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External Commercial Borrowings and Outward Foreign Direct Investment: Evidence From Indian Manufacturing Firms

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The study investigates the effect of external commercial borrowings (*ECB*) on outward foreign direct investment (*OFDI*) using data on Indian manufacturing firms from 2008 to 2020. Our analysis, using the Heckman two-step procedure (1979), suggests a positive effect of *ECB* on firms' *OFDI*. The results indicate that firms using more leverage and *ECB* are firms with higher *OFDI* intensity.

I. Introduction

Internationalization is a process by which firms get into the global market through the channels of exports and outward foreign direct investment (*OFDI*). It helps firms in the creation of better networks and technological competitiveness (Barkema & Drogendijk, 2007). Firms face various hurdles in the internationalization process of which availability of finances is a critical factor (Buch et al., 2014; Buckley et al., 2016; Sasidharan & Padmaja, 2018). Firms incur costs in the form of both fixed and variable costs for the overseas expansion of firm activities. Thus, internationalization requires large investments which, in turn, depend on the availability of internal as well as external funds. Firms can use internal financing–cash flows, or external financing–borrowings from banks and other financial institutions (Chawla, 2019). The importance of access to finance is a well-established fact in the literature of firm growth and performance (Rajan & Zingales, 1998). The situation of limited internal funds forces firms to depend on external funds for financing their investments. Thus, firms which are financially constrained are less likely to raise external funds and undertake overseas expansion due to the difficulties involved in accessing finance.

The pecking order theory by Myers and Majluf (1984) advocates that firms prefer internal financing over external financing due to higher costs of external financing arising from information asymmetries. Firms prefer debt financing over equity financing while raising external funds. A set of empirical studies on pecking order theory supports the preference for internal financing over external financing by firms (Almeida & Campello, 2007) whereas an alternative set of studies finds evidence for the preference of external financing over internal financing by firms (Frank & Goyal, 2003). Similarly, *OFDI*, another mode of internationalization is often hampered by the availability of external finance (Welch et al., 2008). Most of the studies on financing of *OFDI* firms offer descriptive discussions on host country determinants of financing and the role of parent firm characteristics in determining the financing strategy (Tripathi & Thukral, 2016, 2018). There is lack of empirical evidence that focuses on the link between access to external finance and its role in firms' *OFDI* with regard to emerging market firms. *ECB* is a policy that supports public and private sector firms to raise funds externally. *ECB* refers to commercial loans in the form of bank loans, buyers' credit, suppliers' credit, securitised instruments (e.g., floating rate notes and fixed rate bonds) availed from non-resident lenders with minimum average maturity of 3 years. India's total *ECB* was US$21,110 (million) in 2011-2012 and has increased to US$28,714 (million) in 2021-2022 indicating a 36 % increase over the years (Report on India's External Debt, 2021-2022, Department of Economic Affairs), signifying an increased dependence on ECB by Indian firms.

Indian firms have increased their share in total global *OFDI* flows to 1.5% in 2020 from 0.05% in 2000 (UNCTAD, 2021). However, it lags other BRICS countries such as Russia (3.7%) and China (8.5%) (UNCTAD, 2021). Thus, this study attempts to examine the role of *ECB* in facilitating *OFDI* by Indian manufacturing firms. Even though there are studies examining the macro-economic and firm-level implications of the increasing role of *ECB* on firm exports, studies that analyze the effect of *ECB* on firm investments are scarce (Bose et al., 2017). This study adds to the scarce literature by employing an appropriate method which controls for the possible selection bias and endogeneity issues in estimation. To the best of our knowledge, no study has

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examined the role of *ECB* in firm *OFDI* of Indian manufacturing firms.

II. Data and Methodology

A. Description of data and variables

We use firm level data from the PROWESS database which is a corporate sector database used in previous empirical studies (Roy & Narayanan, 2019). The OFDI firms are obtained from the Reserve Bank of India's (RBI) firm-level data on OFDI published from 2007. The OFDI firms in the RBI's database are matched with the firms in the PROWESS database. The RBI data suffers from certain limitations. Primarily, it is a provisional data; it is updated as and when the authorized dealers report the transactions. Also, it does not provide investor-wise guarantee invoked data, although it provides investor-wise guarantee issued data (Joseph, 2019). Therefore, we use the field 'investment outside India' from PROWESS to capture the final *OFDI* made by the firms. This study focuses exclusively on Indian manufacturing firms based on the 3-digit NIC industry classification. Firms operating under NIC codes from 101 to 321 are grouped under twelve industry categories based on similarities in their activity. The sample is further filtered based on the following criteria. First, firms with more than four years of continuous missing observations are dropped. Second, only firms with positive sales and fixed assets are included. Third, *OFDI* firms that have invested only once during the sample period are dropped as these are likely to reflect short-term transactions. The final sample contains a total of 1497 firms with 393 *OFDI* firms. The sample period of the study is 2008-2020.

Following Manova (2015), the *access to finance* variable, used to capture the role of external finance, is constructed as the ratio of Long-Term Borrowings to Banks to Total Assets. *Current ratio* represents the internal fund availability whereas access to finance and *ECB* are used as proxies for external finance.

B. Empirical model

We examine the impact of *ECB* on firm *OFDI* intensity using the Heckman two-step procedure (1979). Selection bias due to self-selection by firms can be applicable in the current context, since few firms may self-select to undertake *OFDI*. Using Ordinary Least Squares regression results in biased estimates in such contexts. The Heckman two-step procedure helps in solving the sample-selection bias and the endogeneity issues in estimation. The advantage of the Heckman model is that it is able to model factors influencing the decision to undertake *OFDI* and *OFDI intensity* in a single framework while simultaneously correcting for any possible sample selection bias. The method involves two steps: i) the first stage estimates a model that addresses the likelihood of *OFDI* participation using a probit regression to derive the Inverse Mills' Ratio (IMR) ii) the second step estimates the relationship between the explanatory variables and *OFDI intensity* using OLS (including IMR as an additional control variable), while correcting for potential sample selection bias. A significant result of IMR (λ) indicates the presence of sample selection bias.

To analyze the effect of *ECB* on firm *OFDI*, we use the following model:

$$\begin{aligned} OFDIdummy_{it} = {} & \alpha_0 + \alpha_1 Age_{it-1} + \alpha_2 Size_{it-1} \\ & + \alpha_3 Accfinance_{it-1} \\ & + \alpha_4 Currentratio_{it-1} \\ & + \alpha_5 ECB_{it-1} + \alpha_6 Exportint_{it-1} \\ & + \alpha_7 R\&Dint_{it-1} + \alpha_8 Profitint_{it-1} \\ & + \alpha_9 TFP_{it-1} + \alpha_{10} Group_{it-1} \\ & + \alpha_{11} Foreign_{it-1} + \alpha_{12} Listdummy_{it-1} \\ & + Inddummies + Timedummies + \mu_{it} \end{aligned} \tag{1}$$

The outcome equation with *OFDI intensity* is as follows:

$$\begin{aligned} OFDIIntensity_{it} = {} & \alpha_0 + \alpha_1 Age_{it-1} + \alpha_2 Size_{it-1} \\ & + \alpha_3 Accfinance_{it-1} \\ & + \alpha_4 Currentratio_{it-1} \\ & + \alpha_5 ECB_{it-1} + \alpha_6 Exportint_{it-1} \\ & + \alpha_7 R\&Dint_{it-1} + \alpha_8 Profitint_{it-1} \\ & + \alpha_9 TFP_{it-1} + \alpha_{10} Group_{it-1} \\ & + \alpha_{11} Foreign_{it-1} + Inddummies \\ & + Timedummies + \mu_{it} \end{aligned} \tag{2}$$

where *OFDI* dummy in equation (1) represents the firm *OFDI* status and *OFDI intensity* in Equation (2) represents the amount of *OFDI*. The covariates included are lagged values of *age, size, access to finance, current ratio, ECB, export intensity, R&D intensity, profit intensity* and total factor productivity (TFP)[1] in the selection equation (Equation 1). We also control for *group affiliation, foreign ownership, industry* and *time* using binary variables. The outcome equation includes all variables except listing status of firms in stock market, which is an additional control for selection equation (Bhat & Narayanan, 2011).

III. Results and Discussion

Table 2 reports the results of the Heckman (1979) two-step procedure. Panel A reports the results obtained from Equation (1). The first-stage probit regression examines the effect of access to finance and *ECB* on firm *OFDI* participation (i.e., probability of undertaking *OFDI*). The positive and significant coefficient of lagged value of *ECB* indicates that firms with higher *ECB* are more likely to undertake *OFDI,* when other factors are kept fixed, whereas current ratio does not report a significant effect on *OFDI*. Furthermore, other firm characteristics such as *size, age, export intensity and profit intensity* also significantly improve *OFDI* participation of firms.

Panel B reports the results of the second stage regression analysis. The second stage regression estimates the effect of access to finance and *ECB* on firm *OFDI intensity*. The re-

1 TFP is calculated following Levinsohn & Petrin (2003). Capital stock, an input variable, is constructed using the Perpetual Inventory Method (Srivastava, 1996).

Table 1. Descriptive statistics

Variable	Explanation	Mean	Std Dev	Min	Max
Size	Log of sales	7.943	1.722	0.101	15.458
TFP	Total Factor Productivity	0.317	0.482	0.000018	2.652
Age	Age of the firm	33.536	18.717	1	141
OFDI Intensity	OFDI/Sales	0.264	0.635	0	2.003
Export Intensity	Exports/sales	0.162	0.248	0	6.336
Profit Intensity	Profit/Sales	0.045	0.051	-0.036	0.135
R&D Intensity	R&D Expenditure/Sales	0.006	0.049	0	5.126
Access to Finance	Long-term borrowings from banks/ Total assets	0.048	0.107	0	2.289
Current Ratio	Current Assets/ Current Liabilities	1.634	2.094	0.01	83.21
External Commercial Borrowings (ECB)	ECB/Total Assets	0.008	0.042	0	1.631
Dummy Variable	**Explanation**	**Mean**	**% of observations (=1)**	**Min**	**Max**
OFDI dummy	=1 if firm invests =0 Otherwise	0.230	23.08	0	1
Group	=1 if firm belongs to a Group =0 Otherwise	0.395	39.55	0	1
Foreign	=1 if firm is owned by Foreign Promoter =0 Otherwise	0.097	9.75	0	1
Listing Dummy	=1 if firm is listed in NSE/BSE =0 otherwise	0.570	57.07	0	1
Total Observations	19461				

Note: This table reports descriptive statistics of all variables used in this study.

sults indicate that external financing has a significant bearing on firm *OFDI intensity* as indicated by the coefficients of lagged values of *access to finance* and *ECB*, whereas *current ratio* does not significantly affect the *OFDI intensity* of firms. This indicates that *OFDI* firms are dependent on external funds for overseas investment.

Furthermore, greater access to finance and larger amounts of *ECB* helps firms to undertake more *OFDI*. The coefficient of *ECB* is the highest among all sources of funds including *current ratio* and *access to finance*. This is in line with the observation that 70% of India's OFDI flows between 2007 and 2021 were either through loans or guarantees issued, as per RBI's firm-level OFDI data. This indicates that many *OFDI* firms depends on *ECB* as an important source of external finance. The significance of access to finance and *ECB* represents the fact that the smaller the constraints of external financing, the higher the *OFDI*. These results are consistent with those of studies showing the importance of external finance over internal funds in firm investment decisions (Patnaik et al., 2015). *Export intensity, profit intensity, group and* foreign *ownership* are found to have positive and significant effects, whereas *R&D intensity, size and TFP* do not play a significant role in determining *OFDI intensity*.

IV. Conclusion

Using Heckman (1979) two-step procedure, we provide evidence in favour of the significant role of *ECB* in firm OFDI in the context of Indian manufacturing firms. The findings suggest that lowering financial constraints and creating easier access to external finance are important for encouraging firm internationalization. Future research can be extended to examine the role of *ECB* in alternative firm investments. Additionally, the significant role of external financing calls for the framing of policies to lower firm financial constraints, thereby encouraging higher *OFDI* by Indian firms.

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Table 2. Heckman two-step procedure results

Variable	Coefficient	Standard Error
Panel A: Selection Equation with *OFDI Dummy*		
Age_{t-1}	0.001**	0.0007
$Size_{t-1}$	0.2885***	0.009
$Acc\ finance_{t-1}$	0.1896	0.0125
$Current\ ratio_{t-1}$	0.004	0.007
ECB_{t-1}	1.074**	0.355
$Export\ Intensity_{t-1}$	0.7310***	0.0610
$R\&D\ Intensity_{t-1}$	0.84118	2.135
$Profit\ Intensity_{t-1}$	1.657***	0.269
TFP_{t-1}	-0.0396	0.0374
Group	0.0138	0.0286
Foreign	-0.627***	0.0492
Constant	-3.043***	0.103
List Dummy	0.3778***	0.026
Industry Dummies	Yes	
Time Dummies	Yes	
Panel B: Outcome Equation with *OFDI Intensity*		
Age_{t-1}	-0.0016**	0.0007
$Size_{t-1}$	0.013	0.216
$Acc\ finance_{t-1}$	0.737**	0.133
$Current\ ratio_{t-1}$	0.001	0.006
ECB_{t-1}	1.954***	0.290
Export intensity	0.208*	0.076
$R\&D\ Intensity_{t-1}$	2.579	0.611
$Profit\ Intensity_{t-1}$	1.791***	0.333
TFP_{t-1}	-0.063	0.038
Group	0.116*	0.031
Foreign	0.203**	0.065
Constant	0.914**	0.309
IMR (λ)	0.221**	
Rho	0.26	
Wald Chi^2	394.58	
Industry Dummies	Yes	
Time Dummies	Yes	
No. of observations	16,002	

Notes: This table reports the results of Heckman two-step procedure. ***, **, * represent 1%, 5% and 10% significance respectively.

References

Almeida, H., & Campello, M. (2007). Financial constraints, asset tangibility, and corporate investment. *Review of Financial Studies*, *20*(5), 1429–1460. https://doi.org/10.1093/rfs/hhm019

Barkema, H. G., & Drogendijk, R. (2007). Internationalising in small, incremental or larger steps? *Journal of International Business Studies*, *38*(7), 1132–1148. https://doi.org/10.1057/palgrave.jibs.8400315

Bhat, S., & Narayanan, K. (2011). Technology Sourcing and Outward FDI: Comparison of Chemicals and IT Industries in India. *Transnational Corporations Review*, *3*(2), 50–64. https://doi.org/10.1080/19186444.2011.11658283

Bose, U., Mallickb, S., & Tsoukasc, S. (2017, March). *Does Easing Controls on External Commercial Borrowings boost Exporting Intensity of Indian Firms?* [Conference paper].

Buch, C. M., Kesternich, I., Lipponer, A., & Schnitzer, M. (2014). Financial constraints and foreign direct investment: firm-level evidence. *Review of World Economics*, *150*(2), 393–420. https://doi.org/10.1007/s10290-013-0184-z

Buckley, P. J., Munjal, S., Enderwick, P., & Forsans, N. (2016). Cross-border acquisitions by Indian multinationals: Asset exploitation or asset augmentation? *International Business Review*, *25*(4), 986–996. https://doi.org/10.1016/j.ibusrev.2015.10.006

Chawla, I. (2019). Determinants of firms' initial decision to invest abroad: An application of 'survival' analysis to manufacturing firms in India. *Emerging Markets Finance and Trade*, *55*(3), 562–583. https://doi.org/10.1080/1540496x.2018.1447461

Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of Financial Economics*, *67*(2), 217–248. https://doi.org/10.1016/s0304-405x(02)00252-0

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, *47*(1), 153–161. https://doi.org/10.2307/1912352

Joseph, R. K. (2019). *Outward FDI from India: Review of policy and emerging trends* (No. ISID Working Paper 124). Institute for Studies in Industrial Development.

Levinsohn, J., & Petrin, A. (2003). Estimating Production Functions Using Inputs to Control for Unobservables. *Review of Economic Studies*, *70*(2), 317–341. https://doi.org/10.1111/1467-937x.00246

Manova, K. (2015). Firm Exports and Multinational Activity Under Credit Constraints. *Review of Economics and Statistics*, *97*(3), 574–588. https://doi.org/10.1162/rest_a_00480

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405x(84)90023-0

Patnaik, I., Shah, A., & Singh, N. (2015). *Foreign currency borrowing by Indian firms* [Working Paper].

Rajan, R., & Zingales, L. (1998). Financial Dependence and Growth. *American Economic Review*, *88*(3), 559–586.

Roy, I., & Narayanan, K. (2019). Outward FDI from India and its impact on the performance of firms in the home country. *Journal of Asia Business Studies*, *13*(1), 1–32. https://doi.org/10.1108/jabs-05-2017-0063

Sasidharan, S., & Padmaja, M. (2018). Do financing constraints impact outward foreign direct investment? Evidence from India. *Asian Development Review*, *35*(1), 108–132. https://doi.org/10.1162/adev_a_00107

Srivastava, V. (1996). *Liberalization, productivity and competition*. Oxford University Press.

Tripathi, V., & Thukral, S. (2016). Financing the internationalisation of Indian MNEs. *Transnational Corporations Review*, *8*(3), 215–229. https://doi.org/10.1080/19186444.2016.1233732

Tripathi, V., & Thukral, S. (2018). Determinants of financing of outward foreign direct investment by Indian MNEs: A three-level analysis". *International Journal of Emerging Markets*, *13*(5), 1154–1181. https://doi.org/10.1108/ijoem-12-2016-0333

UNCTAD. (2021). World Investment Report.

Welch, L. S., Benito, G. R., & Petersen, B. (2008). *Foreign operation methods: Theory, analysis, strategy*. Edward Elgar Publishing.