

Causal Links between Foreign Direct Investments and Trade: A Comparative Study of India and China

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Abstract

Global economic environment is changing rapidly during the last two decades. This change is reflected in widening and intensifying international linkages in trade and FDI. Various countries are now favouring economic reforms for attaining rapid and sustained growth. The scope for transnational production has expanded due to reduction of the barriers to international trade and the various regional integration agreements between the different countries. This paper examines the causal relationships between FDI and trade (i.e Exports and Imports) in India and China. Granger causality test has been employed to examine the causal relation between FDI and trade by using the data over the period of 1976-2011. The results for China show unidirectional causality running from FDI to imports and FDI to exports, however, there exist bidirectional causality between imports and exports. India gives the results which are not similar to China where bidirectional causality between FDI and imports; FDI and exports; and exports and imports have been found.

Keywords: Causality Exports, FDI, Imports

JEL Code Classification: F21, F10, F23.

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1. Introduction

The importance of the causal relationship between inward FDI and exports is central to development and planning strategies of the countries. If FDI (Foreign direct investments) displaces export trade of local firms of the host country, then it will be harmful for the domestic industry of the investing country. On the contrary, if trade and FDI complements to each other then it might lead to greater competitiveness of the foreign market and this is beneficial to exports from host country and therefore to its industries (Tadesse and Ryan, 2001).

As noted by the United Nations Conference on Trade and Development (1996), conceptual models of foreign direct investment (FDI) and international trade have traditionally been developed separately. The integration of FDI and trade theories is still at its infant stage. As a result, though the importance of FDI or international trade as individual variables in economic growth has been widely documented, their possible linkages are relatively understudied. An understanding of these linkages will help governments to harmonize their FDI and trade policies for growth and development.

In the international economics and business literature, the following two aspects of possible linkages between FDI and international trade are discussed:

- (1) Whether FDI is a Substitute for, or a Complement to, International Trade
- (2) Whether FDI Causes International Trade or Vice-Versa.

As for the first aspect, the Heckscher Ohlin–Samuelson model suggests that international trade can substitute for international movement of factors of production including FDI. This model implies that international commodity trade involves an indirect exchange of factors between countries. For instance, by exporting capital-intensive commodities in exchange for labour-intensive commodities, the capital-abundant country indirectly exports a net amount of capital in exchange for a net amount of labour. Even under the assumption that factors are perfectly immobile between countries, factors do migrate between countries indirectly through exports and imports of commodities. International trade and the international mobility of factors of production, which includes FDI, are substitutes rather than compliments for each other where there are barriers to trade (Liu et al. 2002). Export growth and inward FDI may have a reciprocal causative relationship. In that case, there is no evident direction of causation between export growth and FDI, and then alternative strategies for the encouragement of FDI or export promotion are required for structural transformation and growth of the economy (Zhang and Felmingham, 2001).

After learning more about the economic, political, and social conditions and gaining more experience, home country firms may establish production subsidiaries in the foreign market. However, foreign subsidiaries in host country may eventually begin to export. Thus, there can be a two-way causal link between trade and FDI i.e. trade will first cause FDI and FDI may eventually cause trade. The causal

relationship between trade and FDI is complicated and depends largely on the types of trade and FDI being considered. It is basically country specific. In brief, the Indian and Chinese governments and development agencies must know about the success of past policy and future development strategies of their country. This necessitates not only to pay attention toward finding out the causal links between FDI and Trade in India and China, but the comparison of India and China on the basis for testing for causality for FDI, exports and imports with recent data is extremely needed. This suggests the importance of empirical investigations in assessing FDI–trade relationships for these countries.

The study has been classified into 6 sections. The first section presents the direct and indirect effect of FDI on host country exports. Section 2 reviews the existing studies on the causal relationships between FDI and trade. Trade performance of India and China during the period 1980-2011 has been explained in section 3. Section 4 describes data base and methodology and the findings of the paper has been discussed in section 5. Summary, limitations and suggestions have been explained in section 6. Scope for further research has also been discussed under this section.

2. Effect of Foreign Direct Investments on Host Country Exports

Transnational corporations (TNC's) have become a common feature of most of developing countries in the world. TNC's are large corporations which have their operations in a number of countries (Chopra, 2003). These are the most powerful economic and political entities in the world corporations which operate in more than one country or nation at a time (Karliner, 1997). A host country's exports may expand due to foreign investments as TNCs has comparative advantages of assessing world markets then the local firms. There may be direct and indirect effects of FDI (Foreign direct investments) on exports of host countries. Direct effects refer to exports by foreign subsidiaries themselves. The impact of FDI on export activities of local firms accounts for their indirect effects. A brief description of these effects is as under:

2.1. Direct Effects of FDI on Host Exports

In a discussion of the direct effects of FDI on host country exports, it is convenient to divide export activities of foreign affiliates into three categories according to their production characteristics:

- **Local Raw Materials Processing:** In the processing of locally produced raw materials, foreign subsidiaries in host countries may have better export potential than indigenous firms because of their business contacts abroad, marketing skills and superior technology, both in product and processes.
- **New labour-intensive Final Product Exports:** There are many opportunities for host countries to become significant exporters of new labour-intensive final

products, such as textiles and other consumer goods. Firms in developing countries seeking to expand their exports to world markets, however, face immense difficulties in setting up a distribution network, changes in consumer tastes, and building up a new product image. In many cases, the design, packaging, distribution, and servicing of the products are as important as being able to produce them at, or below, ruling prices in world markets. The lack of such skills constitutes a key barrier to entry into the world markets for developing country's exporters.

- **Labour-intensive Processes and Component Specialization within Vertically Integrated International Industries:** Exports of labour-intensive goods within vertically integrated production obviously depend on the participation of TNCs. Generally, these exports are thought of as intra-firm trade, but a great part of them are arm's-length transactions between TNCs and indigenous host country firms. This type of production in general is associated with processing components and assembling in which host countries import unfinished and intermediate goods.

2.2. Indirect Effects of FDI on Host Exports

Foreign affiliates can also affect host country manufacturing exports in several indirect ways. For instance,

- **Increase in Exports of Local Firms:** Local firms may increase their exports by observing the export activities of TNCs and by making use of the infrastructure of transport, communications, and financial services that develop to support those activities.

- **Impact of FDI on the Competitiveness of Host Country Firms:** Another indirect effect involves the influence of FDI on the competitiveness of host country firms and diffusion of new technologies. TNCs have firm-specific advantages that enable them to compete with local firms with better knowledge of consumers, factor markets, and the favor of local governments. These firm-specific advantages in product-process technology, management, and marketing competence represent something more than simple input of capital into a host country and may influence both the structure of the host economy and performance of host country firms. By taking their firm-specific assets abroad, TNCs may increase competition in host country markets and in that way, force existing firms to adopt more efficient methods. FDI thus may improve the efficiency of host country firms through the diffusion of new technologies and management practices in host countries.

- **Linkage Structure between Foreign and Local Firms:** The third indirect effect is related to the linkage structure between foreign and local firms. If export-oriented foreign subsidiaries increase the purchase of inputs from the local firms as the subsidiary matures, the host country's trade balance will improve. Furthermore, such relationships between a foreign subsidiary and its local suppliers are also important potential sources for technology spillovers, which may stimulate

productivity improvements and the competitiveness of host country firms. Export promotion through FDI has been one of the key reasons for the government's desire to attract FDI. FDI can help to channel capital into industries that have the potential to compete internationally, and the global linkages of TNCs can facilitate their access to foreign markets. In addition to exports that are generated directly by foreign affiliates, FDI can also promote exports by framing proper marketing strategies, adopting optimal methods, following suitable procedures, and channels of distribution (Zhang and Song, 2000).

There is an intense competition among nations around the world to attract export-oriented FDI (EFDI). This is particularly true among developing countries where EFDI acts as instrumental tool for strengthening their export competitiveness particularly in the knowledge-based industries. There are many reasons for this competition. In general EFDI brings in a 'bundle of intangible assets' such as new technology, skill, marketing know-how and management which are relatively scarce in developing countries but are indispensable for export performance. Traditionally India has not been a favorable destination for EFDI as compared to other countries such as China, Singapore or Malaysia. Even the countries such as Argentina, Brazil, Costa Rica, Mexico, Peru and Taiwan have been found to attract EFDI considerably higher as compared to India. There is no doubt in the fact that countries with relatively low-cost labour having availability of good infrastructure and raw materials along with outward looking policy regime tends to attract more EFDI. The size of domestic market however is found to have a dampening effect on the export orientated FDI (Pradhan and Abraham, 2004).

3. Review of Existing Studies

This section deals with the evaluating literature on short-run and long-run causality between FDI (Foreign direct investments) and trade, which may be helpful for policy makers to device better trade policies in the host countries after having the idea about this causation. Various studies showing the causal relation between FDI and trade have been presented in Table 1.

The relationship between outward FDI and exports has been empirically examined and the existence of long-run Granger-causality from outward FDI to exports for the Spain was pointed out which have important policy implications for the development planning and strategies (Bajo and Montero, 1994). The linkages between foreign direct investment and international trade for developing, OECD and industrialized countries has been investigated. Complementarity between FDI and trade was found at the macro-economic level due to spillovers between firms within industries and between industries within the manufacturing sector. Linkages between FDI flows and trade were stronger in developing than in industrialized countries. In an era of rapidly growing trade integration countries cannot choose their capital account policies independently of their degree of openness to trade. This notion also provides a partial motivation for the deep trade and financial

liberalizations undertaken by developing countries in recent years on account of the positive feedbacks between trade and FDI (Aizenmana and Noy, 2006; Fontagne and Pajot; 2000; Pantulu and Poon 2002).

Table: 1 Causal Relationship between FDI and Trade

Studies Direction of Causality	Bajo and Montero (1994)	Fontagne and Pajot (2000)	Liu et al. (2001)	Pantulu and Poon (2002)	Srivastava and Sen (2004)	Aizenmana and Noy (2006)	Ahmed et al. (2007)	Liu and Graham (2008)	Iqbal et al. (2010)
Sample Size	Spanish Economy	21 OECD Countries	China	29 Countries respectively	India	81 Developing Countries	5 Sub Saharan African Economies	54 Countries	Pakistan
Period of Study	(1977- 1992)	(1984- 1994)	(1984- 1998)	(1996- 1999)	(1991- 2002)	(1982- 1998)	(1985- 2005)	(1999- 2006)	(1998- 2009)
Outward FDI→Exports	√	-	-	-	-	-	-	-	-
FDI→Trade	-	-	-	√	-	-	-	-	-
FDI↔Trade	-	√	-	-	-	√	-	-	-
Imports→FDI I→Exports	-	-	√	-	-	-	-	-	-
FDI→Exports	-	-	-	√	√	-	-	√	-
FDI↔Exports	-	-	-	-	-	-	√	-	√

Source: Author computations

√ Indicates the existence of causal relationship

The causal relationship between foreign direct investment and trade in China for the period 1984-1998 has been evaluated. It was concluded that the growth of China imports causes the growth in inward FDI from home country, which in turn causes the growth of exports from China to home country (Liu et al., 2001). Srivastava and Sen (2004) explored the causal relationship between FDI net inflows and service exports in the Indian economy over the period 1991 to 2002. The empirical results show the presence of short-run unidirectional granger causality from FDI to Services exports in the Indian economy in the post liberalization period. This analysis concluded that FDI has positively contributed to the growth of services exports in the Indian economy after initiation of economic reforms in the country.

Ahmed et al. (2007); Liu and Graham (2008); Iqbal et al. (2010) assessed the relationship between FDI inflows, exports and economic growth in the five Sub-Saharan African economies (Ghana, Kenya, Nigeria, South Africa and Zambia), Taiwan and South Korea and in Pakistan. The analysis revealed the long run relationship among the factors and found bidirectional causality between foreign direct investment and export. These were the two important factors responsible for enhancing economic growth in an economy. It was suggested that government should play a positive role in providing security to the investors around the globe.

It has been observed after reviewing the literature that a number of studies have found bidirectional causality between FDI and trade in case of the developing

countries (Aizenmana and Noy, 2006; Fontagne and Pajot, 2000) while Pantulu and Poon, (2002) have found uni-directional relationships between these variables. Further one-way relationship between FDI and exports has also been found by some studies (Bajo and Montero, 1994; Pantulu and Poon, 2002; Liu and Graham, 2008; Srivastava and Sen, 2004) on the other hand the causation between FDI and exports has found to be bi-directional in case of developed countries in some of the studies (Ahmed et al., 2007; Iqbal et al., 2010). Liu et al., 2001 revealed the existence of one-way relationship between FDI and Exports; Imports and FDI in China.

The causal relationship between trade and FDI is complex. This necessitates serious attention towards investigating the causal links between FDI and Trade. Most of the studies have found FDI and trade relationship but there exist lack of general consensus among the researchers. This suggests the relationship to be country specific. A few studies have examined the causality between exports and imports of India and China, therefore, the comparison of these countries on the basis of testing for causality between FDI, exports and imports with recent data is extremely needed. This suggests the importance of empirical investigations of FDI–trade relationships for these countries.

4. Trade Performance of India and China

Exports not only stimulate economic development and structural change, but also attract FDI (Foreign direct investments). This is also true that the inflow of FDI plays a major role toward the expansion of exports of host country. Therefore, the appropriate growth strategy is to provide incentives for FDI, which in turn leads to increase in export as well the overall development of the domestic economy.

It is apparent from the table 2 and figure 1 that from the year 1980 to 2011 Trade/GDP ratio has a wide range i.e. 11.8 % - 54.69% in case of India and 19.8 %-71.9 % in case of China. As compared to India, this ratio was higher in China since 1980. From 1991, India's trade/GDP ratio has been rising continuously which reached at its highest level of 54.69 percent in the year 2011. This ratio in China was noticed to be 71.9 % for the same year. The year 2004 and 2003 witnessed substantial increase in trade/GDP ratio in India and China respectively. This is due to more liberal and effective trade promoting policy framework adopted by the government of the countries including more trade incentives, provision of infrastructural network and genuine efforts towards economic stabilization, which corrected the wave of business optimism enhancing multilateral investment agreements leading to rise in foreign mobility of capital. It was the favorable global business environment which was responsible for tremendous trade expansion in both the countries. Table further indicates that position of China remained dominant as compared to India as far as Trade/GDP ratio is concerned. A more open economy gains more access to new knowledge and is exposed to more competition from the outside world. Moreover, trade/GDP ratio in India and China in the year 2011 (54.69 %) is found be similar because of more rapid improvement in its trade position in case of India.

Table: 2 Trade as a Percentage of GDP (1980-2011)

Years	India			China		
	GDP (\$million)	Trade (\$million)	Trade/GDP%	GDP (\$million)	Trade (\$million)	Trade/GDP%
1980	185402	28840	15.55	306520	65712	21.43
1981	197762	28651	14.48	293852	70722	24.06
1982	201927	28551	14.13	295370	62935	21.30
1983	220318	29798	13.52	314637	62552	19.88
1984	218222	30223	13.84	317352	70266	22.14
1985	227247	31601	13.90	309083	73665	23.83
1986	248982	29885	12.00	304348	78342	25.74
1987	275529	32680	11.86	329851	105228	31.90
1988	304809	38735	12.70	413439	142337	34.42
1989	301764	43498	14.41	459782	154572	33.61
1990	327930	49258	15.02	404494	135045	33.38
1991	290687	48044	16.52	424117	155536	36.67
1992	291925	53010	18.15	499859	152644	30.53
1993	284972	54185	19.01	641069	184905	28.84
1994	328472	61626	18.76	582653	230497	39.55
1995	370522	77087	20.80	756960	282498	37.32
1996	390520	85760	21.96	892014	325805	36.52
1997	420040	91643	21.81	985046	371655	37.72
1998	428750	100265	23.38	1045199	371021	35.49
1999	454952	109042	23.96	1098832	411289	37.42
2000	468970	119087	25.39	1192836	530243	44.45
2001	483466	127805	26.43	1311558	570734	43.51
2002	503954	139788	27.73	1454040	697037	47.93
2003	592535	168328	28.40	1647918	937568	56.89
2004	688803	232094	33.69	1936502	1262371	65.18
2005	808884	315000	38.94	2282554	1548975	67.86
2006	903226	391516	43.34	2661265	1914056	71.92
2007	1141346	484779	42.47	3400351	2375831	69.87
2008	1252403	577201	46.08	4348303	3072963	70.67
2009	1353215	590187	43.61	5050543	2446583	48.44
2010	1722328	789541	45.84	5739358	3273184	57.03
2011	1848241	1010830	54.69	7298121	3984133	54.59

Source: World Investments Reports for the years 1982 to 2012.

The role of FDI in export promotion in developing countries remains controversial and depends crucially on the motive for such investment. If the motive behind FDI is to capture domestic market then it may not contribute to export growth. On the other hand, if the motive is to tap export markets by taking advantage of the country's comparative advantage, then FDI may contribute to export growth. Thus, whether FDI contributes to export growth or not depends on the nature of the policy regime (Sharma, 2003).

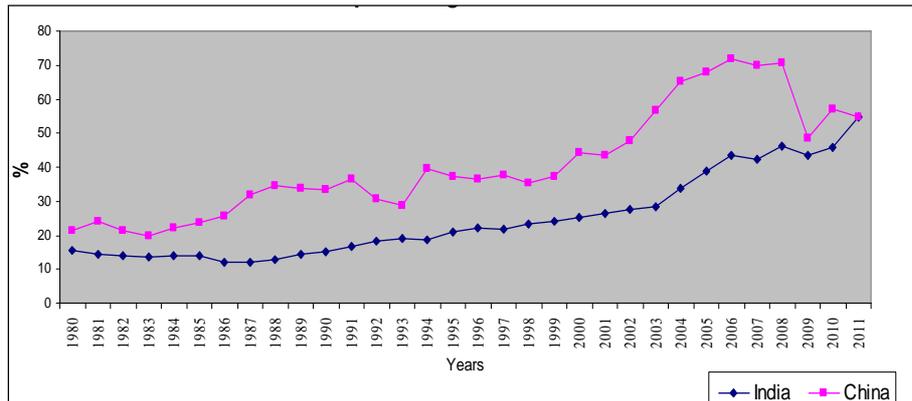


Figure 1: Trade as a Percentage of GDP in India and China

The difference in the trade performances of China and India is very interesting because the two countries share a variety of common social and economic characteristics. Both the countries adopted the heavy industry-oriented development policy and even launched their first Five-year Plan in the same decade. China and India's trade difference is mainly caused by the differences in their development strategies. Since the 1980s, China had already adopted the export-oriented development strategy in accordance with its abundance in labor. In contrast, India began to switch from the inward-oriented controlled regime to the outward-oriented regime only in the early 1990s. The late adoption of an export-oriented development strategy partially results in India's relatively lower export volume at present. China initially adopted a heavy industry-oriented development strategy after independence. However, China lacked sufficient capital to finance heavy industries, it had to overvalue its currency and adopt the import substitution strategy by setting high import tariffs for foreign products in accordance with the idea of infant industry protection (Tian and Yu 2011).

5. Data Base and Methodology

5.1. Variables, Data Source and Period of the Study

Three variables used for testing the causality between FDI and trade are the Foreign Direct Investment (FDI), Export (EXP) and Import (IMP) for both India and China. The data has been collected from the World Development Indicators and World Development Reports published by the World Bank for the period 1976-2012. All the variables have been deflated at 2004-05 prices by using Purchasing Power Parity Index (PPI) so as to nullify the impact of change in prices.

5.2. Choice of Variables

The causal relationship between trade and FDI is complicated. This necessitates paying an attention towards finding the causal links between FDI and Trade. Most

of the studies have found FDI and trade relationship. Some have investigated bi-directional causality, (Aizenmana and Noy, 2006; Fontagne and Pajot, 2000) while some others have found uni-directional relationships between these variables (Tedesse and Ryan, 2001; Pantulu and Poon, 2002). Several studies investigated causality between FDI and exports. Srivastava and Sen (2004) found uni-directional causality running between FDI and exports for India and Liu and Graham (2008) observed the same results for Taiwan and South Korea but the bidirectional causality has been found by Aizenmana and Noy, (2006) and Iqbal et al. (2010) for developing countries and for Pakistan respectively.

This suggests the relationship to be country specific. A small number of studies have examined the causality between exports and imports of India and China, therefore, the comparison of these countries on the basis of testing for causality between FDI, exports and imports with recent data is extremely needed. This suggests the importance of empirical investigations of FDI–trade relationships for these countries.

5.3. Hypotheses Taken in the Study

The various hypotheses to be tested for achieving the above mentioned objective of the study are categorized as under:

- Imports do not cause FDI
- FDI does not cause Imports
- Exports do not cause FDI
- FDI does not cause Exports
- Imports do not cause Exports
- Exports do not cause Imports

5.4. Econometric Methodology

The first step in the analysis is to verify the stationarity of the data series. Augmented Dickey-Fuller (ADF) test has been employed for this purpose. The unit root property of the data series is crucial for the causality analyses. Variables that are non-stationary can be made stationary by differencing the number of differencing (**d**) required to make the series stationary identifies the order of integration **1(d)**. The unit root test results reveal that the null hypothesis of unit root for the selected variables such as FDI, exports and imports in case of each individual country was not rejected at levels. But, when the series are first differentiated, both the series are found to be stationary and integrated at the order of one **1(1)**. All the variables (FDI, EXP and IMP) have been taken in logarithmic form to make them stationary at lesser order of integration. After that, stationarity of Regression residuals for estimating the existence of cointegrating relationships between FDI, Exports and Imports have been tested for India and China. Engle Granger test for cointegration can be used if the residuals of the data

series are stationary, which means there exist cointegration relationship between the variables.

ADF test has been used in order to test the stationarity of residuals. It has been found that the regression residuals are non stationary so the cointegration technique cannot be applied so standard Granger Causality test has been used to examine possible causal relationships among three variables i.e. FDI, Exports and Imports in India as well as in China separately. Firstly following unrestricted equation with n lags is estimated by using OLS.

$$F_t = \alpha_0 + \sum_{i=1}^l \alpha_i F_{t-i} + \sum_{j=1}^l \beta_j E_{t-j} + \varepsilon_t \quad (1.1)$$

$$E_t = \omega + \sum_{i=1}^l \gamma_i E_{t-i} + \sum_{j=1}^l \theta_j F_{t-j} + \varepsilon_t \quad (1.2)$$

Equation 1.1 postulates that current exports is related to past values of exports itself as well as of FDI and equation 1.2 postulates a similar behavior for FDI similarly in order to study the granger causality between FDI and imports; exports and imports following sets of equations can be framed.

$$F_t = \alpha_0 + \sum_{i=1}^l \alpha_i F_{t-i} + \sum_{j=1}^l \beta_j I_{t-j} + \varepsilon_t \quad (2.1)$$

$$I_t = \omega + \sum_{i=1}^l \gamma_i I_{t-i} + \sum_{j=1}^l \theta_j F_{t-j} + \varepsilon_t \quad (2.2)$$

$$I_t = \alpha_0 + \sum_{i=1}^l \alpha_i I_{t-i} + \sum_{j=1}^l \beta_j E_{t-j} + \varepsilon_t \quad (3.1)$$

$$E_t = \omega + \sum_{i=1}^l \gamma_i E_{t-i} + \sum_{j=1}^l \theta_j I_{t-j} + \varepsilon_t \quad (3.2)$$

Where F stands for FDI; E for exports and I for Imports.

To test the null hypothesis F test is conducted by comparing the respective residual sum of squares, which are given as:

$$RSS_i = \sum t \mu t^2 \quad ; \quad RSS_0 = \sum t \hat{e} t^2$$

The test statistics given as:

$$F = \frac{(RSS_0 - RSS_i)/P}{RSS/(T-2P-1)} \sim FPIT-2p-1$$

It follows the F distribution with m and (n-k) degrees of freedom. If the computed value of F is greater than the specified critical value then the null hypothesis is rejected (Gujrati, 2004).

5.5. Statistical Diagnostic

Three models have been constructed to check the stationarity of regression residuals, where ADF t-statistics for residual was found to be insignificant in both the countries and the results are reported in Table no. 3 for India and Table no. 4 for China.

Table: 3 Results for Stationarity of Residuals for Estimating Cointegrating Relationships between FDI, Exports and Imports (India)

Models	Constant	Coefficient	D.W	Adjusted R ²	ADF t-Statistics for Residual	Decision about presence of Cointegration
Model 1 (IMP on FDI)	7.489 (40.49)*	0.463 (16.37)*	0.77	0.89	-3.212	No
Model 2 (EXP on FDI)	7.266 (41.26)*	0.475 (17.65)*	0.97	0.90	-3.403	No
Model 3 (EXP on IMP)	0.378 (2.34)*	0.977 (61.90)*	0.47	0.99	-2.858	No

* denotes significance at the level 1%.

Table: 4 Results for Stationarity of Residuals for Estimating Cointegrating Relationships between FDI, Exports and Imports (China)

Models	Constant	Coefficient	D.W	Adjusted R ²	ADF t-Statistics for Residual	Decision about presence of Cointegration
Model 1 (IMP on FDI)	0.386 (11.37)*	8.116 (27.72)*	0.28	0.80	-1.121	No
Model 2 (EXP on FDI)	0.401 (11.14)*	8.065 (26.03)*	0.25	0.79	-1.446	No
Model 3 (EXP on IMP)	0.957 (72.88)*	0.412 (2.77)*	1.06	0.99	-3.158	No

* denotes significance at the level 1%.

The results show the absence of cointegrating relationship between the variables of the study. Since all the variables are not cointegrated, the standard granger causality test to determine short run causal relationship between the variables can be performed without including the error correction term.

6. Empirical Findings

In the conventional two country trade models based on the Heckscher- Ohlin framework, factor mobility across countries may substitute for trade if production functions are identical, but may complements trade if capital flows into foreign industries in which domestic investors have a comparative disadvantage. In the theories of FDI, two types of production arrangements are known to exist in multinational enterprises i.e. vertical integration and horizontal integration. The former is likely to facilitate trade by increasing exports of capital equipments and factor services from the home country. The latter is a substitute for trade given that multinational enterprises have shifted their production for exports from their home country to the host country (Liu and Shu, 2001). The empirical findings based on Granger model are shown in tables 5 and 6 for India and China respectively.

Results of Granger causality test for India as presented in the table 5 show that the null hypothesis of 'FDI does not cause imports' is rejected at 1% level. Moreover,

null hypothesis for 'imports do not cause FDI' is also rejected at 1% significance level. This leads to the conclusion that there exist bidirectional causality between FDI and imports. Similarly the null hypothesis of 'FDI does not cause exports' as well as null hypothesis for 'exports do not cause FDI' have been rejected at 1% level. This also indicates the presence of bidirectional causality between FDI and exports. There is strong evidence of bidirectional causality between exports and imports as the null hypothesis of 'exports do not cause imports' and vice-versa have been rejected at 1% level. In brief it can be said that FDI causes imports which in turn causes exports and exports further causes FDI. It is also noted that FDI also causes exports which in turn leads to more imports.

Table: 5 Granger Causality Test for FDI, Exports and Imports in India

Null Hypotheses	F values	P values	Inferences
Imports do not cause FDI	9.617	0.000*	Rejected
FDI does not cause Imports	6.040	0.007*	Rejected
Exports do not cause FDI	26.017	0.000*	Rejected
FDI does not cause Exports	5.235	0.013*	Rejected
Imports do not cause Exports	27.985	0.000*	Rejected
Exports do not cause Imports	36.806	0.001*	Rejected

*Significant at 1%.

Table: 6 Granger Causality Test for FDI, Exports and Imports in China

Null Hypotheses	F values	P values	Inferences
Imports do not cause FDI	1.833	0.181	Accepted
FDI does not cause Imports	3.024	0.067***	Rejected
Exports do not cause FDI	1.134	0.338	Accepted
FDI does not cause Exports	2.615	0.091***	Rejected
Imports do not cause Exports	6.092	0.007*	Rejected
Exports do not cause Imports	4.741	0.018*	Rejected

Significant at 1%, * Significant at 10%.

Table 6 signifies the granger causality results for China. The results of India is not similar to China as the causality between two variables is also country specific. The null hypothesis 'FDI does not cause imports' is rejected at 10% level on the other hand the null hypothesis of 'imports do not cause FDI' is accepted, which indicates the unidirectional causality running from FDI to imports. Again the null hypothesis for 'FDI does not cause exports' is rejected at 10% level, and the null hypothesis for 'Exports do not cause FDI' is not rejected. There is only one way causality running from FDI to exports, which indicates that FDI causes exports but exports do not influence FDI. The hypothesis of 'imports do not cause exports' is rejected at 1% level, and the hypothesis of 'Exports do not cause Imports' is also rejected at 1% representing the bidirectional causality between imports and exports. These empirical results indicate a virtuous procedure of development for China i.e. more FDI into China will lead to more imports, which in turn will lead to rise in exports. Furthermore, more imports leads to more exports because of synergies created by this procedure.

China's inward FDI and trade have expanded very rapidly over the last two decades. China is a labour abundant developing country. One important attraction of China as a host country is its relatively cheaper labour. The combination of foreign technological, managerial and marketing expertise with China's labour force and other endowments makes foreign subsidiaries more competitive and able to export back to their parent country. The causation from FDI to China's export growth may also reflect China's special FDI policy, which encourages foreign-invested firms to export their products. Most of the newly industrialized economies produce labour intensive products in China and transfer the products back to the home economies (Liu et.al., 1997).

7. Summary, Limitations and Suggestions

Objective of the present study is to check the causality between FDI and trade. For this objective, Cointegration technique has been employed to examine the causal relation between FDI and trade in India as well as in China separately. Granger causality test for China gives the results which are not similar to India that suggests that causality between two variables is also country specific. There is strong evidence of unidirectional causality running from FDI to imports and FDI to exports i.e FDI influences imports and exports but not caused by imports and exports. However, there exist bidirectional causality between imports and exports. The empirical results indicate a virtuous procedure of development for China; more FDI into China leads to more imports, which in turn leads to more exports because of synergies created by this procedure. In this sense, inward FDI at economy level in China can be regarded as efficiency seeking, which increases the volume of trade. The causation from FDI to China's export growth may also reflect China's special FDI policy, which encourages foreign-invested firms to export their products; many firms from newly industrialized economies treat China as their export platform. The results for India show that there exists bidirectional causality between FDI and imports, FDI and exports and exports and imports which indicate that FDI causes imports (importing technologies) which in turn causes exports and exports further cause FDI. Moreover, it is also noted that FDI also causes exports which in turn leads to more imports.

Bi-causal relationship between imports and exports has been found in both the countries which suggest that India and China should focus more on technology imports and its transfer as an essential condition for expanding exports of these countries. Government of these countries should use this perspective of imports as an effective measure in formulation of their export promotion strategy. This will also promote industrial upgradation through advanced machinery and equipment.

Although this study has been able to explore extensively the set objectives yet there are many other Asian countries which could also be included in the study but due to time and data constraints this work has been restricted to India and China only.

7.1. Scope for Further Research

- During the past two decades, FDI has become increasingly important in developing countries. Among the developing countries, the Asian countries have large share of FDI inflows in the last three decades. The study can be further expanded by comparing economic performance of more Asian countries with longer time span for the analysis.
- FDI inflows in South Asia were associated with a many fold increase in the investment by national investors. It is an important aspect in pursuing growth and development among countries. Its role in global businesses is crucial enough to determine whether new market trends or marketing channels affect a specific country. Therefore economic impact of foreign direct investment in South Asian countries is of interest in itself.

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Appendix

Granger Causality Test for Exploring the Relationships between FDI, Exports and Imports in India

Pairwise Granger Causality Tests

Date: 06/09/12 Time: 15:12

Sample: 1 35

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause EXPORTS	29	5.23585	0.0130
EXPORTS does not Granger Cause FDI		26.0170	1.E-06

Pairwise Granger Causality Tests

Date: 06/09/12 Time: 15:12

Sample: 1 35

Null Hypothesis:	Obs	F-Statistic	Prob.
EXPORTS does not Granger Cause IMPORTS	29	36.8062	5.E-08
IMPORTS does not Granger Cause EXPORTS		27.9852	5.E-07

Pairwise Granger Causality Tests

Date: 06/09/12 Time: 15:12

Sample: 1 35

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause IMPORTS	29	6.04017	0.0075
IMPORTS does not Granger Cause FDI		9.61732	0.0009

Granger Causality Test for Exploring the Relationships between FDI, Exports and Imports in China

Pairwise Granger Causality Tests

Date: 06/09/12 Time: 18:22

Sample: 1 35

Null Hypothesis:	Obs	F-Statistic	Prob.
EXP does not Granger Cause FDI	29	1.13414	0.3383
FDI does not Granger Cause EXP		2.61548	0.0938

Pairwise Granger Causality Tests

Date: 06/09/12 Time: 15:12

Sample: 1 35

Null Hypothesis:	Obs	F-Statistic	Prob.
IMP does not Granger Cause FDI	29	1.83351	0.1815
FDI does not Granger Cause IMP		3.02417	0.0674

Pairwise Granger Causality Tests

Date: 06/09/12 Time: 15:12

Sample: 1 35

Null Hypothesis:	Obs	F-Statistic	Prob.
EXP does not Granger Cause IMP	29	4.74193	0.0184
IMP does not Granger Cause EXP		6.09277	0.0072