size, FIIs appear to monotonically buy bigger stakes in bigger companies. Going from the smallest to the biggest firms in the dataset appears to account for a 20 percentage point increase in the percentage of outside shareholding held by FIIs. A remarkable feature here is the difference when compared with DIIs, who seem to be averse to investing in the largest companies.

Finally, the results suggest that FIIs favour low leverage, while DIIs favour high leverage. This may reflect differences in the ability of these two classes of investors in responding to bankruptcy events.

In a similar study in Sweden, Dahlquist and Robertsson (2001) find that foreign and domestic institutional investors are alike in their behaviour. They suggest that the only important difference is that between *institutional investors* and individuals. However, working with Indian data, we do find that foreign institutional investors differ strongly from domestic institutional investors.

The most interesting estimates pertain to the year-fixed-effects. These parameters identify the role of country effects after controlling for firm effects. We find that the country effects actually went against India from 2001 to 2003, with a decline from 11.0598% ownership by FIIs to 10.0244%. From 2003 onwards, there was a recovery to 11.8191% ownership. Overall, there is a very small change from 2001 to 2005: from an FII ownership of 11.0598% of the outside shareholding of Indian firms in 2001 to 11.8191% in 2005.

This suggests that when we seek to explain the large rise in the value of FII ownership of Indian equities from 2001 to 2005, the dominant factor explaining this change was improvements in the characteristics of Indian firms, in the dimensions of size, liquidity,

outside shareholding and the other explanatory variables seen in Table 9.

## 5 Conclusion

Why did the value of shares owned by foreigners in India rise by roughly 13 times in 4 years? Our examination of the evidence suggests a multi-step answer.

1. *Stulz effect*: The Stulz (2005) argument suggests that alleviating home bias requires that insiders have to reduce their shareholding. In the events described in this paper, this effect was playing in the opposite direction. Insiders significantly increased their ownership in 2004 and 2005, thus reducing the space available for foreigners.
2. *A decomposition of changes in  $F$* : A decomposition of changes in  $F$ , the value of foreign shareholding, suggests that the change in 2005 was made up of -29% owing to the ‘Stulz effect’, +81% owing to increased market capitalisation of local firms and +51% owing to a higher fraction of outside shareholding being purchased by foreigners.
3. *The phenomenon of zero-foreign-ownership firms*: An examination of outside shareholding held by foreigners uncovers an important phenomenon of zero foreign shareholding in many firms. Further, there was a substantial decline in this problem between 2003 and 2005.
4. *A Heckman-style model*: Hence, we propose a two-stage model, where firms first graduate into the investment universe of foreign investors. Public ownership (-), lagged returns (-), a nonlinear response to stock market liquidity, size (+) and E/P (-) play a role in determining which firms make it into the non-zero group.

An OLS model explains foreign ownership within this group utilising leverage (-), a nonlinear response in size, and a nonlinear response in outside shareholding.

5. *Firm characteristics, not country characteristics*: After controlling for these firm characteristics, year fixed effects on the OLS equation exhibit little year-to-year fluctuation. This suggests that the surge of foreign investment into India was largely induced by modified firm characteristics, and not a change in sentiment about India as a whole.

## A Appendix: The Indian institutional setting

Multi-country studies that study the question of stability of foreign capital flows in developing have to control for the fact that developing countries often have poorly developed financial and legal systems. India constitutes an interesting experiment where capital account convertibility was introduced for foreign institutional investors on the equity market, in a sophisticated institutional setting by the standards of developing countries. In this section, we describe the institutional environment of the Indian equity market, and the easing of capital controls which made access to this market possible for foreign investors.

### A.1 Equity markets

#### A.1.1 Securities market reforms

India embarked on a major program of modifying incentives and institutions on the securities markets in the 1990s (Shah and Thomas, 2000; Thomas, 2006). This involved a new securities regulator (SEBI), and a new set of securities trading institutions (NSE, NSCC and NSDL). These institutions innovated on the market design, introducing all the elements of world class securities infrastructure: demutualisation of the exchange (1993), electronic limit order book market (1994), elimination of entry barriers into intermediation (1994), nationwide access (1994), novation at the clearing corporation (1996), dematerialised settlement (1996), equity derivatives trading (2000-2001) and T+3 and then T+2 rolling settlement (2001, 2002).

This reforms program had a profound impact upon transactions costs. It helped foster IPOs and the growth of market capitalisation, and foreign investment. It also eliminated the rationale for offshore issuance as a mechanism to disintermediate an inefficient domestic market.

In the process of institution building on the securities markets, India harnessed the scale economies associated with a large number of listed companies and a large number of active speculators. The two stock markets in India - NSE and BSE - are ranked 3rd and 5th in the world by the number of transactions. These economies of scale in India were a sharp contrast with the difficulties faced by many small countries in building liquid securities markets.

Through these reforms, the equity market has developed a sophisticated ‘ecosystem’ comprising:

- A professional private equity and venture capital industry for incubating firms;
- An effective IPO market, where firms go public for the first time;
- A remarkably liquid secondary market;

**Table 10** Mean transaction size on the equity market (in rupees)

	2002	2003	2004	2005
NSE spot	26,703	26,993	27,716	24,293
NSE derivatives	300,334	425,077	488,790	501,946

**Table 11** FII turnover on the equity market

	(Trillion rupees)			
	2002	2003	2004	2005
Total turnover	26.07	55.15	86.29	120.32
Institutions	1.13	2.56	5.47	12.36
Of which, FII	0.54	1.58	5.03	9.79

- Stock market indexes and index funds;
- Equity derivatives based on both index and individual stock underlyings. By late 2007, the daily turnover of equity derivatives was at notional values of roughly \$15 billion a day.

### A.1.2 Broad-based stock market with speculative price discovery

We may usefully classify the participants in the equity market as being domestic institutional investors (DIIs), foreign institutional investors (FIIs) and non-institutional participants. The term “retail investors” is often used in India to convey non-institutional participants. However, there is actually a wide range of players under this category, including proprietary trading by securities firms, and agency structures for portfolio management that are similar to hedge funds.

An outstanding feature of the equity market is domination by these retail participants (in this sense). Table 10 shows the mean transaction size on the spot and derivatives market.<sup>3</sup> These show remarkably small values. Translating into USD at the 2005 exchange rate of Rs.44 per USD, the 2005 values stand at a mean transaction size on the equity spot market of \$552 and a mean transaction size on the equity derivatives market of \$11,407. These suggest a large number of small transactions, as opposed to the large transactions that would be associated with institutional trades.

Foreign institutional investors (FIIs) form a subset of total institutional turnover. Table 11 shows the role of FIIs in the equity market, summing across spot and derivatives.<sup>4</sup> In 2005,

<sup>3</sup>Source: Table 4.9 from *Securities Markets*, Chapter 4, *Economic Survey*, Ministry of Finance, February 2006.

<sup>4</sup>There is a difficulty in measurement which needs to be addressed in obtaining comparable data. Turnover data is reported “one-way”: when 1 share is sold, there is one buyer and one seller, and a turnover of 1 share is reported. In contrast, institutional and FII turnover is reported “two-way” : when

this shows that institutional turnover accounted for roughly 10% of total turnover. This is a small value by international standards. FII turnover stood at just 8.1%. This suggests that while FIIs are an important part of the equity market ‘ecosystem’, their transactions are as yet a small part of the equity market.

## A.2 Asymmetric information

In a rational world, decisions about including securities from a given country into global portfolios should be based on the improvements in diversification obtained therein. At the same time, a strong problem that is well known in the literature is that of the “home bias”, where individual and institutional portfolios tend to hold higher weights of local country securities. In the literature, home bias is believed to be related to informational asymmetries and transactions costs. For example, Portes and Rey (2001) find that the geography of information – rather than the quest for efficient portfolios through diversification – dominates patterns of cross-border equity flows. Other constraints include size, liquidity and corporate governance. India offers a relatively benign environment on these issues.

**Size:** India is a large economy, with a strong set of domestic firms in place by the 1990s when portfolio flows commenced. A steady flow of startups and IPOs has fueled a large domestic corporate sector. In October 2007, the market capitalisation of the equity market was \$1.6 trillion.

**Information:** On the issues of informational asymmetries and transactions costs, India has certain strengths:

- India’s extensive use of English, and the extensive presence of individuals of Indian origin in global finance companies, has helped reduce the informational asymmetry faced by foreign investors.
- The political attributes of an open democracy have implied that there is lively debate and discussion within the country about data and public policy, thus reducing the possibility of fabricated data about the country or about firms being given to foreign investors.
- There is a century-old tradition of law, accounting, and stock market trading with extensive participation by domestic households. This implied that many issues about law, information disclosure and corporate governance, which are important to foreign investors, are broadly in place in India.

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one FII buys 1 share, it is reported as 1 share. In order to make the two data sources comparable, turnover is converted into “two-way” by doubling it. Hence, while the table shows the turnover of the Indian equity spot+derivatives market at Rs.120 trillion in 2005, this is actually a number of Rs.60 trillion (or almost 200% of GDP) if measured in the conventional one-way manner.

- Familiarity with India amongst global finance companies was further heightened from the late 1990s onwards, when most major global finance companies started moving parts of their production process to India, including areas such as call centres, accounting, back office processing, research, and software development.

### A.3 Easing capital controls

For many decades, India followed highly autarkic policies. ‘Foreign institutional investors’ (FIIs) were given permissions to participate on the Indian market on 14 September 1992. Over the years, this has evolved into a fairly open capital account for stock market investment in equity instruments by FIIs. These economic agents are able to bring capital in and out of the country, hedge currency exposures using the currency forward market, and trade on the equity derivatives market. By default, the ownership of all FIIs put together in a firm is capped at 24%, but the firm can raise this till 98%. Any one FII is blocked from owning more than 10% of any one firm. A foreign investor is permitted to either become an FII or open a ‘sub-account’ with another FII, through which investment in India is channeled.

Under the Indian policy framework, entities eligible to become FIIs have an essentially open capital account, while being required to suffer overhead costs of registration and reporting in India. There are two kinds of entities who do not trade in the Indian market through the FII framework: those that are ineligible and those which find the overhead costs unacceptable. In order to overcome these constraints, an OTC derivatives market has sprung up for access products called ‘participatory notes’. In this market, eligible FIIs sell call options or linear exposures to others. In early 2006, roughly half of the outstanding FII investment into India had come through access products sold by 17 out of the 733 registered FIIs. The rise of access products underlines the extent to which India’s FII framework implies that there is *de facto* capital account convertibility when it comes to equity investment.

#### A.3.1 Depository receipts

In many developing countries, ADR or GDR issuance is one response of firms facing a weak domestic financial system. In the early 1990s, when portfolio flows into India commenced, the market design was inadequate both in terms of the high standards of foreign investors for an efficient market design, and in terms of the physical capacity to settle using paper-based share certificates. In late 1993, there was a crisis of settlement with truckloads of share certificates being moved across Bombay.

As a response to these weaknesses, many domestic firms chose to disintermediate the domestic securities markets, and engage in offshore issuance through American Depositary Receipts (ADR) or Global Depositary Receipts (GDR) markets. This allowed these firms

**Table 12** GDR/ADR issuance

		(million USD)	
Year	Inflows (US \$ million)		
1992-93	240	1997-98	645
1993-94	1,520	1998-99	270
1994-95	2,082	1999-00	768
1995-96	683	2000-01	831
1996-97	1,366	2001-02	477
		2002-03	600
		2003-04	459
		2004-05	613

to exploit the superior market design which was available outside in London or New York. From 1993 to 1995, a substantial volume of GDR and ADR issuance took place.

However, from 1995 onwards, the market design in the domestic market started falling into place. In October 1995, the new electronic exchange, NSE, became the biggest in the country. By end-1996, the new clearing corporation and depository were both in place. These developments improved the viability of domestic trading when compared with the GDR / ADR trading venues. In addition, securities issued outside the country did suffer from poor liquidity owing to the lack of widespread trading interest and incompatible time zone. Liquidity on the DR market for many securities tended to fade away after issuance date, as some investors defected from the DR by converting into the underlying shares, and then using the services of the domestic market.

As a consequence, after an early period of a high level of issuance, GDR/ADR issuance has been below \$1 billion from 1997-98 onwards. The stagnation of the volume of DR issuance, measured in nominal USD, is particularly striking considering that the market capitalisation of the relatively liquid firms rose by a factor of five in the period from 1997 to 2005.<sup>5</sup> The domestic equity market now dominates trading, and the dominant mechanism for financial globalisation is foreign investment on the domestic equity market.

## A.4 Some international comparisons

Few developing countries have been able to create such a rich ecosystem, with an interplay between foreign institutional investors, domestic institutional investors and households. Some cross-country evidence is found in Huang (2006), which reports survey evidence about the extent to which firms perceive that financing is a constraint in their growth. This uses data for the World Business Environment Survey (WBES), conducted by the

<sup>5</sup>In the period after 2003, it appears that some Indian ADRs on NYSE and NASDAQ have attained significant liquidity. In the future, this could induce new kinds of behaviour on the part of firms, when compared with the highly limited role of DRs seen in Table 12.

World Bank in 1999 and 2000. This worldwide survey offers data for 188 firms in India and 101 firms in China on the perception of firms. Firms were asked (Question 38) *Please judge on a four-point scale how problematic are the following factors for the operation and growth of your business.* “General financing constraint” (GFC) is offered as one of twelve constraints. The four-point scale runs from 1 (no constraint) to 4 (a major obstacle). The results show that two-thirds of Chinese firms give a score of 4, while only one-fourth of Indian firms report a score of 4. The difference between countries continues to obtain after controlling for a variety of firm characteristics.

Another area where an international comparison between India and China in the area of finance is readily achieved is the extent to which stock price movements are synchronous with the stock market index. As argued by Morck *et al.* (2000), high levels of market model  $R^2$  are identified with poor corporate governance, poor information disclosure and weak minority investor protection. They find that China has a synchronicity score of 0.8, compared with India at 0.695 and the US at 0.579. This places India roughly midway between China and the US.

An integral part of a well-functioning equity market is the issue of corporate governance, which encourages investment by minority shareholders. The size of the Indian equity market and the participation by a broad range of minority shareholders - households, domestic institutions, foreign institutional investors - has helped induce significant policy activism on improving corporate governance (Sarkar and Sarkar, 2000). India appears to have done better than some other emerging markets on the quality of corporate governance. In December 2005, CLSA Asia-Pacific Markets and Asian Corporate Governance Association put out a scorecard with their subjective assessment about the quality of corporate governance in Asia, based on five areas: rules and regulations, enforcement, political and regulatory environment, international accounting and auditing standards and, “a nation’s corporate governance culture”. The scores, out of a maximum of 100, were: Singapore (70), Hong Kong (69), India (61), Malaysia (56), Taiwan (52), South Korea (50), Thailand (50), Philippines (46), China (44), Indonesia (37). This shows India lagging behind Singapore and Hong Kong, but doing better than many other Asian countries.

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