Impact of Outward FDI on Macroeconomic Variables of Home-Country (INDIA)

Shraddha Mishra

Senior Research Fellow, Faculty of Management Studies, Banaras Hindu University, Varanasi

Prof. Raj Kumar

Professor, Faculty of Management Studies, Banaras Hindu University, Varanasi

Abstract

For attainment of the new technological skills, managerial expertise, and innovative strategies, the outward foreign direct investment (OFDI) is the need of the Indian market. We yearned to know the overall scene of Indian OFDI and its impact on macro-economic factors. The data used in the current study consists of multiple time series for the period 1990 to 2014 for India, the choice of period is determined by the availability of data over the time. The study drew data from international sources such as UNCTAD and World Bank.

Given the existence of multiple variables, we have employed Sims (1980), VAR methodology. "The main difference in the VAR approach is that it is built on creating a complete dynamic specification of the series in a system of equations." (Brandt and Williams,2007). The liberalization of medical services, defence and education sectors are prompting Indian firms to explore overseas merger and acquisitions to build both domestic power and global presence. Natural resource sectors and its foreign investments will surge in future.

Indian Multi National Enterprises (MNEs) will continue to invest in developed nations, particularly now because they are affordable to invest after the global crisis. Three imperative regulatory developments have underpinned India as a large global outward investor.

Keywords: Outward foreign direct investment, VAR methodology, Indian Multi National Enterprises, Macroeconomic Variables.

Introduction

Since1991, India has been emerging as a largest foreign direct investment (FDI) destination from the world's key investor's. For attainment of the new technological skills, managerial expertise, and innovative strategies, many Indian organizations are resorting towards developed nations for the outward foreign direct investment (OFDI). Initially before 1990s overseas investment by Indian companies was prominent and laid its foundation earlier itself (Morris, 1987 & 1990; Nagaraj, 2008 and Nayyar, 2008). During British colonial rule India made outside investment in physical assets and raw materials to the countries like Kenya, Ceylon, Malaysia, Nigeria, Thailand and Uganda (Morris, 1987).

The new height of expansion in OFDI, since 2005, has been noticed in the study of Nayyar (2008). The major takeover were: Corus by Tata Steel and Jaguar and land Rover by Tata Motors, U.S Soda ash

producer by Tata Chemical Ltd, Info-crossing ltd. by Wipro technologies and the acquisition of Daewoo's electronics by Videocon Industries for manufacturing in South Korea are the major takeover's and Acquisition's made by India in abroad. Nayyar, 2008 mentioned that about 75 percent of OFDI from Indian economy is done in industries nations only.

The phenomenal rate of 809 percent increase has been observed between 1991 and 2003 for Indian parents companies investing abroad, in number it has been amplified from187 to 1700 firms.

This is an apparent difference in the thoughts that being a developing country with scarce capital sources and less foreign reserves the economy has to widely depend upon the inward FDI for financing its Balance of Payment (BOP). In contrast, the sparse capital of Indian economy has at the same time made it as one of the large exporter and foreign investor to the global market. Hence, it becomes necessary to enquire the following research questions:

1. What explains the rising OFDI from India?

2. The motivation of Indian companies to invest overseas.

3. The factors affecting the OFDI of Indian economy.

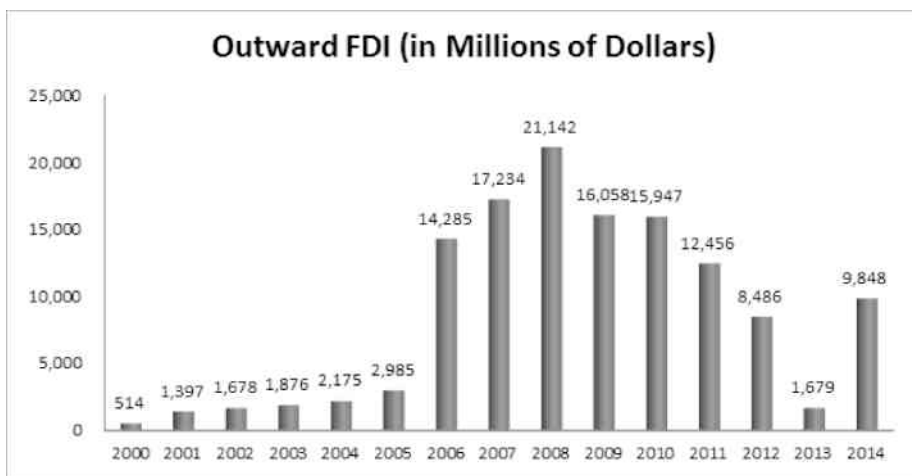4. The implications of this outward FDI on the economy.

So, we yearned to know the answer of these research issues and the major aim of this article is to gather the overall scene of Indian OFDI and its impact on macro-economic factors. Further, this article is divided into five sections. Section one is devoted to historic introduction of outward FDI. Section two will describe about the existing profile of OFDI and motives behind overseas investment of Indian organizations. Fourth Section will explain the factors affecting OFDI and FDI. The implications and conclusion will be discussed in last section.

Motives Driving the OFDI

Nagaraj (2006) and Nayyar (2008) classify the underlying factors that drive the process of OFDI from India. No matter about the classification of these factors, the facts shows that

since 1990s, the Indian organizations are much motivated towards the OFDI. The motivation behind OFDI from Indian market are numerous such as to develop trade networks in abroad, for exploitation of ownership advantages in better way, for the incremental scale of production, acquisition of additional technologies, management expertise, manufacturing skills, marketing distribution, and attainment of natural resources like natural gas & petroleum. Foreign Exchange Regulation Act (FERA) and the 'south-south' cooperation have given a laissez-faire approach to the developing country's OFDI in first wave and thereafter 'south-south' cooperation has been substituted by global competitiveness in the second wave of Pradhan (2008) study.

(Satyanand & Raghavendran, 2010) revealed three major structural shifts in the OFDI during past decade. The Indian OFDI raised fifty-folds from 2000 to 2008 and become the 23rd largest outward investor in 2007 (UNCTAD report, 2007). The manufacturing sector has been replaced by the service sector as the principal OFDI sector since early 2000. The first half of past decade accounted for the massive manufacturing OFDI in consumer electronics, pharmaceuticals and automotives sectors. However, second half was much concentrated on metal sector, investments in energy and natural resource, and various consumer goods OFDIs. Finally, the most important point to be noticed in the past decade is that most of the OFDI from India went into the developed economies in form of merger and acquisition and joint venture. (Satyanand & Raghavendran, 2010) revealed that from 1996-2002, Russia was the top most OFDI destination for India, and basic reason behind this is "Rupee-Rouble" agreement, which promoted Indian firms to trade with Russia. In their study the second time period from 2002 to 2009, Singapore is the largest host to OFDI from India. The Comprehensive Economic Cooperation Agreement between the two countries in 2005 is the reason behind this sudden jump in investment. The Chart showing OFDI status of Indian economy at a glance:

Source: UNCTAD, FDI/TNC database (www.unctad.org/fdistatistics).

The increment of 486 percent is remarkable change occurred in 2014; this change has brought India as the largest investor in South Asian economy in terms of Outward FDI with $ 9.8 billion. Albeit this doesn't bring India in top 20 lists for FDI outflow.
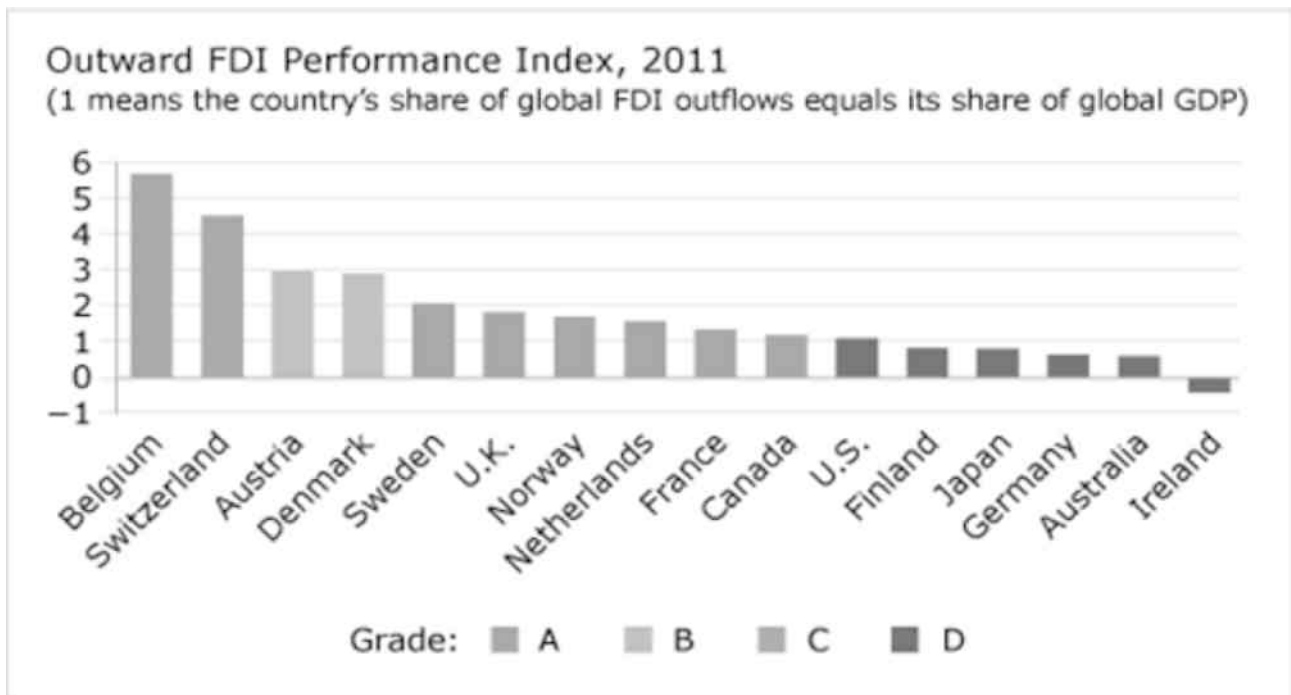
Guoyong Liang; UNCTAD, Asia; Investment Division (Head), has disclosed the reason for descend of 6.8 billion dollars in 2013. He said that this is because of several macroeconomic uncertainties; due to these uncertainties the Indian MNCs divested in 2013. The figures are still lower than in 2008, 2009 and 2010. The United States of America had the largest outward FDI flow in 2014 ($ 337 billion) followed by Hong Kong-China and China.

The major corporate players for accomplishing the Indian OFDI are covering all the sectors such as IT sector, Automotives, Metal and mining, Energy and power and textiles and apparel sectors. Indian market players are still not taking the full privilege of Globalization. Only handful of public sectors is into OFDI process from Indian economy. GAIL and ONGC are the few PSUs, which are enjoying the opportunities of internationalization.

Outward FDI Performance Index

"The ratio of a country's share of global foreign direct investment (FDI) outflows to its share of global gross domestic product (GDP).The Outward FDI Performance Index captures a country's relative success in investing elsewhere in the global economy via FDI. If a country's share of global outward FDI matches its relative share in global GDP, the country's Outward FDI Performance Index is equal to one. A value greater than one indicates a larger share of FDI relative to GDP; a value less than one indicates a smaller share of FDI relative to GDP. A negative value means a country disinvested elsewhere in that period". (Source::Direct Investment Abroad: A Strategic Tool for Canada (Ottawa: The Conference Board of Canada, 2011).

Outward FDI Performance Index, 2011
(1 means the country's share of global FDI outflows equals its share of global GDP)

Relationship of OFDI and Macroeconomic Indicators

FDI is considered to be a significant but lagging indicator of the economic investment environment. Once a given merger or acquisition is decided upon any firms, it can take some duration for the funds to be delivered in economy. Therefore, examining data on outflow FDI for a given year does not provide the full scenario of investor sentiment in that specific year. Flows of FDI over time should also be considered for study. The case studies on Indian MNCs done by Bowonder & Mastakar, 2005 and Seshadri & Tripathy, 2006 are probing the contribution of home country-specific or host country-specific factors and firm specific factors in the growth of Indian MNCs. Pradhan (2004) concluded that firm-specific characteristics such as age, size, (R&D) intensity, skill intensity, and export are the critical explanatory factors in examining the determinants of FDI in manufacturing sector of India. On the other hand, Nayyar (2008), had a broader perspective for the process of expansion in Indian FDI, the underlying factors driving FDI are policy liberalization, greater access to financial markets and capacities & abilities of Indian firms. From his

viewpoint these factors accounts for rapid growth in offshore investment and acquisitions made by Indian firms. This study provides a support to the study of Franko (1976) by considering factors such as the openness of the economy to international trade, the exchange rate, and the interest rate. He considered these factors for Indian and Chinese economy. However our study will be limited to Indian economy only.

Economy Openness

There have been two schools of thoughts in the international business literature with reference to the influence of the trade liberalization on FDI. Empirical studies have drawn mixed conclusions, on the significance of openness of economy in determining inward FDI or outward FDI. The positive school of thoughts has been presented by Culem, 1988; Kravis and Lipsey, 1982; Edwards, 1990; Pantelidis and Kyrkilis, 2005. These studies showed the positive effect between Openness and FDI. The negative School of thoughts regarding weak positive link of openness and FDI is presented by Schmitz and Bieri, 1972 and Chiou Wei and Zhu, 2007. Using extreme bound analysis for calculation of Openness as the ratio of exports plus imports to Gross Domestic Product (GDP), Chakrabarti (2001), established a positive correlation between a economy's openness to trade and FDI as compared between FDI and any other explanatory variable. Ghosh (2007) found a positive correlation, between openness and FDI with or without deeming country fixed effects. He mentioned causality running from FDI to trade openness but not vice-versa. In contrast results of Aizenman and Noy (2006) through the decomposition analysis, reported that the Granger causality from FDI flows to trade openness and reversal accounts for most of the linear response between trade openness and FDI.

Interest rates

The level of interest rate is acts as proxy for the capital abundance or scarcity. Inverse correlation between the interest rate (lending) and outward FDI will lead to low interest rates. Low interest rates associated with capital abundance of a home country. It will decrease the opportunity cost of capital and will enhance the profitability of investments abroad. Thus, to raise capital at preferential interest rates can be hypothesized as asset ownership advantage for MNCs over indigenous companies in host economy (Cushman, 1985). Billington, 1999; Yang et al., 2000; Jeon and Rhee, 2008 showed that interest rates as one of the most significant variable for the choice of location in inward FDI. In addition, Hong and Kim (2003) confirmed that low interest rates in European Union were the influential factors in the locational preferences for Korean MNCs. Chowdhury and Wheeler (2008) showed the impact of interest rates varies across nations.

Exchange rate

A number of academic studies have emphasized the empirical relationships between the home country's exchange rates and outward FDI. The currency area hypothesis given by Aliber (1970) focused on the importance of country's ownership advantages that grow to firms located in an exact currency area. Aliber squabbled that financial factors such as exchange risks fundamentally explain the FDI. The appreciation of the home country's currency and lowering capital requirements in domestic currency will encourages outward FDI. Conversely, Klein and Rosengren (1994); Baek and Kwok (2002) assessed the effects of foreign exchange rate on the corporate choice of overseas entry mode and shareholder's wealth. They found that firms with a larger home currency have a better propensity to select a subsidiary in other economy. Qin (2000) examined the relationship between exchange rate risks and both-way FDI. He explored that endogeneity of exchange rate act as a determinant of FDI.

Empirically based studies for knowing the causal relationships between the home country's exchange rates and outward FDI for various economies is evident in Blonigen (1997); Guo and Trivedi (2002); Gopinath et al. (1998); Bolling et al. (2007); Georgopoulos (2008); Choi and Jeon (2007) and Kyrkilis and Pantelidis (2003) for developed and developing nations. These studies found a positive correlation between the exchange rate and outward FDI. In contrast, the studies of Froot and Stein (1989), Blonigen (1995); Blonigen and Feenstra (1996) noted a negative correlation between a country's exchange rate and FDI. Tuman and Emmert (1999) detected an insignificant exchange rate effect on FDI of economy in share regression. Using Bound Analysis, Chakrabarti (2001) ascertained that there is low correlation between exchange rate and FDI as compared to any other explanatory variable.

Data Description and the Empirical Model

The data used in the current study consists of multiple time series for the period 1990 to 2014 for India, with the choice of period is determined by the availability of data over the time. The study drew data from international sources such as UNCTAD and World Bank.

Given the existence of multiple variables, we have employed Sims (1980), VAR methodology. "The main difference in the VAR approach is that it is built on creating a complete dynamic specification of the series in a system of equations." (Brandt and Williams, 2007.)

A VAR model is an extension of autoregressive (AR) model to those cases where there is more than one explanatory variable under study. It can have more than one equation; each equation is in the form of multiple equation models. We can use lags of its explanatory variables and may

formulate a deterministic trend. The word autoregressive is stand for the inclusion of lagged value of the dependent variables in the equation, and the term vector is for the existence of a variable quantity that can be resolved into components of two or more variables.

The literature review cites some of the previous studies that has identified and examined the key variables of outward FDI to be included in the VAR model in this study. The lack of a consensus over the wrapping up of the impact on the specific determinants of FDI can be explained, in present study. The study will focus on the specified home country factors that are affecting outward FDI.

Since the present research involves four variables, the unrestricted VAR will estimate four equations which depend on p=2 lag of the dependent variable and q=2 lag of each of the three other variables. Therefore the lag length is set such that p=q. The estimated VAR (2) model is as follows:

$OFDI = C(1)*OFDI(-1) + C(2)*OFDI(-2) + C(3)*OP(-1) + C(4)*OP(-2) + C(5)*IR(-1) + C(6)*IR(-2) + C(7)*FX(-1) + C(8)*FX(-2) + C(9)$

$OP = C(10)*OFDI(-1) + C(11)*OFDI(-2) + C(12)*OP(-1) + C(13)*OP(-2) + C(14)*IR(-1) + C(15)*IR(-2) + C(16)*FX(-1) + C(17)*FX(-2) + C(18)$

$IR = C(19)*OFDI(-1) + C(20)*OFDI(-2) + C(21)*OP(-1) + C(22)*OP(-2) + C(23)*IR(-1) + C(24)*IR(-2) + C(25)*FX(-1) + C(26)*FX(-2) + C(27)$

$FX = C(28)*OFDI(-1) + C(29)*OFDI(-2) + C(30)*OP(-1) + C(31)*OP(-2) + C(32)*IR(-1) + C(33)*IR(-2) + C(34)*FX(-1) + C(35)*FX(-2) + C(36)$

Table 1 presents the descriptive statistics about the data. After satisfying, the Normality assumption through Unit Root test and Jarque bera test. We run the OLS regression by taking OFDI as dependent variable. Table 2 presents the OLS results. The OLS results are similar with the study of Billington, 1999; Yang et al., 2000; Jeon and Rhee, 2008 for Interest rate. We found positive relation with OFDI and Trade Openeness as in studies of Culem, 1988; Kravis and Lipsey, 1982; Edwards, 1990; Pantelidis and Kyrkilis, 2005. The forex is not significantly related with the OFDI from India. Froot and Stein (1989), Blonigen (1995); Blonigen and Feenstra (1996); Tuman and Emmert (1999) and Chakrabarti (2001) also detected the same results for Indian and other nations.

Table 3 and 4 presents the results of the unrestricted 4-equation VAR (2) modelling for India. Taking Foreign exchange as dependent variable, we retrieved the most significant results for Interest rate and Openness and their lagged variables as well. In order to assess the openness through these explanatory variables we found that it is significantly linked with second lag value of OFDI and Openness. However the openness of the economy is negatively associated with the OFDI at lag two. Table 5 presents the results of the Ganger Causality test. The results suggest that all null hypotheses are accepted except the four relations in the study. The Interest rate causes Openness and OFDI. Foreign Exchange causes interest rates but not reverse relation has been found. The bi-directional relationship has been found between Openness and Interest Rates.

Liberalized policy scene

Three imperative regulatory developments have underpinned India as a large global outward investor. First is the number of sectors requiring industrial licensing was reduced (only to 14 manufacturing activities) in a calibrated manner. Second, ongoing liberalizations in Indian economy has historically encouraged Outward FDI. After Foreign Exchange Management Act (2000) Indian firms were allowed to invest in 100 percent subsidiaries, in any business line, in any nation. In 2005, overseas investors were allowed to float global special purpose vehicles to finance foreign acquisitions. The prudential limit on bank financing was elevated from 10% to 20% of offshore investment. Third, capital market liberalization enabled investors to buy Indian stocks and Indian firms to borrow money worldwide (even for overseas investments). This radically transformed the Indian market into the global financial markets. Bilateral investment treaties (BITs) as well as the double taxation treaties (DDTs) have also played a vital role, in the case of small firms or organizations.

Conclusions

The growth of OFDI is expected to be continued in India. Outward FDI, sometimes accused for job losses by shifting investment. However, with trade liberalization, FDI has increasingly become a means of generating wealth and stimulating bilateral trades. Indians should be not only creating a centre of attention for more FDI into country but also doing alot to facilitate growing outflows of FDI from economy. Indeed, in future we should perhaps speak less in terms of "international trade and investment"—and more about "international investment and trade."

The industrial distribution of Indian outward FDI is augmenting. The liberalization of medical services, defence and education sectors are prompting Indian firms to explore overseas merger and acquisitions to build both domestic power and global presence. Natural resource sectors and its foreign investments will surge in future.

Indian Multi National Enterprises (MNEs) will continue to invest in developed nations, particularly now because they are affordable to invest after the global crisis. According to a recent report of UNCTAD, India might become the largest source of developing market MNEs by 2024, over 2,200

Indian firms are more likely to invest overseas in the subsequent fifteen years.

References

Aizenman, J., Noy, I., 2006. FDI and trade — two-way linkages? Quarterly Review of Economics and Finance 46, 317–337.

Aliber, R.Z., 1970. A theory of foreign direct investment. In: Kindleberger, C.P. (Ed.), The international Corporation: A Symposium. MIT Press, Cambridge, Massachusetts, pp. 17–34.

Baek, H.Y., Kwok, C.C.Y., 2002. Foreign exchange rates and the corporate choice of foreign entry mode. International Review of Economics and Finance 11, 207–227.

Billington, N., 1999. The location of foreign direct investment: an empirical analysis. Applied Economics 31, 65–76.

Blonigen, B.A., 1995. Explaining Japanese Foreign Direct Investment in the United States. (Ph.D. Dissertation) University of California, Davis.

Blonigen, B.A., 1997. Firm-specific assets and the link between exchange rates and foreign direct investment. American Economic Review 87, 447–465.

Blonigen, B.A., 2001. In search of substitution between foreign production and exports. Journal of International Economics 53, 81–104.

Blonigen, B.A., Feenstra, R.C., 1996. Effects of U.S. trade protection and promotion policies. National Bureau of Economic Research Working Paper No. 5285. National Bureau of Economic Research Working Paper No. 5285. Cambridge, MA.

Bolling, C., Shane, M., Roe, T., 2007. Exchange rates and U.S. foreign direct investment in the global processed food industry. Agricultural and Resource Economics Review 36, 230–238.

Bowonder, B., Mastakar, N., 2005. Strategic business leadership through innovation and globalisation: a case study of Ranbaxy Limited. International Journal of Technology Management 32, 176–198.

Chakrabarti, A., 2001. The determinants of foreign direct investment: sensitivity analyses of cross-country regressions. Kyklos 54, 89–113.

Chiou Wei, S.Z., Zhu, Z., 2007. A revisit to the outward FDI determinants: further evidence from count panel data models with fixed effects. Applied Economics Letters 14, 809–812.

Chittoor, R., Ray, S., 2007. Internationalization paths of Indian pharmaceutical firms — a strategic group analysis. Journal of International Management 13, 338–355.

Choi, J.J., Jeon, B.N., 2007. Financial factors in foreign direct investments: a dynamic analysis of international data. Research in International Business and Finance 21, 1–18.

Chowdhury, A.R., Wheeler, M., 2008. Does real exchange rate volatility affect foreign direct investment? Evidence from four developed economies. The International Trade Journal 22, 218–245.

Culem, C.G., 1988. The locational determinants of direct investments among industrialized countries. European Economic Review 32, 885–904.

Cushman, D.O., 1985. Real exchange rate risk, expectations, and the level of direct investment. Review of Economics and Statistics 67, 297–308.

Edwards, S., 1990. Capital Flows, Foreign Direct Investment, and Debt–Equity Swaps in Developing Countries. National Bureau of Economic Research, Working Paper No. 3497. Cambridge, MA.

Franko, L.G., 1976. The European Multinationals. A Renewed Challenge to American and British Big Business. Harper and Row, London.

Froot, K.A., Stein, J.C., 1989. Exchange Rates and Foreign Direct Investment: An Imperfect Capital Markets Approach. National Bureau of Economic Research Working Paper No. 2914. Cambridge, MA.

Georgopoulos, G.J., 2008. Cross-border mergers and acquisitions: does the exchange rate matter? Some evidence for Canada. Canadian Journal of Economics 41, 450–474.

Ghosh, I., 2007. The relations between trade and FDI in developing countries — a panel data approach. Global Economy Journal 7, 1–30.

Gopinath, M., Pick, D., Vasavada, U., 1998. Exchange rate effects on the relationship between FDI and trade in the U.S. food processing industry. American Journal of Agricultural Economics 80, 1073–1079.

Guo, J.Q., Trivedi, P.K., 2002. Firm-specific assets and the link between exchange rates and Japanese foreign direct investment in the United States: a reexamination. Japanese Economic Review 53, 337–349.

Hong, S., Kim, S., 2003. Locational determinants of Korean manufacturing investments in the European Union. Hitotsubashi Journal of Economics 44, 91–103.

Jeon, B.N., Rhee, S.S., 2008. The determinants of Korea's foreign direct investment from the United States,

1980–2001: an empirical investigation of firm-level data. Contemporary Economic Policy 26, 118–131.

Klein, M.W., Rosengren, E., 1994. The real exchange rate and foreign direct investment in the United States. Journal of International Economics 36, 373–389.

Kravis, I.B., Lipsey, R.E., 1982. The location of overseas production and production for export by U.S. multinational firms. Journal of International Economics 12, 201–223.

Kyrkilis, D., Pantelidis, P., 2003. Macroeconomic determinants of outward foreign direct investment. International Journal of Social Economics 30, 827–836.

Nayyar, D., 2008. The internationalization of firms from India: investment, mergers and acquisitions. Oxford Development Studies 36, 111–131.

Pradhan, J.P., 2004. The determinants of outward foreign direct investment: a firm-level analysis of Indian manufacturing. Oxford Development Studies 32, 619–639.

Pradhan, J.P., 2008. The evolution of Indian outward foreign direct investment: changing trends and patterns. International Journal of Technology and Globalisation 4, 70–86.

Qin, J., 2000. Exchange rate risk and two-way foreign direct investment. International Journal of Finance and Economics 5, 221–231.

Ramachandran, J., et al., 2004. Indian companies in overseas markets: perspectives, patterns, and implications. Vikalpa: The Journal for Decision Makers 29, 93–111.

Schmitz, A., Bieri, J., 1972. EEC tariffs and U.S. direct investment. European Economic Review 3, 259–270.

Seshadri, D.V.R., Tripathy, A., 2006. Reinventing a giant corporation: the case of Tata Steel. Vikalpa: The Journal for Decision Makers 31, 133–146.

Tuman, J.P., Emmert, C.F., 1999. Explaining Japanese foreign direct investment in Latin America, 1979–1992. Social Science Quarterly 80, 539–555.

Yang, J.Y.Y., Groenewold, N., Tcha, M., 2000. The determinants of foreign direct investment in Australia. Economic Record 76, 45–54.

Website:

To understand the benefits of outward FDI and integrating into global supply chains:

Direct Investment Abroad: A Strategic Tool for Canada (Ottawa: The Conference Board of Canada, 2011).

Best Policy Practices for Promoting Inward and Outward Foreign Direct Investment (Ottawa: The Conference Board of Canada, 2010).

India leads FDI in South Asia with 34 billion investment in 2014: Report (Date 25/06/2015)

:http://economictimes.indiatimes.com/articleshow/478062 43.cms?utm_source=contentofinterest&utm_medium=text &utm_campaign=cppst

Book & Reports on Outward FDI

Foreign Direct Investment and Governments: Catalysts for Economic Restructuring-

By Emeritus Professor of International Business at University of Reading and Professor of International Business John Dunning, John Dunning, Rajneesh Narula.

Growth and Development in Emerging Market Economies: International Private

edited by Harinder S Kohli

The Rise of Indian Multinationals: Perspectives on Indian Outward Foreign Direct Investment (New York: Palgrave, 2010) by Karl P. Sauvant and Jaya Prakash Pradhan, with Ayesha Chatterjee and Brian Harley.

Satyanand, P. N., & Raghavendran, P. (2010). Outward FDI from India and its policy context (Columbia FDI Profiles)

UNCTAD, 2014. World Investment Report 2014: Transnational Corporations, Agricultural Production and Development. United Nations, New York.

Table1: Descriptive Statistics	OFDI	IR	FX	OP
Mean	10.10037	12.82899	42.49087	38.81114
Median	0.180256	12.23958	44.52079	28.33519
Maximum	232.8574	18.91667	61.02951	265.1767
Minimum	-3.181818	8.333350	22.74243	5.529712
Std. Dev.	47.48787	2.608267	9.353492	49.68310
Skewness	4.574495	0.682581	-0.234620	4.158341
Kurtosis	21.96820	2.872564	2.853952	19.57420
Jarque-Bera	443.4965	1.879908	0.241516	343.8714
Probability	0.000000	0.390646	0.886248	0.000000

Table2: OLS Regression

Dependent Variable: OFDI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-124.9213	43.72170	-2.857193	0.0097
OP	0.951929	0.046487	20.47748	0.0000
IR	4.490680	1.782761	2.518947	0.0204
FX	0.952329	0.507117	1.877929	0.0751
R-squared	0.957733	Mean dependent var		10.10037
Adjusted R-squared	0.951393	S.D. dependent var		47.48787
S.E. of regression	10.46966	Akaike info criterion		7.685852
Sum squared resid	2192.275	Schwarz criterion		7.882194
Log likelihood	-88.23022	Hannan-Quinn criter.		7.737941
F-statistic	151.0606	Durbin-Watson stat		2.013636
Prob(F-statistic)	0.000000			

Table3: Vector Autoregression Estimates

Standard errors in ( ) & t-statistics in [ ]

	OFDI	OP	IR	FX
OFDI(-1)	-1.303257 (1.23152) [-1.05825]	-1.466758 (1.26711) [-1.15756]	0.004609 (0.02680) [0.17198]	-0.012652 (0.07459) [-0.16963]
OFDI(-2)	-1.555306 (1.00381) [-1.54940]	-1.905907* (1.03282) [-1.84535]	0.023180 (0.02184) [1.06115]	0.115645 (0.06079) [1.90222]
OP(-1)	1.015910 (1.22830) [0.82709]	1.189822 (1.26379) [0.94147]	0.001941 (0.02673) [0.07263]	0.010487 (0.07439) [0.14097]
OP(-2)	1.410261 (0.96767) [1.45737]	1.654835 (0.99564) [1.66209]	-0.016724 (0.02106) [-0.79420]	-0.114951* (0.05861) [-1.96142]
IR(-1)	-10.83025 (12.3883) [-0.87423]	-11.68990 (12.7463) [-0.91712]	0.471493 (0.26958) [1.74897]	-0.000821 (0.75029) [-0.00109]
IR(-2)	24.79513* (11.0459) [2.24474]	27.92562* (11.3651) [2.45714]	-0.230208 (0.24037) [-0.95772]	-1.339521* (0.66898) [-2.00232]
FX(-1)	2.383539 (4.30284) [0.55395]	-0.286386 (4.42718) [-0.06469]	-0.155630 (0.09363) [-1.66211]	1.236352* (0.26060) [4.74429]
FX(-2)	-1.868908 (5.64054) [-0.33133]	1.312381 (5.80353) [0.22613]	0.017875 (0.12274) [0.14563]	-0.640317* (0.34161) [-1.87439]
C	-267.0531 (453.848) [-0.58842]	-295.3765 (466.963) [-0.63255]	15.51787 (9.87621) [1.57124]	38.34069 (27.4869) [1.39487]
R-squared	0.499224	0.507468	0.861734	0.926542
Adj. R-squared	0.191054	0.204372	0.776647	0.881338
Sum sq. resids	25786.10	27297.91	12.21082	94.58377
S.E. equation	44.53702	45.82401	0.969172	2.697346
F-statistic	1.619965	1.674279	10.12770	20.49660
Log likelihood	-108.9487	-109.5754	-24.74072	-47.25953
Akaike AIC	10.72261	10.77958	3.067339	5.114502
Schwarz SC	11.16894	11.22592	3.513674	5.560838
Mean dependent	11.29200	40.87731	12.32292	44.14183
S.D. dependent	49.51782	51.37336	2.050713	7.830334
Determinant resid covariance (dof adj.)	566419.0			
Determinant resid covariance	69059.03			
Log likelihood	-247.4365			
Akaike information criterion	25.76695			
Schwarz criterion	27.55229			

Table 4: Estimation Method: Least Squares

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-1.303257	1.231522	-1.058249	0.2948
C(2)	-1.555306	1.003811	-1.549401	0.1274
C(3)	1.015910	1.228298	0.827088	0.4120
C(4)	1.410261	0.967673	1.457374	0.1510
C(5)	-10.83025	12.38833	-0.874230	0.3860
C(6)	24.79513	11.04589	2.244739	0.0291
C(7)	2.383539	4.302840	0.553945	0.5820
C(8)	-1.868908	5.640541	-0.331335	0.7417
C(9)	-267.0531	453.8483	-0.588419	0.5588
C(10)	-1.466758	1.267109	-1.157563	0.2523
C(11)	-1.905907	1.032818	-1.845346	0.0707
C(12)	1.189822	1.263792	0.941469	0.3508
C(13)	1.654835	0.995636	1.662089	0.1025
C(14)	-11.68990	12.74632	-0.917120	0.3633
C(15)	27.92562	11.36508	2.457143	0.0174
C(16)	-0.286386	4.427179	-0.064688	0.9487
C(17)	1.312381	5.803535	0.226135	0.8220
C(18)	-295.3765	466.9631	-0.632548	0.5298
C(19)	0.004609	0.026799	0.171980	0.8641
C(20)	0.023180	0.021844	1.061148	0.2935
C(21)	0.001941	0.026729	0.072631	0.9424
C(22)	-0.016724	0.021058	-0.794200	0.4307
C(23)	0.471493	0.269583	1.748974	0.0862
C(24)	-0.230208	0.240370	-0.957723	0.3426
C(25)	-0.155630	0.093634	-1.662107	0.1025
C(26)	0.017875	0.122744	0.145625	0.8848
C(27)	15.51787	9.876207	1.571238	0.1222
C(28)	-0.012652	0.074586	-0.169630	0.8660
C(29)	0.115645	0.060795	1.902220	0.0627
C(30)	0.010487	0.074391	0.140966	0.8884
C(31)	-0.114951	0.058606	-1.961417	0.0552
C(32)	-0.000821	0.750289	-0.001094	0.9991
C(33)	-1.339521	0.668984	-2.002321	0.0505
C(34)	1.236352	0.260598	4.744292	0.0000
C(35)	-0.640317	0.341614	-1.874385	0.0665
C(36)	38.34069	27.48692	1.394870	0.1690
Determinant residual covariance		69059.03		

Equation: OFDI = C(1)*OFDI(-1) + C(2)*OFDI(-2) + C(3)*OP(-1) − C(4)*OP(-2) + C(5)*IR(-1) + C(6)*IR(-2) − C(7)*FX(-1) + C(8)*FX(-2) + C(9)

R-squared	0.499224	Mean dependent var	11.29200
Adjusted R-squared	0.191054	S.D. dependent var	49.51782
S.E. of regression	44.53703	Sum squared resid	25786.10
Durbin-Watson stat	1.977896		

Equation: OP = C(10)*OFDI(-1) + C(11)*OFDI(-2) + C(12)*OP(-1) + C(13)*OP(-2) + C(14)*IR(-1) + C(15)*IR(-2) + C(16)*FX(-1) + C(17)*FX(-2) + C(18)

R-squared	0.507468	Mean dependent var	40.87732
Adjusted R-squared	0.204372	S.D. dependent var	51.37336
S.E. of regression	45.82401	Sum squared resid	27297.91
Durbin-Watson stat	1.968135		

Equation: IR = C(19)*OFDI(-1) + C(20)*OFDI(-2) + C(21)*OP(-1) + C(22)*OP(-2) + C(23)*IR(-1) + C(24)*IR(-2) + C(25)*FX(-1) + C(26)*FX(-2) + C(27)

R-squared	0.861734	Mean dependent var	12.32292
Adjusted R-squared	0.776647	S.D. dependent var	2.050713
S.E. of regression	0.969172	Sum squared resid	12.21082
Durbin-Watson stat	1.755010		

Equation: FX = C(28)*OFDI(-1) + C(29)*OFDI(-2) + C(30)*OP(-1) + C(31)*OP(-2) + C(32)*IR(-1) + C(33)*IR(-2) + C(34)*FX(-1) + C(35)*FX(-2) + C(36)

Table5: Pairwise Granger Causality Tests		
Null Hypothesis:	F-Statistic	Prob.
FX does not Granger Cause OFDI	2.63681	0.1006
OFDI does not Granger Cause FX	0.13543	0.8743
OP does not Granger Cause OFDI	0.00286	0.9971
OFDI does not Granger Cause OP	0.07339	0.9295
IR does not Granger Cause OFDI	4.40216*	0.0288
OFDI does not Granger Cause IR	3.28385	0.0622
OP does not Granger Cause FX	0.03343	0.9672
FX does not Granger Cause OP	1.56342	0.2381
IR does not Granger Cause FX	1.40437	0.2726
FX does not Granger Cause IR	5.51386*	0.0143
IR does not Granger Cause OP	3.43406*	0.0559
OP does not Granger Cause IR	3.45096*	0.0552