What makes home bias abate?
The evolution of foreign ownership of Indian firms

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The big facts

1986	First country fund
1992	‘FII’ framework
2001	Reforms of capital controls and equity market institutions largely complete.
2003	Foreign ownership of shares $\approx$ \$10 billion
2007	Foreign ownership of shares $\approx$ \$124 billion

Why?

Home bias perspective

	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

Potential explanations

- Did India become fashionable?
- Did the firms achieve characteristics that are conducive to internationalisation of liabilities?

Part I

Sources of change

Three sources of change

- Indian market capitalisation goes up, while foreigners preserve their ownership of Indian shares. (“ICAPM effect”)
- Changes in insider ownership - for foreigners to buy shares, insiders (“promoters”) have to reduce ownership. (“Stulz effect”).
- Traditional sources of home bias - information asymmetries, liquidity, etc.

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p is insider shareholding
g is fraction of outsider shareholding with foreigners
F is dollar value of foreign shareholding.

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$M(1-p)\Delta g$	Traditional home bias explanations
$g(1-p)\Delta M$	Response to bigger M
$-gM\Delta p$	Stulz effect.

Indian experience

Year	For. own. (fraction of outsider)	Insider own. (fraction of total)	Market capn. (Trn. Rs.)	For. mktcap. (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**

Decomposition of ΔF

(Billion rupees)

	Components				
Year	Traditional	ICAPM	Stulz	Discrepancy	ΔF
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

Implications for our exploration

- The massive jump from 2003 to 2006 was not caused by a ‘Stulz effect’ – if anything this was playing *against* a rise in foreign ownership.
- Roughly half of the story lies in a bigger g - a bigger fraction of outside shareholding being purchased by foreigners.
- We must explain why g changed.

Part II

Explaining changes in the fraction of outside shareholding held by foreigners, utilising firm-level data

Cross-sectional variation

- If foreigners were country-picking, they would buy index portfolios
- g would be the same across firms
- The data vehemently disagrees.
- There is massive firm-variation in g
- Foreigners are very picky about what firms they invest in.

The zero-foreign-ownership phenomenon

- Suppose g is zero
- In $F = g(1 - p)M$, changes in p or M stop mattering as long as the firm is not even off the starting line.
- The ICAPM effect and the Stulz effect are not operative as long as $g \approx 0$.

We define 'zero foreign ownership' companies as those with $g < 0.05$.

Number of firms

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

Market capitalisation of zero-ownership firms

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**

Transition probabilities between zero and non-zero foreign ownership

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

Our story

1. Firms must have certain characteristics in order to internationalise shareholding
2. There is a selectivity process which determines which firms make it into the investment universe of foreign investors
3. Once a firm is in this universe, foreign investors choose g, the fraction of outside shareholding that they buy.

A Tobit-2 or Heckman-style model.

$$
\begin{aligned}
y^* &= \beta' X + e_1 \\
y &= 1 \qquad \text{if} \quad y^* > 0 \\
g &= \gamma' W + e_2 \qquad \text{if} \quad y = 1 \\
\begin{pmatrix} e_1 \\ e_2 \end{pmatrix} &\sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma_1^2 & \rho\sigma_1\sigma_2 \\ \rho\sigma_1\sigma_2 & \sigma_2^2 \end{bmatrix} \right)
\end{aligned}
$$

Setting up the model

- Model nonlinear response in size and liquidity using orthogonal polynominals
- Estimation by MLE
- Identical model for both foreign institutional investors and domestic institutional investors.

What firms make it?

	Foreign II		Domestic II	
	Coef.	*t*	Coef.	*t*
Intercept	-2.0289	-31.23	0.2815	4.15
is.SOE	-0.5812	-5.06	0.5858	2.44
Lagged returns	-0.0007	-3.94	-0.0011	-6.10
Poly(turn. ratio, 1)	17.8548	11.43	-2.1724	-1.02
Poly(turn. 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

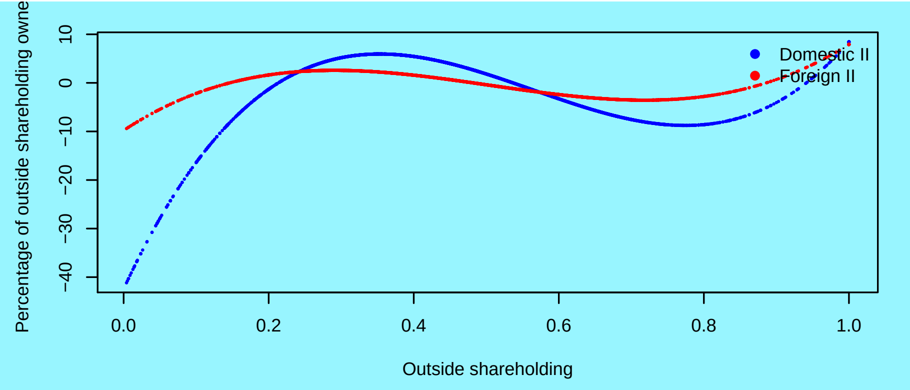
How much shareholding?

	Foreign II		Domestic II	
	Coef.	*t*	Coef.	*t*
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(Out., 1)	-22.5563	-1.08	13.8626	0.71
Poly(Out., 2)	-60.2356	-2.84	-60.8253	-3.09
Poly(Out., 3)	24.3799	1.16	-178.3963	-9.39
Poly(Lmkt., 1)	151.9899	3.20	381.4702	17.01
Poly(Lmkt., 2)	236.7690	9.48	-18.3270	-0.94
Poly(Lmkt., 3)	-47.9569	-2.49	-104.7732	-5.43
Debt/equity	-0.3831	-2.04	1.5036	8.78
σ	12.4025	52.39	17.6565	83.08

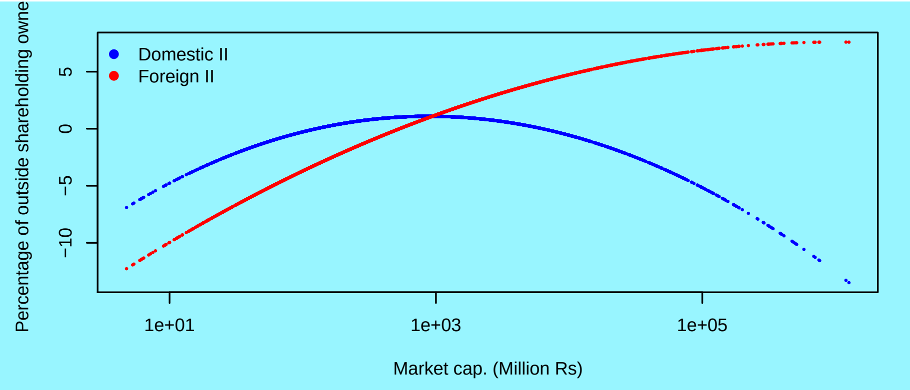
Key findings

- The selectivity process emphasises: SOE, contrarian investment, liquidity, size, E/P.
- There are selectivity effects for both foreign and domestic institutional investors.
- g is influenced by : Nonlinear response to outside shareholding, nonlinear response to size, leverage.
- Foreign institutional investors think very differently from domestic institutional investors. (Differs from Dahlquist & Robertsson, 2001).

Nonlinearity in outside shareholding



Nonlinearity in size



What changed?

- A major factor influencing the phenomenon of interest was the rise in g from 11.95% in 2003 to 23.28% in 2005.
- After controlling for firm characteristics, the year dummies show: 10.02 in 2003 and 11.82 in 2006.
- The bulk of the change in g is explained by changes in firm characteristics.

Summary

Why did the F rise by roughly 13 times in 4 years?

1. *Stulz effect:* was *exacerbating* home bias.
2. *A decomposition of changes in F*: The change in 2005 was: -29% the 'Stulz effect', +81% the increased market capitalisation of local firms, +51% a bigger g.
3. *The phenomenon of zero-foreign-ownership firms.* There was a substantial decline in this problem between 2003 and 2005.
4. *A Heckman-style model:* Model selectivity and propensity using firm characteristics.
5. *Firm characteristics, not country characteristics:* After controlling for these firm characteristics, year fixed effects have little year-to-year fluctuation.

The surge of foreign investment into India was largely about modified firm characteristics.

Thank you.