

# The Causal Relationship of Continent Wise FDI Inflows, 1980-2008

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## ABSTRACT

Since 1990s, a lot of countries in the world have witnessed sustainable growth in their economies, and even faster growth in their international transactions, especially in the form of FDI. The share of FDI in world GDP has grown five times through during 1980s to 1990s, which makes FDI a subject of ever growing interest. The current study attempts to make a contribution in this context, by analyzing the existence and nature of causalities, if any between different classifications of FDI inflows in the world. For this reason Granger causality test was used. The results for the different regions of the world clearly complement the Granger causality test results for world, developed and developing. Where both developed regions and world causes developing region FDI inflows but developing does not cause neither world nor developed. Both Africa and Asia share bicausal relationships among themselves and with world and America. Furthermore, Europe causes both Asia and Africa.

**KEYWORDS:** Bidirectional and Unidirectional relationship, Continent wise, FDI, Granger causality, Stationary.

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## INTRODUCTION

After 1980, the restrictions on FDI (Foreign Direct Investment) over the world were dramatically reduced. This was due to host of factors like globalization policies of developing countries, accelerating technological change, emerging worldwide integrated production and marketing networks, existing bilateral investment treaties, prescriptions from multilateral development banks, and positive evidence from developing countries that have opened their economies to FDI. Moreover, the drying-up of commercial bank lending because of debt crises which brought many developing countries to reform their investment policies in order to attract foreign investment; in this case FDI emerged to be an attractive alternative to banks as a source of capital inflows. In the process, incentives and subsidies were offered, particularly to transnational companies that supported developing countries industrial policies. All these led to a rapid expansion of FDI flows around the world during the last 30 years from only \$51.5 billion in 1980, FDI outflows reached \$1.2 trillion in 2000 and \$1.7 trillion in 2008[1].

Many empirical studies have focused upon the causality of FDI, from different point of views. Significant relationships have been found between FDI and technological intensity[2], firm size[3], capital intensity[4] and product differentiation[5] and other related variables. These studies though provide rationale and a generalized method for explaining variations in FDI, however, do not focus on regional variations. It is this aspect that has been explored in the present study; Therefore, objectives of the present study are to:

- Analyze causal relationship among world FDI inflows and FDI inflows of different regions.
- Analyze causal relationship among FDI inflows of different regions.

There are certain factors which causes change and influence the trends of FDI inflows. The most important ones are:

### Location as a region

Dunning's [6,7] eclectic paradigm posits generically that an MNC invests in the most advantageous location. This linkage is dyadic, between each MNC and its unique location decision within a country. However, if we consider location decisions of various MNCs collectively, in the context of the bandwagon effects, then 'location' can have a wider, regional connotation. MNCs often evaluate prospective FDI destinations on a regional, rather than single-country basis. Geographically contiguous countries are likely to have similar cultures, political and economic systems, and development levels. Such countries often constitute a regional economic grouping, with considerable uniformity in their trade and investment policies. Numerous benefits accrue to MNCs from operating in such unified markets, with common communication infrastructure, intra- regional trade without barriers, and networking

opportunities. FDI into Western Europe (EU), East Asia (ASEAN), South Asia (SAARC), Eastern Europe, Latin America (e.g., MERCOSUR) and Africa (PTA), etc. has followed the same regional pattern in exploiting the advantages of economic integration outlined above and capitalizing on an international division of labor [8]. Therefore, MNC investments initially flow to the region that provides the best mix of the traditional FDI determinants. This background provides an impetus to the world FDI inflows and region wise analysis of world FDI inflows, the core concept of the present study.

### **Cost-reduction pressures**

Reducing cost can build-up intense competitive pressures in the original host region which would lead MNCs to make efficiency-seeking investments in low-wage countries to reduce costs.

### **Liberalized investment environment**

The impudent economic policies of most developing countries in Asia, Latin America and Africa up to the early 1980s were basically caused by their socialist leanings. This, together with the greater benefits of investing in Western Europe, prevented any significant FDI into above regions. However, the subsequent failure of planned economies caused wide spread disenchantment with restrictive policies and other disadvantages of closed economy gradually encouraged these governments to start opening up their economies [9]. Furthermore, MNCs' investments into a region will be contingent upon the countries in that region adopting investor-friendly liberalization policies.

### **Institutional prerequisites for attracting FDI**

The function of governments in providing a favourable environment to FDI cannot be over-emphasized. Foremost, they need to establish prerequisites such as a stable political and economic environment, the rule of law, and better infrastructure. Educated and technically skilled work forces, low wages, open economy and stable currency are also essential [9]. However, it needs to be mentioned that the optimal mix of FDI determinants for low-wage countries would be different from the mix for the developed countries.

### **Cultural proximity**

Many previous studies have found that cultural proximity play a crucial role for to the home country to attract more FDI [10, 8]. However, some other studies have claimed that the preferences and tastes of consumers in different nations are converging to a global norm [11], and hence the effect of cultural distance is likely to be weaker progressively. Moreover, MNCs might also be forced to ignore the greater cultural distance of developing countries in favor of their low-wage advantages.

## **SCOPE AND METHODOLOGY**

The data covers world and region wise FDI inflows for the period 1980-2008. Data are secondary which have been collected form IMF and UNCTAD. The econometric technique employed for empirical analysis includes ADF test and Granger causality test which are explained in detail in the later stage of the article.

For the sake of empirical analysis the data on world FDI inflows was classified into developed and developing at first instance and continent wise classification has also been considered. Two Granger causality test were run for both the classifications.

In this study, Grange causality test was used to test the hypothesis that there is no causal relationship between world FDI and other classifications of the world. The study addresses all the problems that come across during the course of employing quantitative techniques.

### **Granger Causality Test**

The Granger causality technique was proposed by Granger [12] and subsequently modified by Toda and Yamamoto [13]. This test is usually preferred to other tests because it is very robust.

In order to determine whether changes in one variable are a cause of changes in another, we employed the Granger (1969) causality test. Granger causality method of investigating whether A causes B is to see how much of current B can be explained by past values of B and then to see whether by including lagged values of A we can improve the explanation of B. B is said to be Granger-caused by variable A if A helps in the prediction of B, or if the coefficients on the lagged A's are statistically significant. The main idea of causality is quite simple, if A causes B, then changes in A should precede changes in B [14]. This characteristic makes causality test an important one in the test of endogeniety.

$$Y_t = \gamma + \sum_{i=1}^k \alpha_i \cdot Y_{t-i} + \sum_{i=1}^k \beta_i \cdot X_{t-i} + \mu_t \quad (1)$$

$$X_t = \phi + \sum_{i=1}^k \delta_i \cdot Y_{t-i} + \sum_{i=1}^k \lambda_i \cdot X_{t-i} + \eta_t \quad (2)$$

Based on the equations (1) and (2), four different hypotheses about the relationship between these two variables can be formulated:

- Unidirectional Granger-causality from X to Y. In this case S increases the prediction of the economy but not vice versa. Thus  $\sum_{i=1}^k \beta_i \neq 0$  and  $\sum_{i=1}^k \delta_i = 0$
- Unidirectional Granger-causality from Y to X. In this case the Y increases the prediction of the X but not vice versa. Thus  $\sum_{i=1}^k \beta_i = 0$  and  $\sum_{i=1}^k \delta_i \neq 0$
- Bidirectional (or feedback) causality. In this case, and  $\sum_{i=1}^k \beta_i \neq 0$  and  $\sum_{i=1}^k \delta_i \neq 0$ , so in this case the Y increases the prediction of the X and vice versa.
- Independence between Y and X. In this case there is no Grange causality in any direction, thus  $\sum_{i=1}^k \beta_i = 0$  and  $\sum_{i=1}^k \delta_i = 0$

Macroeconomic time-series data are usually non-stationary [16] and thus conducive to spurious regression, therefore, before proceeding with the Granger causality test we test for stationarity of the data series. A unit root test based on the structure in (3) was carried out in order to know about the problem of non-stationarity:

$$\Delta X_t = \kappa + \rho \cdot t + \theta_i \cdot X_{t-i} + \sum_{i=1}^n \varphi_i \cdot \Delta X_{t-i} + \varepsilon_t \quad (3)$$

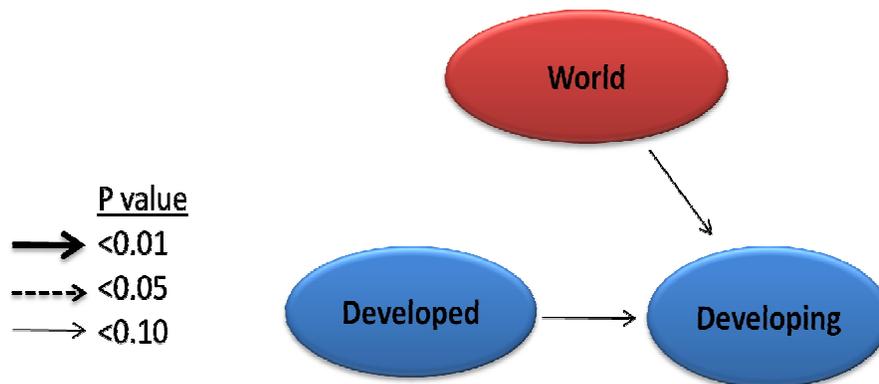
In which X is the variable under consideration, Δ is the first difference operator, t captures any time trend, ε<sub>t</sub> is a random error, and n is the maximum lag length. If we do not reject the null hypothesis θ = 0, then we conclude that the series under consideration has a unit root and is therefore non-stationary.

Using Eviews package the stationarity of the variables were checked. Results showed that Oceania at level is stationary; Africa at first difference become stationary and other variables at second differences become stationary. MacKinnon criteria used for rejecting hypothesis at 1% level. We therefore proceed with the Granger causality test among all the variables using second-differences of the respective series. Following are the results of Granger causality test

### RESULTS AND DISCUSSION

It was quite obvious from the chart 1 that both world as well as developed countries FDI inflows was causing developing countries FDI inflows; however developing countries were causing neither world nor developed FDI inflow. On the other side there was no relationship between world and developed FDI inflows.

**Chart 1** Granger causality relations between world, developed and developing countries



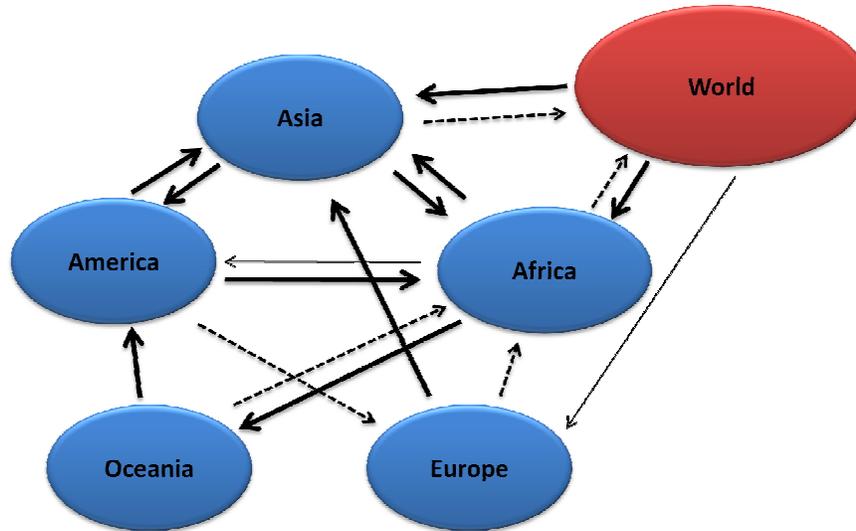
**Chart 2** Granger causality relations between world and other regions

Chart 2 indicates that world had bidirectional causal relationship with Asia and Africa, whereas it had unidirectional causal relationship with Europe with world causing Europe inflows. Same has been observed in the Granger Causality tests among world, developed and developing regions.

Africa is one of the regions which was sharing bicausal relationships with world as well as three regions namely Asia, America and Oceania. Whereas Europe FDI inflows caused African FDI inflows and not vice versa, indicating unidirectional causal relationship.

In case of Asia the Granger causality test results indicated Asia sharing bicausal relationship with world, Africa and America. Like African case Asia had unidirectional relation with Europe.

America causes Asia, Africa and Europe. Whereas, America was caused by Oceania, Asia and Africa. Thus is clear that America had bidirectional causal relationship with Asia, Africa and unidirectional with Oceania and Europe.

The striking aspect observed in the case of Europe is the fact that it shared unidirectional relationship and no bicausal relations. Europe caused Asia, Africa and gets caused by America and world.

Oceania has relationship with only Africa and America. With Africa it has two way relationships whereas with America it was one way with Oceania causing America.

## Conclusion

The Granger causality test results for the different regions of the world clearly complement the Granger causality test results for world, developed and developing. Where both developed regions and world causes developing region FDI inflows but developing does not causes neither world nor developed.

The most important observation is Asia and Africa indicating similar kind of Granger causality test results. Both Africa and Asia share bicausal relationships among themselves and with world and America. Europe causes both Asia and Africa this can be because of the application of the theories of location as a region, cost-reduction pressures, liberalized investment environment, institutional prerequisites for attracting FDI and cultural proximity for these two regions. The only difference is the absence of causal relationship between Oceania and Asia and presence of bicausal relationship with Oceania and Africa. The similarity of results for African and Asian regions can be attributed to the fact that both are potential market for FDI inflows with presence of vast area and population.

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