DOMESTIC INVESTMENT BY FIRMS THAT EXPAND OVERSEAS: THE INDIAN EXPERIENCE

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1. Introduction

➢ Outward foreign direct investment is often seen as a badge of honour for the company concerned, as it signals international competitiveness and belonging to the 'Premiere League' of the global business community.

➢ Yet, stakeholders —labour, management and government—are concerned about the impact of foreign activity on their welfare:

   o Labour fears job losses and wage reductions

   o Management worries about lack of control of the company

   o Government is concerned about possible reduction in tax revenues.

➢ These concerns, which are admittedly voiced in developed economies, motivate this study.

➢ In particular we investigate the Indian experience in the past decade or so, and to our knowledge this is the first study of its kind that focuses on a major emerging country.

   o India is a timely case study as it is country in which a strong set of firms embarked on both exporting and outward investment relatively recently.

1. Introduction

- o With high quality firm level data, India also offers the opportunity to test the explanatory power of dominant economic theories in the context of emerging countries.
- o While Indian stakeholders are yet to express concern regarding the domestic impact of OFDI, the study should also be of interest to policy makers seeking to minimise the negative ramifications of Indian investment abroad.

➢ The study is based on firm level panel data, which is ideal to allow for heterogeneity in investors.

➢ The specific aim of the project is to identify the impact of a firm OFDI on the same firm's domestic investment trajectory.

➢ The task of identifying the impact of a firm OFDI on other firms' domestic investment and general equilibrium effects will not be attempted here.

➤ An intuitive framework for analysing the relationship between outward foreign direct investment and the domestic capital stock would be to start from the multinational's production function as in Desai et al (2005).

➤ Let $Q(K_d, K_F, P)$ be the global production function in which capital (K) is indexed by destination (*d* for domestic and *f* for foreign) and P is a vector of prices and factors affecting output Q.

➤ Abstracting from tax effects on investment and other complications, the level domestic capital that yields profit maximisation would have to satisfy the following first-order condition:

$$\frac{\partial Q(K_d, K_f, P)}{\partial K_d} = \lambda(K_d, K_f^*), \tag{1}$$

where λ is the firm's cost of capital.

➢ Equation (1) suggest that there are two channels through which foreign capital affects domestic capital: (1) through the cost of capital λ and (2) through the sign of the second order condition $\dfrac{\partial Q^2(K_d, K_f, P)}{\partial K_d \partial K_f}$.

➢ In a world where resource are fixed (e.g. firms can only borrow from one capital market), the cost of capital function can be expressed as $\lambda(K_d + K_f)$, implying the extreme case in which a unit of foreign investment corresponds to a unit less domestic investment.

➢ This extreme effect would be attenuated to the extent that MNE's affiliates borrow from local sources, as found by Desai et al (2004) for the US MNEs and (Du and Girma, 2008) for MNE affiliates based in China.

➤ When it comes to the sign of $\dfrac{\partial Q^2(K_d, K_f, P)}{\partial K_d \partial K_f}$, economic theory provides conflicting predictions, depending on the motive of FDI, the industry in question and the income differential between source and destination countries.

Case 1: Horizontal FDI:

➤ Horizontal FDI is largely motivated by the desire to exploit existing advantages and economies of scale effect by replicating existing activities abroad.

➤ In a tradable sector, a negative relation between domestic and foreign activities can be expected if domestic exports are substitutes for foreign production in the initial stage of the investment.

➤ At latter stages complementarity between domestic and foreign capital may start to materialise as synergies between headquarters and foreign operations emerge.

➤ In a non-tradable sector it is reasonable to expect $\dfrac{\partial Q^2(K_d, K_f, P)}{\partial K_d \partial K_f} \geq 0$.

Case 2: Vertical FDI

➤ Vertical FDI is made by MNEs that geographically fragment stages of their production process (e.g. Ekholm and Markusen 2002)

➤ The decision of what to produce where is made on the basis of factor intensities:

- o Shift labour-intensive stages of abroad to exploit differential lower unit labour costs.

- o Reduce transaction coat by internalise upstream and downstream activities.

- o The splitting up of the production process is likely to lead to substitutability between domestic and foreign capital.

- o However $\dfrac{\partial Q^2\left(K_d, K_f, P\right)}{\partial K_d \partial K_f} > 0$ can emerge through time as expansion abroad leads to increased demand of goods produced at home (Brainard and Riker 1997), hence increase demand for domestic capital.

➤ Broadly speaking the relationship between domestic and foreign capital has been analysed at three different levels: macro, industry and firm level studies.

1: Macro level studies

➤ These rely on time series techniques based on aggregate domestic and capital stocks to get a handle on the causal relationship between K_d and K_f.

➤ They suffer from the advantage of relatively easy data access and ability to generate economy-wide general equilibrium effects.

➤ On the other hand, they suffer from the aggregation bias in that macro data tend to mask important heterogeneity in the motives of investment and the relationship between K_d and K_f.

➤ Feldstein (1995) for OECD countries, Herzer and Schooten (2007) for Germany and Sauramo (2008) for Finland find a negative relationship between K_d and K_f. Desai, Foley and Hines (2005) report that K_d and K_f are complementary for the USA.

II. Industry level studies:

➢ As argued by Arndt et al (2007), the main advantage of industry level studies lies in the fact that intra-industry as well as inter-industry effects of OFDI (via backward and forward linkages) can be identified.

➢ Using panel cointegration techniques, Arndt et al (2007) conclude that the positive relationship between German OFDI and domestic FDI which is driven by intra-industry effects.

III. Firm level studies

➢ Firm level studies minimise the risk of aggregation bias, allow for heterogeneous investment behaviours and provide the opportunity to control for potential endogeneity between K_d and K_f.

➢ Using data on US MNEs, Desai et (2005) report a positive relationship between K_d and K_f.

➢ Several firm level studies focus on the domestic *employment/output* effects of K_f, producing mixed results, depending on whether the "scale effect" or the "substitution effect" dominates.

3. The empirical evidence

➢ To mention few examples, Feenstra and Hanson (1996) for the US; Lipsey et al (2000) for Japan; Braunerhjelm and Oxelheim (2000) for Sweden and Pavarotti, and Castellani (2004) for Italy, document evidence that expansion abroad results in additional domestic jobs creation,

➢ On the other hand, Brainard and Riker (1997) for the US and Branconier and Ekholm (2001) for Sweden, amongst others, found a substitution effect between foreign affiliates expansion and domestic employment growth.

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A road map and progress report

Task	Progress report
1. Collect suitable data	A firm level data base is constructed. Ideally it should be augmented with more detailed information such destination of investment.
2. Conduct preliminary analysis with the view of establishing patterns of correlation between K_d and K_f	Reasonable progress made in terms of estimating $\Delta K_d = X\beta + f(K_f) + error$, where X is a vector of control variables.
3. Establishing causality between K_d and K_f	Still in the 'thought process': a. Matching methods? b. Search for convincing exogenous instruments
4. Establishing general equilibrium effects of K_f	a. Macroecometric analysis b. Industry level analysis (need good quality input output matrix)
5. Further analysis	Complement analysis with case studies?

The story so far in a nutshell…

➢ There is a substitution effect between growth of domestic investment and involvement in OFDI activity. This effect being more pronounced for services firms.

Some details:

➢ Information comes from CMIE database, a workhorse of the research literature.

➢ Key variables about internationalisation observed in this database: foreign investment and exports.

➢ Our strategy:

    a. Define a dummy variable = 1 when foreign investment exceeds 1% of total assets

    b. Construct a `domestic assets' measure = total assets - foreign investment

    c. For each firm, construct the time-series of annual percentage changes in domestic assets.

    d. Set up a benchmark model explaining growth of domestic assets based on various explanatory variables.

    e. Into this benchmark model, introduce the dummy variable for significant

Summary statistics of percentage change in domestic assets:

	2002	2003	2004	2005	2006	2007
Min	-64.26	-45.52	-80.86	-611.90	-90.91	-88.27
Q1	-2.82	-2.63	-1.96	0.22	3.34	6.56
Median	3.60	4.64	6.08	11.25	14.66	18.20
Mean	7.57	7.67	11.15	15.38	23.83	27.63
Q3	12.75	14.37	17.90	23.88	32.98	36.64
Max	552.00	373.60	390.00	333.50	381.70	418.10

The median and the mean have shifted strongly with business cycle conditions.

Summary statistics about other variables of interest:

	Q1	Median	Q3	Mean	Std.Devn.
age	16.00	23.00	40.00	29.83	20.48
Log total assets	4.18	5.09	6.11	5.23	1.48
Insider ownership	40.62	52.61	65.35	52.59	17.73
Leverage	1.71	2.42	3.47	2.84	11.78
Return on equity	4.06	11.60	20.55	7.84	132.91

Summary statistics about exporting dummy (defined as exports exceeding 1% of sales):

	Nonexporting	Exporting
2002	319	752
2003	331	815
2004	335	820
2005	357	903
2006	372	1013
2007	383	1079

Summary statistics about OFDI dummy:

	Non-OFDI	OFDI
2002	961	110
2003	1021	125
2004	1017	138
2005	1086	174
2006	1177	208
2007	1222	240

So in 2002, we have 110 firms who have OFDI; in 2007 we have 240 firms who have

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Benchmark regression

Median regression with industry and time effects

Coefficient	Value	statistic
Exporter	1.66073	3.71
Age	-0.12876	-3.97
Age-squared	0.00075	2.32
L(log TA)	-0.75756	-1.61
squared L(log TA)	-0.04868	-1.42
insider ownership	0.07097	1.31
Squared insider ownership	-0.00049	-0.99
Leverage	-0.02341	-10.00
For. Inst. ownership	0.60388	11.52
Above-med profitability	9.71128	23.14

Financing seems to matter in shaping asset growth. High leverage deters growth; having foreign investors seems to spur growth; having high profitability (i.e. internal cash) helps grow assets.

➤ We introduce the dummy variable for OFDI to our benchmark model and employ different estimation techniques.

	Coef. of FDI dummy	t statistic
OLS	-7.082092	-5.055241
OLS, HC standard errors	-7.082092	-4.244773
lmRob	-1.402681	-1.907071
Rlm	-2.486665	-3.393868
rlm, MM	-1.468953	-2.147267
Median regression	-2.479867	-3.116750

➤ By and large, it seems that we have a statistically significant and negative coefficient on OFDI.

➤ Firms that are engaged in OFDI seem to have a reduction in their rate of growth of domestic assets to the tune of roughly 2.5% (from the median regression).

➤ For manufacturing firms alone, this coefficient is -1.54 with a t stat of -1.84. For services firms alone, this coefficient is -6.57 with a t stat of -4.37. So the substitution effect is much stronger with services.

5. Conclusion

➤ Clearly more work awaits us…

➤ In light of recent event in America and beyond, people are thinking hard about which version of capitalism to follow. So it is perhaps timely to scrutinise what India's vanguards of capitalism are up to…

THANK YOU!