Received 3 May 2015
Revised 20 July 2015
Accepted 14 August 2015

Exports and outward FDI: are they complements or substitutes? Evidence from Asia

Niti Bhasin
Department of Commerce, Delhi School of Economics, University of Delhi, New Delhi, India, and
Justin Paul
Graduate School of Business, University of Puerto Rico, San Juan, Puerto Rico, USA

Abstract

Purpose – Outward foreign direct investment (OFDI) and its relationship with exports of home country is an important aspect of internationalization having implications for both policymakers and multinational enterprises (MNEs). This paper aims to examine this relationship by using panel data for ten major emerging countries from Asia over the period 1991-2012.

Design/methodology/approach – The authors use panel vector auto regression, panel cointegration and causality tests in this study.

Findings – The authors find evidence of long-run causality from exports to OFDI. Further, exports and OFDI are found to be substitutes. There is no long-run causality from OFDI to exports, implying that MNEs are not "connecting" with home country firms through backward and forward linkages in the production process.

Originality/value – To the best of the authors' knowledge, this is the first paper to deal with the relationship of OFDI with exports of the home country, for a group of developing/emerging countries.

Keywords Exports, Cointegration, Outward FDI, Causality

Paper type Research paper

Introduction

Outward Foreign Direct Investment (OFDI) from developing countries is a phenomenon that has captured increasing attention in recent times. Emerging market firms undertake a large-scale OFDI in today's business world (Luo *et al.*, 2010). While developed countries have traditionally been the important sources of foreign direct investment (FDI), OFDI from emerging and developing countries has grown in importance in both absolute and relative terms. Within developing countries, the majority of OFDI originates from Asia. Further, the largest source of OFDI within Asia is South, East and South-East Asia. It is also worth noting that emerging-economy enterprises engage in strategic asset-seeking FDI for different reasons than traditional FDI (Yang *et al.*, 2014).

In view of the increasing importance of OFDI from developing countries, it is important to gauge the potential impact of OFDI on home countries. The relationship of OFDI with exports is of great importance for policymakers and business firms alike. From the point of view of policymakers, if FDI is undertaken abroad as a substitute for

Multinational Business Review
Vol. 24 No. 1, 2016
pp. 62-78

1525-383X
DOI 10.1108/MBR-05-2015-0016

exports, then the effects would be twofold; first, it would divert domestic investment to channels other than the home country, and second, it would have a negative effect on balance-of-payments through reduced foreign exchange earnings. On the other hand, if FDI outflows lead to increased exports through forward and backward linkages in the production process, then such a complementary relationship will boost domestic investment and contribute to the growth of the economy through increased foreign exchange reserves.

The contribution of our paper lies in that it is probably the first paper to deal with the relationship of OFDI with exports of the home country, for a group of developing/emerging countries. As a region, Asia accounts for the largest share of OFDI from developing countries. Within this, South, East and South-East Asia are the largest source of OFDI. Hence, this paper focuses on OFDI from ten major emerging economies of Asia which contribute for about 90 per cent of total OFDI from the region. Using panel data for these countries over a 22-year period, we attempt to understand the relationship between OFDI and exports.

The understanding of the relationship between OFDI and exports is of significance in the context of developing and emerging countries. This is because FDI inflows as well as FDI outflows are considered to be important engines of growth for these countries. While the main motive behind FDI outflows is to make their presence felt internationally, it is also expected that it would lead to knowledge development for the intermediate firms through linkages with the multinational enterprise (MNE).

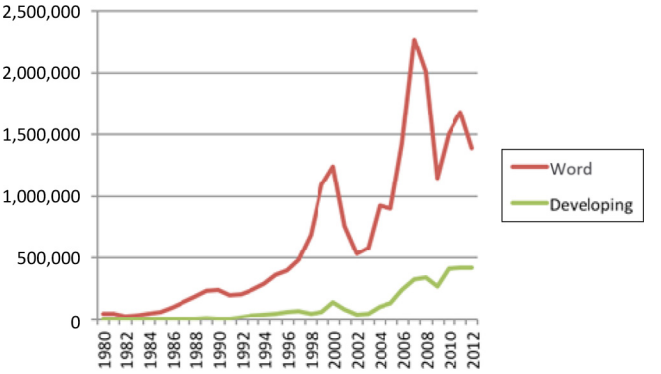
The rest of the paper is organized as follows: Section 2 looks at the trends in OFDI for developing countries as well as for the South, East and South-East Asian countries. Section 3 reviews the existing literature on the subject. Section 4 outlines the research methodology along with sample and data sources. Section 5 discusses and analyzes the results, and Section 6 gives conclusions and theoretical propositions emerging out of the study.

Trends in outward foreign direct investment from developing countries

Developing and transition countries have become important sources of FDI in the past two decades. The share of developing and transition countries in global FDI outflows has increased from 6.2 per cent in 1980 to 27 per cent in 2011, while reaching its peak at 32 per cent in 2010 (Figure 1). This share in global FDI outflows has increased to over 35 per cent in 2014 (UNCTAD, 2015). Asian countries remain the largest source of FDI among developing regions (Figure 2), accounting for almost three quarters of the total FDI outflows from developing countries (UNCTAD, 2013). These countries have been the largest source of OFDI since 1985. Within Asia, it is the Southern, Eastern and South-Eastern economies that constitute the bulk of OFDI (Figure 3).

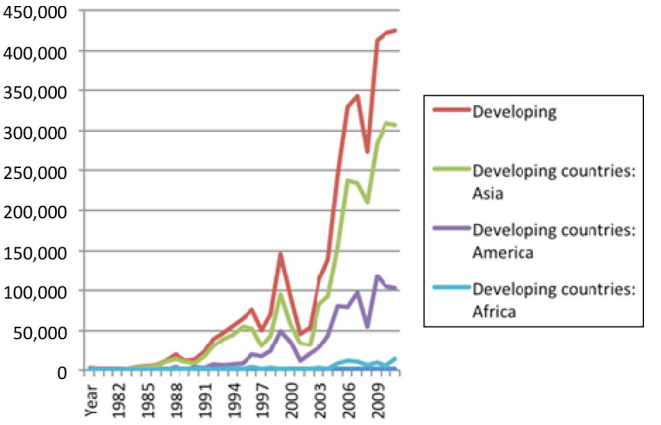
Literature review

From the point of view of an MNE, where OFDI acts as a substitute for exports, it implies that the foreign market is growing (with rising exports) and hence a large-scale production facility is now justified. According to Vernon's (1966) Product Life Cycle (PLC) theory, a firm would normally start its international operations by "exporting" as a mode of entry, as it is less risky and less costly. Only when the demand in the host country is large enough to warrant substantial investment in production, the firm would consider undertaking FDI as an alternative to exports. However, as mentioned by Cantwell and Narula (2001), firms in certain sectors may skip exporting altogether and



Source: UNCTAD online FDI statistics

Figure 1.
Share of developing countries in global OFDI flows

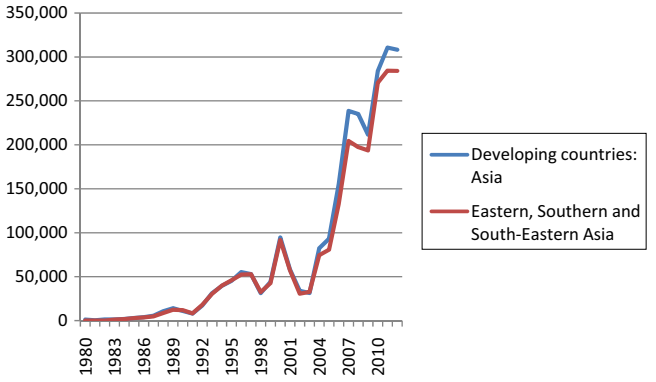


Source: UNCTAD online FDI statistics

Figure 2.
Regional patterns of OFDI flows among developing countries

proceed directly to FDI. Another aspect of this relationship is the impact on home country exports once OFDI is undertaken. If the home country firms offer competitive advantages in the production cycle, it implies benefit to the MNE through forward and backward linkages with firms in its home country. For example, if the home country is a source of cheap raw material, it would help the MNE through backward linkage in the production process. In such cases, OFDI and exports share a complementary relationship. Cantwell (2009) revisits the role of location as a dominant consideration and points that MNEs now have a greater potential to benefit from a synergistic locational portfolio of complementary sources of knowledge. This implies that the MNE looks for sources of competitiveness in the host country itself. In these cases, there would not be much impact on home country exports.

A large part of literature on OFDI focuses on the drivers of OFDI or the motives of internationalization of MNEs from developed as well as developing countries (Buckley *et al.*, 2007; Morck *et al.*, 2008; Rasiah *et al.*, 2010; Singal and Jain 2012; Wei, 2010; Azmeh and



Source: UNCTAD online FDI statistics

Figure 3.
Share of South, East and South-East Asian countries in OFDI from Asia

Nadvi, 2014). Dunning (1998) suggests that in view of the changing geography of MNE activity, more attention should be given to both the determinants and consequences of related cross-border activities. The extant literature on home country impact of OFDI largely focuses on developed countries as the source of OFDI (Dritsaki *et al.*, 2004; Hejazi and Safarian, 1999; Kim and Rang, 1997; Martin, 2010). The home country macroeconomic variables under study range from economic growth and domestic employment to wages, trade and tax revenues (Kokko, 2006). However, the literature on home country effects of OFDI from developing countries is relatively sparse. Of the few works that study the relationship between OFDI and exports, the studies are largely single-country-based studies (Goh *et al.*, 2012; Lim and Moon, 2001; Liu *et al.*, 2001).

It is worth noting that there are fewer studies directly testing the relationship between FDI and exports. A large part of literature focuses on the determinants of FDI (Carstensen and Toubal, 2004; Du *et al.*, 2008; Williams, 2009; Bhaumik *et al.*, 2010; Gorynia *et al.*, 2010; Armutlulu *et al.*, 2011 and; Holtbrügge and Kreppel, 2012) as well as on the impact of FDI on other variables (Sinani and Meyer, 2004; Dritsaki *et al.*, 2004; Yao and Wei, 2007; Dash and Sharma, 2011; Moraru, 2013; Yaqub *et al.*, 2013).

Further, studies relating FDI and exports/trade have largely looked at the relationship of exports/trade with inward FDI and not OFDI (Hejazi and Safarian, 1999; Liu *et al.*, 2001; Dritsaki *et al.*, 2004; Hsiao and Hsiao, 2006; Aizenman and Noy, 2006; Guru-Gharana, 2012). For instance, Liu *et al.* (2001) examine the causal relationship between FDI and trade (exports and imports) in China. The results indicate a virtuous procedure of development for China: the growth of China's imports causes the growth in inward FDI from a home country/region, which, in turn, causes the growth of exports from China to the home country/region. Hejazi and Safarian (1999) extend the linkage between FDI and trade by adding FDI stocks to foreign trade as a channel linking total factor productivity levels between OECD countries. There are three main results:

(1) the co-efficient estimates for FDI are higher than those for trade in the standard model;

(2) the importance of the trade channel is reduced once FDI is included; and

(3) the overall spillovers increase significantly with the inclusion of FDI.

Guru-Gharana (2012) tests the relationships among export, FDI and growth for India using auto regressive distributed lag (ARDL) and finds that the post-liberalization period in India exhibits significantly different characteristics than the pre-liberalization period. If both periods are combined, there is lack of evidence for long-run cointegration. In the post-liberalization period, however, there is strong evidence of long-run relationship with gross domestic product (GDP) as the dependent variable. The analysis of error correction model (ECM) shows that exports are a significant determinant for explaining changes in GDP. Moreover, there is short-run as well as long-run Granger causality from exports to GDP. In contrast, there is no Granger causality from FDI to GDP.

Dritsaki *et al.* (2004) examine the relationship between exports, economic growth and FDIs in Greece by using annual data for the period 1960-2002. Using the Johansen cointegration test and the Granger causality test, the author infers that there is a bilateral causal relationship between exports and economic growth, while there was a unidirectional causal relationship from FDI to GDP and also a unidirectional causal relationship from FDIs to exports. Similarly, Paul and Mas (2016) examine the reasons for China's and India's emergence in the global economy and found that FDI and exports have contributed substantially for their growth.

The extant literature on OFDI includes studies that examine the relationship of OFDI with different macroeconomic variables such as growth, productivity and exports (Damijan *et al.*, 2007; Tolentino, 2010). Damijan *et al.* (2007) use data set of manufacturing firms from Slovenia in the period 1994-2002 with the information on OFDI and exports to test the relationship between OFDI to total factor productivity. Liu *et al.* (2005) examined whether the Chinese OFDI follow the investment development path proposed by Dunning and found that the OFDI is consistent with the refined investment development path hypothesis. Their results suggest that the level of economic development, proxied by GDP per capita plus refinements, is still the main factor explaining China's rate of OFDI. Globerman (2012) assesses whether OFDI and home country capital investment are substitutes or complements and found that they are complements in the longer run.

The studies focusing on the relationship of OFDI with exports of the home country are relatively less and restricted largely to developed countries (Lipsey and Weiss, 1984; Kim and Rang, 1997; Head and Ries, 2001; Martin, 2010). Kim and Rang (1997) examine the relationship between OFDI and exports using cross-sectional data in South Korea and Japan. In both countries, OFDI did not have significant positive or negative effects on exports. The tendency of investing abroad to retain foreign export markets is greater in Japan than in South Korea, implying that OFDI in South Korea is more cost-oriented, while Japanese OFDI is more market-oriented. Martin (2010) provides insights into the dynamics of exports and OFDI flows in Spain using a multivariate cointegrated model (VECM). The evolution in exchange flows (1993-2008) and country-specific variables (such as world demand – including Spain's main foreign markets – for trade flows and the relative price of exports to proxy new global competitors) are taken into account. The results provide evidence of a positive (Granger) causality relationship running from FDI to exports of goods (strong) and to exports of services (weak) in the long run, the complementarity relation of which is consistent with vertical FDI strategies. In the short run, however, only exports of goods are affected (positively) by FDIs. The important

studies looking at the relationship between OFDI and exports have been summarized in Table I.

While the literature on the relationship between OFDI and exports in the context of developing countries is relatively sparse, we believe that MNEs from developing countries follow the internationalization path proposed by Vernon, i.e. they begin with exports as their mode of entry and then go for FDI in the long-run as demand expands. Thus, we propose to test the following hypothesis:

H1. Exports and OFDI are substitutes for each other.

We further propose to test whether subsequent to undertaking OFDI, MNEs "connect" with home country firms through forward and backward linkages. Thus, our second hypothesis is:

H2. MNEs from developing countries do not "connect" with home country firms through forward and backward linkages.

Data and research methodology

Sample and data sources

We use panel data of ten countries over a period of 22 years to analyze the relationship between OFDI and exports from South, East and South-East Asia. The time period used is 1991-2012. Due to lack of data availability for some of these countries for years prior to 1991, the above period has been selected. The countries included are typical developing countries such as China, India, Thailand, Republic of Korea, Philippines, Malaysia, Bangladesh, Indonesia and relatively developed Hong Kong and Singapore.

Author (Year)	Purpose/Findings
Kim and Rang (1997)	Examine relationship between OFDI and Exports in South Korea and Japan. They found that OFDI did not have effects on exports in those countries
Lim and Moon (2001)	Empirical result supports that outward FDI would have a more positive effect on home country exports if the subsidiaries are located in less developed countries than in developed countries (the case of Korean firms)
Cantwell and Narula (2001)	Firms in some sectors skip exporting and proceed to FDI directly
Goh *et al.* (2012)	Using the gravity model they examined the relationship between trade (export and import), inward and outward FDI using Malaysia as a case. They find that inward FDI has a complementary relationship with trade, while outward FDI and trade linkages are not significant
Aizenman and Noy (2006)	They investigate the intertemporal linkages between foreign direct investment and disaggregated measures of international trade. They find that the strongest linkage between the sub-accounts is between FDI and trade in manufacturing sector
Liu *et al.* (2001)	Examining the causal relationship between FDI and trade (exports and imports) in China, they find that the growth of China's imports causes the growth in inward FDI from a home country/region, which, in turn, causes the growth of exports from China to the home country/region

Table I.
Important studies testing the direct relationship between OFDI and exports from emerging countries

These countries are among the top investors abroad in the South, East and South-East Asian region. Together, they account for around 90 per cent of total OFDI flows from the region. The data on OFDI flows and exports have been taken from UNCTAD online FDI statistics.

Research methodology

We test for the existence of a long-run relationship between OFDI and exports using a panel cointegration framework. A complete understanding of this relationship requires testing for cointegration as well as causal relationship between the two variables. Following Ajaga and Nunnenkamp (2008) and Basu *et al.* (2003), we use a three-step procedure in our analysis. We first test for the presence of non-stationarity or unit root in our series. Having found both series to be non-stationary, we then use panel cointegration techniques to test for the presence of long-run relationship between OFDI and exports. As we get evidence of cointegration from this step, we then proceed to establish the direction of causality between the OFDI and exports.

Unit root testing

As mentioned above, the first step involves determining whether the data are amenable to cointegration testing. Both the series have to be integrated of order (1) for cointegration tests to be carried out. Recent literature suggests that panel-based unit root tests have higher power than unit root tests based on individual time series. A number of panel unit root tests are available such as those proposed by Levin *et al.* (2002) and Im *et al.* (2003), and Fisher-type tests using ADF and PP tests (Choi, 2001). While the tests by Levin *et al.* (2002) assume that there is a common unit root process, the tests by Im *et al.* (2003) and Fisher-ADF and PP tests allow for individual unit root processes so that ρ_i may vary across cross-sections. We choose the latter tests, as we expect a considerable variation in countries, in our sample.

Panel data vector auto regression and Granger causality test

We first test for the absence of Granger causality by estimating the following vector auto regression (VAR) model:

$$Yt = a0 + a1Yt - 1 + \ldots\ldots + apYt - p + b1Xt - 1 + \ldots\ldots + bpXt - p + ut \quad (1)$$

$$Xt = c0 + c1Xt - 1 + \ldots\ldots + cpXt - p + d1Yt - 1 + \ldots\ldots + dpYt - p + vt \quad (2)$$

As we are estimating a panel data regression model, we will first choose between the fixed effects and random effects specification. Theoretically, the fixed effects model (FEM) may be preferable, as it allows us to account for individual country specific effects. However, we conduct the Hausman test to choose which method would be more appropriate. As mentioned in the results, the Hausman test results show that the FEM is more appropriate.

After estimating panel data VAR by fixed effects method, we conduct the Wald test of coefficients for finding out the direction of Granger causality. No matter what we conclude about co-integration, this test of causality is done to cross-check the validity of our results at the end of the analysis.

Cointegration testing

To examine the existence of a long-run relationship between OFDI and exports, we then use a Fisher-type test using an underlying Johansen methodology (Maddala and Wu, 1999) and the Pedroni Residual Cointegration test (Pedroni, 1999 and 2004). Maddala and Wu (1999) use Fisher's result to propose an approach for testing cointegration in panel data by combining tests from individual cross-sections to obtain a test statistic for the full panel. The Pedroni (Engle-Granger-based) cointegration test is based on an examination of the residuals of a spurious regression performed using I(1) variables. If the variables are cointegrated, then the residuals should be I(0). On the other hand, if the variables are not cointegrated, then the residuals will be I(1). Pedroni (1999, 2004) extends the Engle-Granger framework to tests involving panel data.

Testing for long-run and short-run causality

Having confirmed the existence of long-run relationship between OFDI and exports, we then find out the direction of causality between the two cointegrated variables. For testing long-run causality, we use an ECM. While we have already applied a panel VAR for testing causality, the VECM incorporates information about the short-run dynamics, and hence, tests conducted within that framework may be more powerful than their counterparts within a VAR model. The VAR model results, as mentioned above, will be used to cross-check the validity of the results obtained using ECM. It has been shown by Engle and Granger (1987) that when two series, x and y, are cointegrated, a standard Granger-causality test is misspecified because it does not allow for the distinction between the short-run and the long run-effect. Instead, at this point an ECM should be used. In the first step of this method, we obtain an error correction term and in the second step, the ECM with the included error correction term is estimated. We estimate the ECM using ordinary least squares method. Thus, the specification used is as follows:

$$\Delta y_{i,t} = (\alpha_1 - 1)\Delta y_{i,t-1} + \delta_u \Delta x_{i,t} + (\delta_0 + \delta_1)\Delta x_{i,t-1} + \lambda(y_{i,t-2} - \varnothing x_{i,t-2}) + f_1 + u_{i,t} \quad (3)$$

$$\Delta x_{i,t} = (\beta_1 - 1)\Delta x_{i,t-1} + \gamma_u \Delta y_{i,t} + (\gamma_0 + \gamma_1)\Delta y_{i,t-1} + \lambda(x_{i,t-2} - \varnothing y_{i,t-2}) + \eta_1 + v_{i,t} \quad (4)$$

In the above equations, the coefficients λ and κ of the error correction terms give the speed of adjustment toward long-run equilibrium. If λ and κ are negative and significant, then a long-term causal relationship exists between the two variables. As noted by Granger *et al.* (2000), the long-run causality can be measured by the significance of the error correction term, while the short-run causality can be measured using the Wald test for the joint significance of the lagged explanatory variables. Hence, for testing short-run causality, we use the Wald test. The coefficients δ_0, $(\delta_0 + \delta_1)$ and γ_0, $(\gamma_0 + \gamma_1)$ capture the short-term causality. The null hypothesis is that the coefficients of lagged values of the explanatory variables are equal to zero. If the null hypothesis is rejected, there is evidence of short-term causality from the explanatory variable to the dependent variable.

Results and analysis

Unit root test results

As mentioned above, we carry out panel unit root testing using methodology of Im *et al.* (2003) and Fisher-ADF and PP tests because they allow for individual unit root

processes. The test results are reported in Table II. As both the variables (exports and OFDI) turn out to be I(1), we proceed with cointegration testing in the next step.

Results of panel vector auto regression and Granger causality

The results of panel VAR estimation using FEM have been reported in Table III. As can be seen from Table III, the null hypothesis of no Granger causality is rejected in the case where OFDI is the dependent variable. This implies that exports are causing OFDI. In the case where exports are the dependent variable, the Wald test (*F*-value) is insignificant indicating that the null hypothesis of no Granger causality from OFDI to exports is not rejected. Hence, based on these results, we can say that OFDI is not causing exports. To verify our results further, we now carry out the panel cointegration tests.

Cointegration test results

Table IV reports the results of Johansen Fisher Panel Cointegration Test result. As shown in the table, the null hypothesis of no cointegration equation is rejected at 1 per cent level of significance. The Fisher statistics from trace test and from max-Eigen test are significant at 1 per cent thereby indicating the presence of cointegration between the two variables. The null hypothesis of at most 1 cointegrating equation is rejected at 5 per cent, but not at 1 per cent. Further, the individual cross-section results[1] also point towards 1 cointegrating equation. The null hypothesis of 1 cointegrating equation is not rejected in eight of ten countries, thereby implying the presence of 1 cointegrating equation.

Table V reports the results of Pedroni Residual Cointegration Test. As mentioned above, Pedroni (1999) approach is based on an examination of the residuals for stationarity. To test this, seven-test statistics are generated. Of these, four-test statistics pool the autoregressive coefficients across different countries while conducting the unit root test and thus restricting the first order autoregressive parameter to be the same for all countries. These are called panel cointegration statistics by Pedroni (1999). The remaining three-test statistics are based on averaging the individually estimated autoregressive coefficients for each country. Thus, these statistics allow autoregressive coefficients to vary across countries and are known as group-mean panel cointegration statistics. In Table III, the second column gives the *panel cointegration statistics*. The first of these is a variance ratio test. The second and third are panel versions of the PP rho and *t*-statistic, respectively. Both these statistics are significant at 5 per cent indicating rejection of null hypothesis of no cointegration. The fourth statistic is the panel ADF unit root test statistic. This test rejects the null hypothesis of no co-integration at 10 per cent. The third column in Table V shows the *group-mean panel cointegration statistics*. As before, the first two statistics are panel versions of the PP rho and *t*-statistic, respectively. The PP *t*-statistic is significant at 5 per cent level indicating stationarity of residuals. The third statistic, which is the ADF panel unit root test, is insignificant. Overall, most of the test statistics are found to be significant implying that there is cointegration between exports and OFDI.

Therefore, the overall results of Johansen Fisher Panel Cointegration test and Pedroni Residual Cointegration test point to the existence of a long-run relationship between OFDI and exports.

Table II. Panel unit root test results

Variable	At level			First difference		
	IPS W-stat[a]	ADF Fisher chi-square	PP Fisher chi-square	IPS W-stat	ADF Fisher chi-square	PP Fisher chi-square
OFDI	5.0595 (1.000)	17.6317 (0.6117)	20.6645 (0.4171)	−9.7233** (0.0000)	134.878** (0.0000)	649.395** (0.0000)
Exports	8.9092 (1.000)	1.1955 (1.000)	0.9223 (1.000)	−8.3863** (0.0000)	118.04** (0.0000)	208.965** (0.0000)

Notes: Null hypothesis: There is unit root; [a] IPS W-stat indicates Im, Pesaran and Shin W-stat; ** indicates rejection at 1% level of significance, *p*-values in parentheses

Table III.
Panel data VAR: Granger causality results

Dependent variable	Constant (c1)	OFDI (−1) (c2)	OFDI (−2) (c3)	Exports (−1) (c4)	Exports (−2) (c5)	Wald test (*F*-stat)
OFDI	−108.4773 (0.8446)	0.4958 (0.0000)	0.4736 (0.0000)	0.0058 (0.5084)	0.0058 (0.5980)	17.92702* (0.0000)
Exports	3,292.321 (0.4833)	−0.395303 (0.4572)	−0.148228 (0.4572)	0.881325 (0.0018)	0.272998 (0.0018)	0.548388 (0.5788)

Notes: The numbers in parentheses denote *p*-values; in Wald test of coefficients, the null hypotheses is c4 = c5 = 0 with OFDI as the dependent variable, and the null hypotheses is c = c3 = 0 with exports as the dependent variable; *indicates rejection of null hypothesis at 1% level of significance

Causality results using multivariate co-integrated model

The results of the estimated ECMs are reported in Table VI. The coefficient of the error correction term is found to be negative and significant in the model where OFDI is the dependent variable. Therefore, there is evidence of long-run causality from exports to OFDI. The coefficient of the error correction term for causality in the other direction (from OFDI to exports) is found to be positive and significant. As error correction term needs to be negative to indicate long-run causality; therefore, there is no evidence of long-run causality from OFDI to exports. As mentioned before, the Wald test has been used to test for the presence of short-run causality between the two variables. The test statistic is insignificant in both the cases, and therefore, the null hypothesis of coefficients of lagged values of the explanatory variables to be equal to zero is not rejected. Thus, there is no evidence of short-run causality between exports and OFDI in either direction. As the coefficient of lagged values of exports is negative, it implies that there is a negative relationship between exports and FDI. Thus, OFDI acts as a substitute to exports.

Table IV. Johansen fisher panel cointegration test result

Hypothesized no. of CE(s)	Fisher stat (from trace test)	Fisher stat (from max-Eigen test)
None	64.91** (0.0000)	58.62** (0.0000)
At most 1	32.95* (0.0342)	32.95* (0.0342)

Notes: *Significant at 10%; **significant at 5%; ***significant at 1%; *p*-values in parentheses

Table V. Pedroni residual cointegration test results

	Panel cointegration statistic	Group-mean panel cointegration statistic
Variance-statistic	0.3991 (0.3449)	–
rho-statistic	−1.7181** (0.0429)	−0.5901 (0.2776)
PP statistic	−2.1632** (0.0153)	−1.7631* (0.0389)
ADF statistic	−1.4881* (0.0684)	0.4761 (0.6830)

Notes: Null hypothesis: no cointegration; *significant at 10%; **significant at 5%; *** significant at 1%; *p*-values in parentheses

Table VI. Estimated error correction models

	Dependent variable	
Model	D (OFDI)	D (Exports)
Cointegrating equation	−0.0748** (0.0001)	0.2745** (0.0000)
D (OFDI(-1)	−0.4952** (0.0000)	0.6942 (0.1769)
D (OFDI(-2)	−0.1088 (0.1406)	0.3203 (0.5415)
D (EXPORTS(-1))	−0.0097 (0.4330)	−0.4211** (0.0000)
D (EXPORTS(-2))	−0.0060 (0.6116)	−0.4057** (0.0000)
Wald test (chi-square statistic)	0.6763 (0.7131)	1.8376 (0.3990)

Notes: **Denote significance at 1%; *p*-values in parentheses

Conclusion

Our results based on the panel data for ten Asian countries indicate the existence of a long-run relationship between exports and OFDI. As mentioned before, our study takes a large sample of developing countries, which are important sources of OFDI in contrast to most other studies, which are single country-based. We believe that our findings have managerial and theoretical implications in the areas of international economics and international business. The important findings emerging from this study along with their implications can be summarized as follows:

- There is evidence of long-run causality from exports to OFDI. Further, in the long-run, exports and OFDI are substitutes of each other. This could be due to two reasons; first, the demand in the market abroad is now sufficiently high to warrant expansion through OFDI as an alternative to exports; or second, OFDI is undertaken to avoid high transportation costs or trade barriers to exports or domestic inefficiencies such as exchange rate volatility. Our findings are in line with the PLC theory propounded by Vernon (1966), though his theory is based on exports and OFDI from a developed country. From the point of view of policymakers, such a substitution would imply an adverse effect on balance-of-payments due to outflow of foreign exchange reserves on one hand and reduced inflows of foreign exchange due to fall in exports. For business managers, such a relationship indicates that the foreign market is growing (with rising exports), and hence large-scale production can now be undertaken. As FDI is a costly and risky mode of entry in the host market compared to exports, a substantial rise in exports is reassuring for the MNCs regarding the expanding market size, and they can now contemplate going for the FDI mode.

Thus, regarding our first hypothesis, we find that exports and OFDI are substitutes of each other.

- There is no evidence of long-run causality from OFDI to exports, implying that the MNEs are not "connecting" with home country firms through forward and backward linkages. This leads to acceptance of our second hypothesis. This result needs to be understood in the context of both intra-region OFDI as well as OFDI outside Asia to other developed countries. Emerging market MNEs selected for study are undertaking OFDI in both neighboring developing countries as well as developed countries located in other regions of the world. Where the OFDI is undertaken in similar developing and emerging markets, there is no or less need to "connect" with home country firms as factor conditions and processes are almost similar. For instance, most of these countries are low cost centers of production; hence, inputs can be procured in the host country itself, and there would be no need to import from the home country.

Where OFDI is being undertaken in developed countries, MNEs look upon developing a synergistic locational portfolio (Cantwell, 2009) and looks for sources of competitiveness in the host country itself. In these cases, there would not be much impact on home country exports. Meyer *et al.* (2011) point out that the fundamental difference between FDI and portfolio investment is the high level of engagement with the local context involved in the former. They mention that in the case of emerging countries, the initial advantages are based on cost and standardized processes. However, later the MNEs

from these countries enter into partnerships and trading relationships with advanced country MNEs. Therefore, in the case of developing countries, in particular, a major motivation of OFDI is to seek new sources of competitiveness for firms externally through setting up operations abroad (Mathews, 2006). From the point of view of managers of MNEs based in emerging market economies, it would be more profitable for the MNE if it is able to identify improved technology, more skilled labor or other sources of efficiency in the host country, and thereby develop its competitive advantages. In such a case, the MNE might not "connect" with home country through backward or forward linkages. For the policymakers, such an OFDI is not beneficial in boosting the production process in the home country and hence does not contribute to the growth of the economy.

- There is no evidence of short-run causality between OFDI and exports in either direction. This is plausible as OFDI is a long-term mode of entry, while export is a short-term mode of entry. Hence, it can be expected that there will be no short-run causal relation between the two variables.

Note

1. Individual cross-section results not reported due to space constraints.

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Further reading

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About the authors

Niti Bhasin is an Associate Professor with the Department of Commerce, Delhi School of Economics, University of Delhi. A gold medalist and recipient of various awards at the post-graduate level, she obtained her MPhil and PhD degrees from the Department of Commerce, Delhi School of Economics. She has teaching and research experience of around 15 years and her areas of specialization are "International Business" and "Taxation". She has to her credit eight books including "Indian Financial System: Evolution and Present Structure", "FDI in India: Policies, Conditions and Procedures" and "Financial Institutions and Financial Markets in India: Functioning and Reforms". She has contributed articles in various refereed journals of repute and has been invited to deliver talks at various national and international seminars. Apart from her other projects, she is the Paper Coordinator for "International Business" for e-PG Pathshala project under Ministry of Human Resource and Development (MHRD), Government of India, aimed at developing e-content for PG courses.

Justin Paul is well-known as an Author/Co-author of four text books – *Business Environment* (4th edition), *International Business* (6th edition), *Management of Banking and Financial Services* (2nd edition) and *Export-Import Management* (2nd edition) by McGraw-Hill, Prentice Hall, Pearson & Oxford University Press, respectively. He served as a faculty member with the University of Washington and Nagoya University of Commerce & Business-Japan, prior to his current position. He has co-authored two more books, namely, International Marketing and Services Marketing published by Tata McGraw-Hill. He started his career as Officer – Corporation Bank and moved to academics later. He served as Department Chairperson at Indian Institute of Management (IIM), the premier business school in South Asia at the age of 30 years. He has taught full courses at Aarhus University, Denmark; Grenoble Eco le de Management, France; University of Washington Foster School of Business, Seattle; Universite De Versailles, France; ISM University, Lithuania; SP Jain, Dubai; Warsaw School of Economics, Poland, and has been an invited speaker and trainer at University of Puget Sound, St Martyn's University, USA; Fudan University, Shanghai; and University of San Francisco. Justin Paul is the corresponding author and can be contacted at: profjust@gmail.com