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INDIAN ECONOMIC REFORMS & DIRECT FOREIGN INVESTMENTS: HOW MUCH DIFFERENCE DO THEY MAKE TO NEIGHBORS?

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ABSTRACT

The unprecedented emergence of a country as large as India in South Asian region raises the issue of how it will affect neighboring economies interms of attracting FDI inflows. Does huge FDI inflows of India lead to '*investment creating effect*' or otherwise for its neighbors? If so, do FDI inflows in India exploit the economic reforms process and thereby affect other economies in the region?

In this paper, we explore these issues empirically using data for four South Asian economies (Pakistan, Sri Lanka, Bangladesh and Nepal) from 1975 to 2006 and control for other key determinants of FDI inflows. Using Chantasasawat (2004) and Mercereau (2005) approach, we develop five different methodologies to create '*India effect*' and examine its impact on FDI inflows of its neighbors.

Using all the five methods, the results suggest that the *India effect* is positively related to the levels of FDI inflows of its neighbors. The volatility in FDI inflows of India is not the most important factor in having a detrimental affect on inflows of FDI in the region. Finally, there is a positive spillover effect of Indian economic reforms on FDI inflows of India, which inturn is leading to increase in attractiveness of FDI of its neighbors. Also found is the negative effect of cost of reversal of Indian reforms on neighbors FDI inflows.

Keywords: FDI inflows, India & South Asia

JEL Classification: F 20; O 53.

01. Introduction

Over the years, India followed market distorting policies such as placing restrictions on both foreign and private investments, restricting imports and exports, controlling production and distribution and administered price controls and so on. As a result, the economy grew at an average growth rate of 3% throughout and by 1990, India confronted to the problems of low growth, poor socio-economic conditions and balance of payments crisis. Given the width and depth of market distorting policies which India followed over the decades, the primary focus of the reforms was on correcting these distorting policies. As a result of this, India witnessed major policy reforms and deregulation in its economic history. The government of India in 1991 launched first generation economic reforms program. The focus of the reforms was to bring massive changes in trade, monetary and financial, fiscal & budgetary, pricing policies and institutional reforms.

One if the major focus area of reforms was the New Industrial Policy of 1991 which gave utmost priority to attracting of FDI inflows. This was followed by slow but significant relaxation of regulatory and entry restrictions on FDI inflows. This led to the substantial increase in the volume of FDI inflows into India. The FDI inflows in India in 1970 were around US$ 45 million, surged to over US$ 16 billion by 2006. According to the government sources, the FDI inflow in 2007 is expected to be around US$ 35 billion. In relative terms also, FDI inflow gained prominence. FDI inflows accounted for 8.7% of Gross Fixed Capital Formation (GDCF henceforth) in 2006, a significant increase from just about 0.20% in 1980. During the pre-reform period of 1980-1991, FDI inflows accounted for just 0.21% of GDCF in India. This increased substantially to around 3.3% during the reforms period 1992 to 2006 (UNCTAD, 2007). Though it is well known fact that compared to other emerging economies like China, Brazil and Mexico, India stands way behind. Even its share in fast emerging regions like East Asia and Latin American is very less. But, in South Asia, India is the largest recipient of FDI. The share of India in total FDI inflows in South Asia is around 76% in 2006.

The success of India interms of attracting huge FDI inflows raises an important question about its impact on its neighbors. Do increasing FDI inflows of India have any '*investment creating effect*' on its neighbors? Given the socio-economic, ethino-lingual, cultural, geographical and religious proximity with its neighbors further strengthens this question. Also, what are the effects of economic reforms on FDI inflows in India? And is there any spillover effect of this on FDI inflows of its neighbors? This paper is an attempt to answer these questions using the data for four major South Asian economies namely, Pakistan, Sri Lanka, Nepal and Bangladesh for the period 1975 to 2006.

The rest of the paper is organized as follows: the next section provides a glimpse on trends and prospects of FDI scenario is South Asia and the role of India. In section 3 we formulate the econometric models to be estimated and construct *India effect* variables. In section 4 results are discussed and finally section 5 concludes the study.

02. FDI inflows in South Asia

The FDI flow to South Asia started picking up only in the mid-1990s. The FDI inflows of South Asia in 1970 was just US$ 68 million. This increased to US$ 203 million by 1980. Though the FDI inflows increased from 1980 onwards, the pace was very slow till 1992. In 1993, FDI inflows in South for the first time crossed US$ 1 billion mark. This was due to the launch of economic reforms program in the respective countries. From there on, the inflows have surged to reach to over US$ 22 billion by 2006.

Graph 1

FDI Inflows: Comparative picture of South Asia
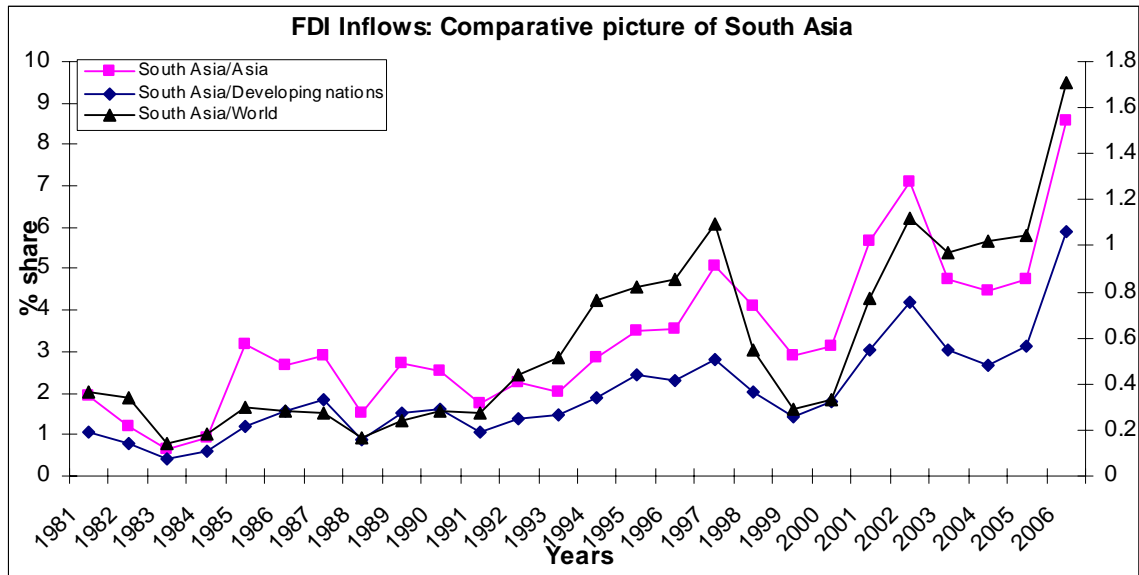
As a result of the liberalization process, the share of FDI of South Asia to Asia increased from 1.92% in 1981 to around 8.59% in 2006. When compared to developing countries, the share of South Asia increased from 1.06% in 1981 to 5.88% in 2006. The share of FDI inflows of South Asia in world FDI inflows also increased gradually from 0.37% in 1981 to 1.71% in 2006 (graph 1). If the sudden surge during post 1992 is attributed to reforms process in these countries, the dip during 2000-2001 is due to the global recession which led to the slow down in FDI inflows to the region.

However, despite this healthy improvement, the UNCTAD figures suggest that over one quarter of all the FDI inflows in Asia are being attracted by China, while rest of the countries specially in South Asia (including India) are receiving under 10% of FDI inflows of developing countries. Even FDI inflows as a percentage of GDCF in South Asian countries are quite low though they have increased largely during post 2000. The same trend is also seen in FDI stock inflows as a percentage of GDP. The stocks have significantly increased during the post 1990 period. With the meager stock inflows of just over US$ 2 billions in 1980, South Asia now has total FDI stock inflows worth US$ 73 billions by 2006. Again this huge increase is largely led by India followed by Pakistan.

Graph 2
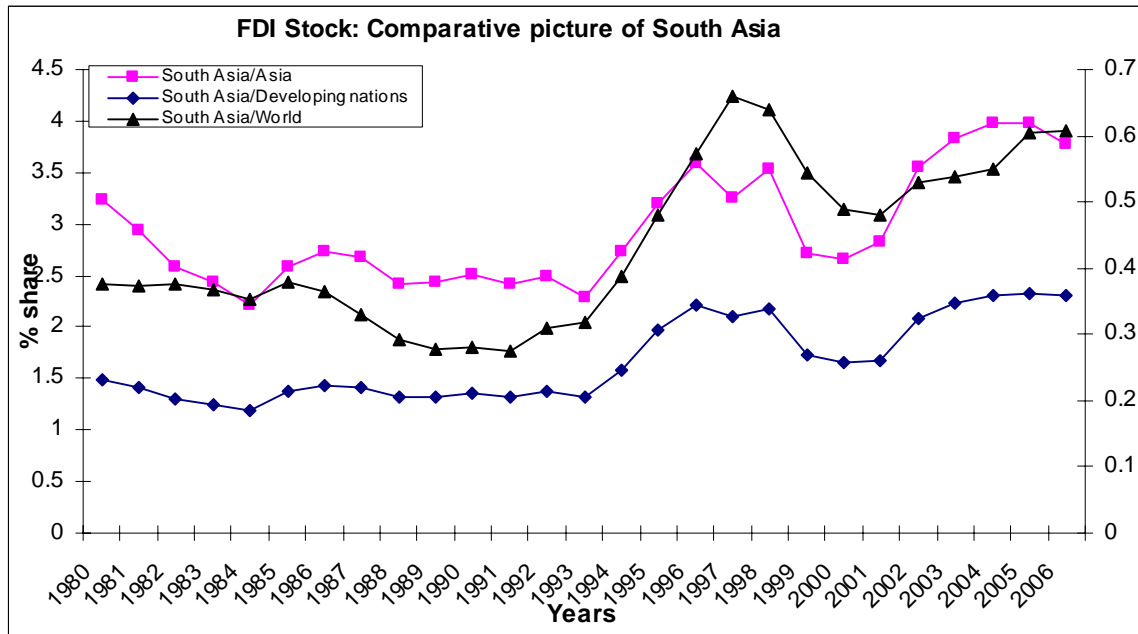
The share of FDI stock of South Asia in Asia increased marginally from 3.24% in 1980 to 3.78% in 2006, while it share surged in developing countries from 1.48% in 1980 to 2.31% in 2006. The share in world FDI stock inflows improved from 0.38% in 1980 to 0.61% in 2006 (graph 2).

2. 1. FDI Inflows among South Asian countries

The South Asian countries have been making consistent efforts to attract more FDI by liberalizing their FDI policy frameworks to compete with other countries in the region and amongst the developing countries. A glance at the performance of South Asian economies during the recent times reveals that there is not only an increase in FDI inflows, but overall macroeconomic performance has considerably increased compared to 1970s and 1980s (see annexure 1). However, the major issue which is plummeting South Asia to improve further is the poor institutional quality. On one hand, Pakistan is battling with restoring Democracy, while Sri Lankan government faces uphill task of battling with LTTE rebels. On the other hand, regime in Bangladesh has been taken over by the Military and Nepal is witnessing transition to full democracy. This coupled with poor social and physical infrastructure facilities and lack of concrete FDI policy is upholding the growth of FDI inflows in these countries. The only country which has consistent economic and political track record in the region is India. The rise of India as one of the most leading emerging economies in the world is providing economic opportunities and cooperation to its neighbors in the form of various trade and business treaties. India has attracted large number of FDI inflows in this region. Though the share of Indian FDI inflows compared to East Asia or Latin America or developing countries is still low, its share in South Asia is the highest.

The rise of India in terms of attracting FDI inflows is phenomenal. We see that the FDI inflows in India in 1970 were US$ 45 million, increased by 372 folds to reach to US$ 16, 881 million by 2006.

Table -1: FDI inflows in South Asia – by country & Share of India

(US$ mn)

Countries	1970	1975	1980	1985	1990	1995	2000	2006
a. Bangladesh	0	2	9	-7	3	92	579	625
b. Nepal	0	0	0.3	1	6	0	0.49	-7
c. Pakistan	23	25	64	47	278	492	309	4273
d. Sri Lanka	-0.3	-0.1	43	24	43	65	173	480
e. India	45	85	79	106	237	2151	3585	16881
Total Inflows (a+b+c+d+e)	67.7	111.9	195.3	171	567	2800	4646.5	22252
Share of India (a+b+c+d+e / e)	66.5 %	76 %	40.4 %	62 %	42 %	76.8 %	77.2 %	76 %
Share of India (a+b+c+d / e)	22.7 %	26.9 %	116.3 %	65 %	330 %	649 %	1061.5 %	5371 %

Source: complied by author from the data source UNCTAD

An examination of the FDI inflows to the individual countries in South Asia shows that most of the receiving countries have shown increasing but inconsistent trends (Table 1). For example Pakistan's FDI inflows increased from US$ 23 million in 1970 to US$ 64 million in 1980, but dropped to US$ 47 million in 1985. In 1990, its FDI inflows stood higher than that of India. Though FDI inflows increased in 1995, it saw a dip of US$ 183 million in 2000. Same is the case with Sri Lanka. During the same period, we see that FDI inflows of India increasing at consistent pace. The share of India in total inflows of South Asia (including India) increased from 66.5% in 1970 to 76% in 2006. Without India, its share increased significantly from 22.7% in 1970 to 65% in 1990. By 2006, its share increased to 5371%. This explains the surge in FDI inflows into India post 1990. Thus, India is a success story interms of attracting FDI inflows atleast in South Asia.

India's success in attracting huge FDI inflows in the post reforms period has raised the question of its impact on neighbors. Given the socio-economic, ethino-lingual, cultural, geographical and religious proximity with its neighbors further strengthens this question. In this paper we would like to examine whether the rise of India interms of attracting FDI inflows has in anyway encouraged its neighbors to attract more FDI inflows? In other words, is there any *India effect* in attracting FDI inflows of its neighbors? If there is any, we label this as '*investment creating effect*' by India.

The literature on this kind of studies is very less and particularly on India and South Asia are virtually absent. The studies of Ahearne et al. (2003), McKibbin & Woo (2003), Chantasasawat et al. (2004), Eichengreen et al. (2004), Mercereau (2005) and Ahearne et al. (2006) concentrate on the effect of China on its neighbors or other Asian economies interms of either FDI inflows or trade. The other different thing with these studies is that they all study the crowding out effect of China on other Asian economies. Our focus

rather is on India and South Asia to begin with and given the close proximities, we explore if there is any '*investment creating effect*' of India on its neighbors. The economies we consider for this study includes: Pakistan, Sri Lanka, Nepal and Bangladesh for the time period 1975 to 2006[1]. This apart, we also examine whether FDI inflows in India exploit economic reforms process and thereby have any spillover effect on its neighbors to attract FDI. To explore this possibility, we make use of Vadlamannati's (2007) Economic Reforms Index (ERI) constructed for India and interact this index with FDI inflows.

03. Research Design

3. 1. Modeling India effect

To investigate the impact of India on FDI inflows of its neighbors, we formulate nine models in total. We include the dependent variable as FDI inflows in US$ millions for each economy and we use log to detrend the series. We formulate our model as:

$$Log \ (FDI \ inflows) \ _{it} = \delta_l + \psi_2 \ Hypothesis \ Variables \ _{it} + \psi_3 \ Control \ Variables \ _{it} + \varepsilon_{it}$$

(1)

We first focus on defining the hypothesis variables. There are three sets hypothesis variables to be estimated for nine models. The first set of hypothesis variables is estimated individually for models 2, 3, 4, 5 & 6 include *India effect* variables. The model 7 is estimated by another hypothesis variable, which is volatility in FDI inflows and finally, models 8 & 9 deals with the spillover effects of Indian economic reforms.

2. 2. Hypothesis Variables 1: '*India Effect variables*'

Our focus now is to find an appropriate method which can proxy for *India effect* to examine its impact on FDI inflows of its neighbors. There are few studies that have used different variables to study the crowding out effect of Chinese FDI inflows and exports on other Asian economies. They are Chantasasawat et al. (2004), Eichengreen et al. (2004) and Ahearne et al. (2003). In their studies, they have used an additional indicator of FDI inflows of China expressed in log values. Thus, taking into consideration these studies, we include FDI inflows of India as a main independent variable. To control for linear trend, we introduce this variable in log values. Also, we use one year lag values because we feel that there is a substantial lag before the *India effect* adoption positively affects the levels FDI in other economies in the region. Thus, our first method is:

Log (Indian FDI Inflows) t-1

(2)

However, the study by Mercereau (2005) argues that the methodology adopted by the above mentioned studies has an important drawback. He argues that the values specified

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[1] We could not take into consideration Bhutan due to lack of data on most of the variables including FDI inflows. Also, we would have loved to perform the tests from 1970 onwards, but the economic reforms index constructed for India begins only from 1975 onwards.

in logarithms would not suffice the cause, as crowding out or crowding in effects depends on the rate of growth of FDI inflows rather than the actual level of FDI inflows.

We could have also included the share of each country's FDI inflows to the region's FDI inflows as a whole. This means that the FDI inflows of India would be on the right hand side of the equation. As highlighted by Mercereau (2005) this would result in a negative relationship simply because the values of FDI inflows of India are very huge compared to the countries in the sample. This would form a biased estimate, which we prefer to avoid. Another indicator possibly recollected is FDI Inflows/GDP ratio. But this again as pointed out by Mercereau (2005) would also be biased simply because for a given level of FDI inflows into India in that year would surely lead to positive sign as the size of the GDP of India is very large, thus resulting in biased estimates again.

Therefore, we follow four options as highlighted by Mercereau (2005) in his study of estimating the crowding out effect of China's FDI to Asian economies. The first two methods include, FDI inflows of India to combined GDP of all countries in South Asia, one excluding India and another including India in the denominator. This is a fairly good indicator compared to the above discussed ones as this assumes that the convergence is proportional to the size of an economy relative to the region.

$$\frac{\textbf{India-FDI}_t}{\sum \textbf{Region-GDP}_{it}}$$

$i = \{\text{Pakistan, Sri Lanka, Bangladesh \& Nepal}\}$

(3)

We also estimate the impact of Indian FDI inflows on South Asian economies using the same method (3) but this time, we also include Indian GDP in the denominator.

$$\frac{\textbf{India-FDI}_t}{\sum \textbf{Region-GDP}_{it}}$$

$i = \{\text{India, Pakistan, Sri Lanka, Bangladesh \& Nepal}\}$

(4)

Moving ahead, we also introduce another two methods namely, FDI inflows of India to total FDI inflows of South Asian region, one excluding and another including India in the denominator. The rationale behind introducing these variables is that the FDI inflows of India if arguably increases FDI inflows of its neighbors then this variable should effectively yield positive sign. However, if India's share of FDI if is no way connected to its neighbors, then the variable would remain insignificant irrespective of the sign. But, looking at the figures of FDI inflows, we strongly feel that the former would be true. This is because, we see that FDI inflows of India has increased rapidly over the years and so do the FDI inflows of other countries in South Asia has gone up.

$$\frac{\textbf{India-FDI}_t}{\sum \textbf{Region-FDI}_{it}}$$

$i = \{\text{Pakistan, Sri Lanka, Bangladesh \& Nepal}\}$

We also estimate the impact of Indian FDI inflows on South Asian economies using the same method (5) but this time, we also include Indian FDI inflows in the denominator.

$$\frac{\text{India-FDI}_t}{\sum \text{Region-FDI}_{it}}$$

i = {India, Pakistan, Sri Lanka, Bangladesh & Nepal}

3. 3. Hypothesis Variable 2: '*Volatility in FDI inflows*'

In the model 7, we probe the impact of volatility in Indian FDI inflows on neighbor's FDI inflows. $\sigma_t^{I^{FDI}}$ is volatility in actual Indian FDI inflows in current year (t). The equation requires the calculation of volatility in Indian FDI inflows variable and this is calculated as under:

$$\sigma_t^{I^{FDI}} = \sigma_{t-1}^{I^{FDI}} + \sigma_{t-2}^{I^{FDI}} + \sigma_{t-3}^{I^{FDI}} + \sigma_{t-4}^{I^{FDI}} + \sigma_{t-5}^{I^{FDI}}$$

(7)

Thus, the volatility in actual Indian FDI inflows is the standard deviation of actual FDI inflows in t-1, t-2, t-3, t-4 and t-5 years.

3. 4. Hypothesis Variable 3: '*Spillover effects of Indian Economic Reforms*'

In the last two models, we include the variables which determine the spillover effects of economic reforms on Indian FDI inflows which inturn affect the FDI of its neighbors. To capture this effect, we adapt the economic reforms index for India and then interact this index with FDI inflows of India.

There is a vast amount literature to estimate the effects of economic reforms on the long run rate of growth of output of the theoretical growth models and economic development process. In all these studies economic reforms is measured only partially with one or a few economic variables like the trade ratio, direct foreign investment, capital flows, tariff rates, trade restrictions, monopolization of exports, and country specific reforms dummies or sometimes combination of these variables and so on. Such measures are generally known as openness of the economy. Subsequently, many other measures of reforms were developed later on using different methods. The well known Sachs and Warner (1995) binary index of openness is based on the weighted averages of some economic variables. This later became popular and was used as a proxy for globalization and reforms process.

Others, while accepting economic variables are important to measure reforms process, argued that reforms also includes various dimensions and subcomponents like for example competition policy or internal structural reforms, which are difficult to

measure[2]. The well known EBDR discrete index of economic reforms for transition economies is based on a few such variables from the competition policy and private sector. The EBDR's reforms index and similar measures are often used, along with other crucial economic variables, as the conditioning variables. In practice it is hard to maintain a distinction between openness which is proxied with mostly economic variables and economic reforms measured with variables from various policies related subcomponents.

In light of these observations, Vadlamannati (2007) is a welcome contribution related to India because his comprehensive measure of economic reforms will help to decrease many disagreements on the measurement issue. The Economic Reforms Index (ERI) for India is formulated with seven subcomponents viz., Social Sector Reforms, Fiscal Reforms, Trade Reforms, Domestic Financial Reforms, International Financial Reforms, Public sector Reforms and Structural Reforms from 1975 to 2006 and updated yearly. For more information on the methodology of construction of the economic reforms index for India, see Annexure 2 at the end[3]. Using his comprehensive economic reforms index we interact with FDI inflows of India to see this effect on FDI of neighboring countries.

Log (Economic Reforms Index *X* FDI Inflows) t-1

(8)

The other important variable apart from this interaction effect in model 9 includes "cost of reversal of economic reforms". We predict that an improvement in economic reforms should effectively lead to increase in FDI inflows of India and thereby has a positive impact on neighboring countries FDI. Based on this premise, we assume that any reversal in economic reforms process would lead to if not decline atleast slowdown in FDI inflows in India. To capture the effect of reversal of economic reforms, we compute this variable in three steps: In the first step, we create a dummy variable "reversal of economic reforms" which takes the value 1 whenever the original value of economic reforms declines from its immediate preceeding year and 0 otherwise. In the second step, we compute the rate of growth of economic reforms index. In the third and final step, we multiply these three indicators to arrive at "cost of reversal of economic reforms", viz., reversal of economic reforms, rate of growth of reforms and lagged value of original economic reforms index. Thus, the Cost of reversal of economic reforms:

Economic Reforms (t-1) x Δ Economic Reforms x Reversal in Economic Reforms[4]

(9)

We introduce this variable in the final model as a part of robustness check to examine its negative impact if any on neighboring countries' FDI inflows.

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[2] Studies like Fidrmuc (2000, 2003); Herbert (2001); Nathan Jensen (2002); Kim & Pirttila (2003); Petia (2004) and Falcetti, Tatiana & Sanfey (2005) make use of EBRD's economic reforms index constructed for all the CIS countries from 1989 to 2004. While other prominent studies related to Latin American economies like Yong (2004) & Jordan Gans-Morse & Simeon Nichter (2008) make use of UN Economic Commission for Latin America and the Caribbean's Economic Reforms Index for Latin American countries. There is also another index of reforms for Latin American countries constructed by Lora (1997).

[3] These indices can be downloaded from http://sticerd.lse.ac.uk/eopp/_new/data/Indian_Data/default.asp

[4] Note: Δ denotes rate of growth of economic reforms & "t" represents current year.

These empirical analyses cover the period 1975 to 2006. The data series may exhibit Heteroskedasticity and serial correlation problems as they often tend to cause biased standard errors for coefficients, producing invalid statistical inferences. To deal with these problems, we estimated for all the models the Huber-White robust standard errors clustered over countries. These estimated standard errors are robust to both Heteroskedasticity and to a general type of serial correlation within the data series (Rogers, 1993 and Williams, 2000). The annual data on FDI inflows for India and other South Asian economies from 1975 to 2006 comes from the database on FDI of United Nations Commission for Trade and Development (UNCTAD).

3. 5. Control Variables

The FDI inflows are usually driven by the expectations of high profits for multinationals. The profits which the firm can generate in foreign country depend on key macroeconomic factors like its market size and growth. It is perceived that the country's market size and other market dynamics have a large impact on the foreign capital inflows into the country. We take into account population levels as proxy for market size of the host economy. The growth of market size is widely accepted as one of the key determinants of FDI. Thus, a large and growing market will often attract foreign investments because of the possibility that a larger market will possibly provide the economies of scale for the foreign companies. The growth rate of GDP is taken to best represent the growth in market size. Apart from market size and its growth, economic development of the country is also considered to be an important variable which influences the FDI inflows. This variable is important because it reflects the purchasing power of the people in the country. This is precisely one of the important reasons why developed economies tend to attract more FDI inflows to developing economies. The economic development is well represented by the growth in per capita income of the country. We take into account the percapita GDP in US$ constant. The other macroeconomic variable which plays a key role in determining FDI inflows include Inflation. High levels of inflation often tend to act as disincentive to attract FDI inflows (Lensik & White, 1998). The data sources for these variables come from World Bank's World Development Indicators 2006.

The influence of exchange rate and exchange rate stability on FDI is two fold for foreign investors. On one hand the depreciation of the currency makes the local assets and production cost cheaper which can lead to much higher FDI. On the other hand, it would reduce the incentives provided for the foreign firms to enter into the country. This apart, this variable also plays a key role in determining the firm's finances, as the production facility would be based in the host country. The real exchange rate of local currencies to US dollar from World Bank's World Development Indicators 2006 is adopted. One of the other key variables which play a key role in attracting FDI inflows is the trade openness. More the open an economy, higher the chances of FDI flows into the country. This is measured by Exports + Imports / GDP. It captures the degree of both tariff and non tariff measures including trade distortions[5].

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[5] We would have also liked to include corporate tax rates and average tariff rates on Imports. But lack of data for Bangladesh, Nepal and to an extent Pakistan prevented us.

We also introduce financial openness which is an index constructed by Chinn & Ito (2007). The index deals with five key components related to international financial transactions and restrictions of a country. Higher financial openness acts as an incentive to attract FDI inflows. This is confirmed by the study of Asiedu and Lien (2004). The study suggests that the impact of capital controls on FDI varies by region and has changed over time. We agree with their view point as many emerging economies like India have made some forward movements to remove some of the restrictions on capital account.

Human capital is the most important variable used in the literature which drives FDI inflows. The study conducted by Noorbakhsh & Paloni (2001) and Elmawazini et al. (2005) found that the weaknesses of human capital levels are the key challenges for developing countries trying to benefit from FDI inflows. We take into account secondary school enrollment ratio which is adapted from the dataset created by GDN network and UNESCO database.

We also make use of institutional quality which is the average scores of civil liberties and political freedom indices drawn from Freedom House[6]. We believe that foreign investors attach importance to both political freedom and civil liberties as the later includes issues not only related to the state like rule of law, but also include issues directly related to business. Freedom to business and cooperation is one of the key components of civil liberties and so do is the liberal labour issues like union membership. While the former includes issues related to political regime and its freedom for the citizens.

Better infrastructure always helps in attracting more FDI inflows into the country. Usually, for many developing and under developed economies, this stands as a major barrier in attracting FDI inflows. Since there are various factors which contribute to the infrastructure development in the country like roads, ports, telecommunications, power, railways and so on, it becomes quite difficult to capture the data for all these variables for any given country. In order to overcome this problem, the paper takes into account the number of telephone lines per 1000 inhabitants as proxy for level of infrastructure for the sample countries.

Finally, we introduce the dummy variables capturing the effect of starting year of economic liberalization process. We take the value of "1" for the years post liberalization period and "0" for the years before the process started. The information for this was obtained from the study of Gupta and Yuan (2006) who compiled the dates for most of the developing countries which begun liberalization process.

04. Empirical Results & Estimates

This section presents the results of regression estimates in measuring the influence of Indian direct foreign investment inflows on its neighbors FDI inflows. We introduce in total nine models. Each model consists of a different diffusion effect variable to examine

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[6] The scores range from 1 to 7. The score 1 is high respect for civil liberties and political freedom while 7 being no respect.

the impact of Indian FDI inflows. The table – 2 captures the regression estimates for general determinants of FDI inflows in South Asia followed by the diffusion effect of Indian FDI inflows. The estimates of the regression results for volatility in actual FDI inflows of South Asia are presented in table – 3. In the same table, it is followed by the results of the impact of interaction effect of economic reforms of India and FDI inflows and cost of reversal of Indian reforms. Important statistics are presented at the end of each table. All the results include white Heteroskedasticity-consistent standard errors & covariance to counter the problem of Heteroskedasticity.

We begin with model – 1, the results provide the first impression about the general determinants of FDI in South Asian economies. All the macroeconomic variables exert a positive and significant impact on FDI inflows. We find that economic development is having a significant positive effect on FDI inflows. A 1% increase in economic development is leading to an increase of 3.06% in FDI inflows. The market size proxied by population levels is leading to an increase in FDI inflows by 0.99% for every 1% increase. An improvement in the economic growth by 1% leads to an increase in 0.11% in FDI inflows. The results of all these three variables remain consistent through out all the models from 1 to 9). This suggests that FDI inflows in South Asian region is largely driven by macroeconomic factors and foreign investors are more sensitive to these than policy related factors.

Human capital is the most important factor in attracting FDI inflows into a country (Blomström & Kokko, 2003 and Farhad & Ali, 2001). But, we could not find any statistical significance for human capital. This apart, we find negative effect of this variable, suggesting that lower human capital in this region is deterring FDI inflows. South Asia is known to have lowest levels of secondary school enrollment ratios[7] (apart from African region). The same is the case with infrastructure. One factor which is acting as stumbling block in this region to attract FDI inflows includes poor infrastructure quality. Including India, this region suffers from poor quality of infrastructure in entire Asia (ADB Report, 2007). Though inflation seems to have negative sign, its effect of FDI inflows is nil. The institutional quality is South Asian region is very poor and perhaps this is the reason why though it has a positive effect, it is not statistically significant. Similarly, we find that though volatility in exchange rate stability is leading to decline FDI inflows, its statistical significance is absent. But, exchange rate in itself is leading to a negative effect of FDI inflows in South Asia. This is statistically significant at 1% confidence level and is consistent across all the models. Trade openness plays a key role in attracting FDI inflows in this region. It captures the degree of both tariff and non tariff measures including trade distortions. We find that an improvement in trade openness along with capital account convertibility is exerting a significant positive impact on FDI inflows. Though most of the economies in South Asia have caps on capital account convertibility, countries like India and Sri Lanka are making some positive moves in relaxing the capital account convertibility norms. Both variables are significant in all the models across the board. Lastly, liberalization dummy is found to be statistically

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[7] The average value of secondary school enrollment ratio from 1975 to 2006 for Bangladesh is 28.86, for Pakistan its dismal 21.41, for Nepal it is 30.34, For India it is 41 and the only country faring well is Sri Lanka with 68.8. Overall average value of this ratio for South Asia (excluding Bhutan) is 36.

significant at 5% confidence level showing that 1% increase in liberalization years is leading to exactly a 1% increase in FDI inflows in this region[8]. The interesting point to be noted here it is that the effect of liberalization dummy is exactly two times larger than that of *India effect* variable. This means the internal liberalization process plays a much more dominant role than simple Indian effect in attracting FDI inflows.

Table 2: Results of FDI Inflows of South Asia equation

Dependent Variable: Log (FDI inflows)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-33.42 *	-33.97 *	-32.89 *	-32.80 *	-33.85 *	-33.73 *
	(5.08)	(4.94)	(5.11)	(5.11)	(4.89)	(4.98)
Economic Growth	0.11 ***	0.13 **	0.11 **	0.12 **	0.13 **	0.09 ***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Log(Economic Development)	3.06 **	3.37 *	2.98 **	2.99 **	3.17 **	3.24 **
	(1.28)	(1.25)	(1.30)	(1.29)	(1.29)	(1.26)
Log(Population)	0.99 *	0.85 **	1.01 *	0.10 *	0.96 **	0.94 **
	(0.38)	(0.42)	(0.38)	(0.39)	(0.38)	(0.37)
Human Capital	-0.02	-0.01	-0.01	-0.01	-0.02	-0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Institutional Quality	0.10	0.08	0.05	0.04	0.12	0.09
	(0.21)	(0.20)	(0.22)	(0.22)	(0.20)	(0.21)
Log(Infrastructure)	-0.25	-0.34	-0.22	-0.21	-0.39	-0.33
	(0.55)	(0.53)	(0.56)	(0.56)	(0.55)	(0.53)
Inflation	-0.03	-0.02	-0.01	-0.01	-0.01	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Exchange Rate	-0.07 *	-0.08 *	-0.08 *	-0.08 *	-0.07 *	-0.07 *
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Exchange Rate Stability	-0.01	0.02	-0.01	-0.01	-0.01	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Trade Openness	0.04 ***	0.03	0.03 +	0.03	0.04 ***	0.04 ***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Capital Account Convertibility	0.41 +	0.50 ***	0.55 **	0.56 **	0.50 ***	0.37 +
	(0.30)	(0.29)	(0.27)	(0.27)	(0.28)	(0.28)
Time Dummy	0.18 *	0.13 **	0.18 *	0.18 *	0.19 *	0.20 *
	(0.06)	(0.06)	(0.09)	(0.06)	(0.06)	(0.06)
Economic Liberalization (t-1)	1.00 **	0.61 +	0.81 ***	0.79 ***	0.90 **	0.87 ***
	(0.46)	(0.47)	(0.47)	(0.47)	(0.45)	(0.46)
Log (Indian FDI Inflows (t-1))		0.52 *				
	----	(0.19)	----	----	----	----

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[8] Sri Lanka is the first country in South Asia to initiate economic liberalization process way back in 1978. This is followed by Pakistan in what was called as partial liberalization process which was followed throughout 1980s. In 1993 they launched second generation reforms. Bangladesh initiated the liberalization process in 1992, Nepal in 1996 and India started its reforms process in 1991.

Indian FDI/South Asia GDP (t-1) (excluding India)	----	----	0.31 ** (0.17)	----	----	----
Indian FDI/South Asia GDP (t-1) (including India)	----	----	----	1.37 ** (0.68)	----	----
Indian FDI/South Asia FDI inflows (t-1) (excluding India)	----	----	----	----	0.01 *** (0.00)	----
Indian FDI/South Asia FDI inflows (t-1) (including India)	----	----	----	----	----	0.01 *** (0.00)
R-squared	0.767107	0.793043	0.773524	0.774255	0.773743	0.773280
Adjusted R-squared	0.739583	0.765449	0.744436	0.745260	0.744683	0.744160
S.E. of regression	1.431678	1.366528	1.418276	1.415987	1.417590	1.419040
Log likelihood	-213.0178	-199.7335	-211.2853	-211.0850	-211.2253	-211.3521
Durbin-Watson stat	1.464915	1.479323	1.403130	1.409342	1.414014	1.458842
F-statistic	27.87069	28.73943	26.59198	26.70320	26.62527	26.55496
Prob(F-statistic)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Number of observations	128	128	128	128	128	128

Note: * Significant at 1% confidence level; ** Significant at 5% confidence level; *** Significant at 10% confidence level & + Significant at 15% confidence level. The models are controlled for Heteroskedasticity. White Heteroskedasticity-Consistent Standard Errors are reported in parenthesis.

In the model 2 from where we start to examine the impact of FDI inflows of India on its neighbors, we introduce one year lagged value of log (Indian FDI inflows). We find that a 1% increase in FDI Inflows into India in previous year is leading to 0.52% increase in FDI Inflows of its neighbors. This is statistically significant at 1% confidence level. If we consider this plain variable of FDI Inflows of India in previous year, we can well argue that indeed FDI inflows in India are having positive spillover effects on its neighbors. But going by the arguments presented by Mercereau (2005), we decided to introduce several other methods to test this relationship. Therefore, in model 3 we introduce another variable namely, one year lagged value of FDI inflows of India to GDP of South Asia excluding India. We find a significant positive effect of this variable on FDI inflows of South Asian economies. The coefficient value falls from 0.52% to 0.31% compared to previous variable. Also, the statistical significance comes down from 1% to 5% level. This is because as argued earlier, estimation in log assumes the values to be rate of change of FDI inflows rather than the actual levels of FDI inflows. This would naturally lead to bias in the coefficient upwards. In model 4, we replace this with almost similar variable, but this time, we also include the GDP share of India in the denominator. This time, we find much robust and stronger results interms of coeffient value. We see that 1% increase in Indian FDI inflows as share of total region's GDP leads to 1.37% increase in FDI inflows of its neighbors. This is statistically significant at 5% confidence level. The reason for this higher value of coefficient is that we have added Indian GDP into the denominator which is very large.

In the last two models 5 and 6, we introduce two more variables viz., one year lagged value of Indian FDI inflows to region's FDI inflows excluding India and including India respectively. We find that both the variables have a positive association with the FDI inflows of its neighbors. However, the coefficient value this time has come down

drastically to 0.01% and is statistically significant at 10% confidence level. Despite this, the results are extremely consistent in showing that whichever methodology is applied, the positive effects of Indian FDI inflows on its neighbors cannot be ruled out. The interesting point worth noting in models 5 and 6 is that the coefficient value of India affect variables remains the same despite having including Indian FDI inflows in the denominator in model 6. This is mainly due to the fact that along with India, rest of the countries (except Nepal) also witnessed tremendous increase in FDI inflows after 1991. For example the FDI inflows of Bangladesh in 1990 were around US$ 3 million increased to US$ 625 million in 2006. Similarly, for Pakistan, the FDI inflows were US$ 278 million in 1990 surged to US$ 4273 million and for Sri Lanka, from US$ 43 million in 1990, the FDI rose to US$ 480 million.

The one major finding from this analysis is that while both the FDI inflows of India and its neighbors have substantially increased together specially from post 1990, an increase in the share of FDI inflows of India to region's GDP and FDI is associated with an increase in the value of FDI inflows of South Asian economies. Meaning, huge increase in Indian flows is actually benefiting its neighbors thereby leading to '*investment creating effect*'. This can be well understood by the fact that there is a close proximity of India with its neighbors in creating economic ties of mutual dependence has increased during the recent times. India formulating Free Trade Agreement (FTA) with Nepal and Sri Lanka in 1996 and 1998 respectively, proposing a similar such FTA with Pakistan and forming South Asian Free Trade Agreement (SAFTA) and South Asian Preferential Trade Agreement (SAPTA) are some of the prominent examples (Chaturvedi, 2007). Thus, a very strong positive significance of India effect variables (see models 2, 3, 4, 5 & 6) to the regional group of South Asian economies tells that overall India acts as a positive dominance force for FDI inflows into other South Asian economies.

We now proceed with our next models 7, 8 & 9 presented in table – 3 dealing with volatility in FDI inflows and effects of Indian reforms. In model 7, we find that all the control variables exhibit the similar signs and remain significant as in base model 1. We introduce the volatility in FDI inflows of India. But we find that it do not make any significant detrimental impact on the actual FDI inflows of its neighbors.

Table 3: Results of Volatility in FDI Inflows & Indian Reforms equation

Dependent Variable: Log (FDI inflows)

Variables	Model 7	Model 8	Model 9
Constant	-33.14 *	-35.1 *	-34.73 *
	(5.18)	(4.86)	(4.81)
Economic Growth	0.12 ***	0.13 **	0.11 **
	(0.06)	(0.06)	(0.06)
Log(Economic Development)	3.04 **	3.34 *	3.31 **
	(1.30)	(1.24)	(1.28)
Log(Population)	0.99 *	0.84 **	0.84 **
	(0.39)	(0.41)	(0.43)

Human Capital	-0.01	-0.01	-0.01
	(0.03)	(0.03)	(0.03)
Institutional Quality	0.10	0.06	0.03
	(0.21)	(0.20)	(0.20)
Log(Infrastructure)	-0.22	-0.31	-0.23
	(0.560	(0.53)	(0.54)
Inflation	-0.03	-0.02	-0.03 +
	(0.03)	(0.02)	(0.02)
Exchange Rate	-0.06 *	-0.09 *	-0.08 *
	(0.02)	(0.02)	(0.02)
Exchange Rate Stability	-0.01	0.02	0.03
	(0.02)	(0.02)	(0.02)
Trade Openness	0.03 +	0.02	0.02
	(0.03)	(0.02)	(0.02)
Capital Account Convertibility	0.42 +	0.49 ***	0.62 **
	(0.29)	(0.29)	(0.31)
Time Dummy	0.17 *	0.14 **	0.13 **
	(0.06)	(0.06)	(0.06)
Economic Liberalization (t-1)	1.02 **	0.52	0.54
	(0.48)	(0.50)	(0.49)
Volatility in Indian FDI Inflows (t-1))	0.11		
	(0.30)	----	----
Log (Indian Economic Reforms x FDI Inflows in India (t-1))	----	0.47 * (0.17)	0.50 * (0.16)
Cost of Reversal of Indian Reforms (t-1)	----	----	-0.01 *** (0.01)
R-squared	0.767489	0.793049	0.799632
Adjusted R-squared	0.737625	0.765456	0.770733
S.E. of regression	1.437049	1.366509	1.351048
Log likelihood	-212.9159	-199.7318	-197.7923
Durbin-Watson stat	1.482192	1.480752	1.458332
F-statistic	25.69965	28.74047	27.66965
Prob(F-statistic)	0.000000	0.000000	0.000000
Number of Observations	128	128	128

Note: * Significant at 1% confidence level; ** Significant at 5% confidence level; *** Significant at 10% confidence level & + Significant at 15% confidence level. The models are controlled for Heteroskedasticity. White Heteroskedasticity-Consistent Standard Errors are reported in parenthesis.

In model 8 we introduce the lagged value of interaction effect between Indian economic reforms and FDI inflows. We are interested to find whether the FDI inflows in India exploit the benefits generated from economic reforms process and how important is this effect in attracting the FDI inflows of its neighbors. The results show strong positive impact of this effect on FDI inflows of its neighbors. We find that a 1% increase in this interaction effect is leading to 0.47% increase in FDI inflows of its neighbors. This relation is statistically significant at 1% confidence level.

In the next model 9[9], along with this interaction effect, we also introduce the lagged value of cost of reversal of Indian reforms. The results show that the interaction effect remains intact with 1% confidence level. The coefficient value improved to 0.50% with the introduction of this new variable. However, we find that cost of reversal of reforms in India has some kind of negative effect on FDI inflows of its neighbors. We see that though its sign is significantly negative, the coefficient value remains very low. This suggests that the spillover effect of Indian reforms on FDI inflows in India has a significant positive impact on its neighbors. Also, the cost of reversal of reforms in India has some kind of negative impact on FDI inflows of its neighbors, though its impact is very minimal.

05. Summary & Conclusion

The rise of India led by economic reforms process helped attract FDI has been a huge success. In 1991 the FDI inflows in India was US$ 120 million, increased to over US$ 35 billion by 2007. As on 2007, India stands 4th in FDI confidence index (AT Kearney report, 2007). But, is India's huge FDI inflow helping its neighbor's to attract FDI? In other words, is India crafting any kind of '*investment creating effects*' on its neighbors? We address these questions in this paper using the data from four South Asian economies namely, Pakistan, Sri Lanka, Bangladesh and Nepal from 1975 to 2006. The standard determinants include: economic growth rate, economic development, population level, trade openness, financial openness, inflation, exchange rate, exchange rate stability, institutional quality, infrastructure, human capital and liberalization year dummies. To estimate the impact of Indian FDI inflows, we follow five methods. We first used parsimonious method of including the lagged value of levels of India's FDI inflows. The second and third methods include the lagged value of Indian FDI inflows to the region's total GDP (one excluding India and other including India) and similarly, the fourth and fifth methods include lagged value of Indian FDI inflows to the region's total FDI inflows (one excluding India and the other including India).

The main results of our study as follows: First, in terms of the general levels of FDI inflows, the India effect is positive. This means that FDI inflows of India are helping increase the FDI inflows of its neighbors.

Second, interms of the share of Indian FDI inflows to total region's GDP and FDI inflows, the Indian effect is again positive. In other words, both the levels of FDI inflows of India and its neighbors are increasing together. An increase in share of Indian FDI inflows to region's GDP and FDI is associated with an increase in the FDI inflows of the South Asian economies.

Third, the volatility in FDI inflows of India is not the most important factor in having any detrimental affect on inflows of FDI into the South Asian economies.

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[9] We also ran all the models starting from model 1 to 9 without Nepal for robustness check. We do not find any drastic changes in the results.

We also find that the macroeconomic variables like GDP growth rate, percapita GDP, Population levels are playing a key role in attracting the FDI inflows into this region. While the policy variables show mixed results with liberalization, trade and financial openness playing positive role in attracting FDI inflows and human capital, exchange rate and institutional quality play insignificant role in driving FDI. Thus, the major lesson to be drawn from this empirical analysis is that if the South Asian economies were to increase their levels of FDI, they should focus more on reforming and strengthening their internal institutional and policy related factors. On improving these fundamentals, the countries might attract higher levels of FDI inflows.

The second important lead in this study is about the spillover effects of Indian economic reforms and its impact on FDI inflows in India and inturn effects on South Asian counterparts. The unprecedented emergence of a country as large as India in South Asian region especially after the initiation of economic reforms program raises the issue of how well the FDI inflows exploit the reforms process and thereby affect other economies in the region. Thus, analyzing the regional impact of Indian economic reforms in India becomes increasingly relevant. This paper is a contribution of its first such kind in the growing body of literature on diffusion effects of FDI on their neighbors. To test the spillover effect, we interact lagged values of economic reforms and FDI inflows of India and construct simple reforms reversal variable. We therefore introduce two models to examine this effect. We find that the interaction effect (Indian economic reforms X FDI inflows) having a significant positive impact on FDI inflows of its neighbors. This apart, we also find that the cost of reversal of the reforms process exerts a negative effect on neighbors FDI inflows. Meaning, there is a positive spillover effect of Indian economic reforms on the FDI inflows of India which increased substantially during the post reforms period, which inturn lead to increase in attractiveness of FDI inflows of its neighbors.

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07. Annexures

Annexure – 1:

Macroeconomic Performance of South Asian economies

	INDIA					PAKISTAN					SRI LANKA				
	1970	1980	1990	2000	2006	1970	1980	1990	2000	2006	1970	1980	1990	2000	2006
GDP Growth rate	5.15	6.74	5.52	4.03	9.19	11.35	10.22	4.45	4.26	6.92	3.84	5.84	6.4	6	7.35
Percapita GDP	2.75	4.36	3.41	2.30	7.69	8.05	7.05	1.84	1.77	4.74	1.84	-5.67	5.20	4.27	6.17
Agriculture Sector	42.32	35.70	29.27	23.35	17.52	36.83	29.52	25.98	25.92	19.39	28.30	27.55	26.31	19.90	16.46
Industry Sector	20.78	24.68	26.88	26.18	27.89	22.32	24.92	25.19	23.32	27.20	23.78	29.64	25.96	27.28	27.06
Services Sector	36.88	39.61	43.83	50.45	54.58	40.84	45.56	48.83	50.74	53.40	47.91	42.80	47.71	52.82	56.47
Fiscal Deficit	9.27	9.98	11.66	12.62	11.33	10.14	10.03	15.14	8.64	10.85	11.87	8.54	9.76	10.51	9.04
Trade Deficit	-1.8	-0.97	-2.21	-0.99	-1.03	-3.5	-3.65	-4.15	-0.11	-5.36	-15	-16.3	-3.71	-6.39	-4.94
Imports	3.92	9.35	8.54	14.15	25.80	14.66	24.10	23.37	14.69	23.31	28.60	54.79	38.06	49.62	43.16
Exports	3.82	6.21	7.13	13.22	22.97	7.76	12.48	15.53	13.44	15.29	25.45	32.21	30.18	39.01	31.62
FDI Inflows	0.007	0.004	0.07	0.77	1.91	0.23	0.26	0.61	0.41	3.37	-0.01	1.06	0.54	1.06	1.78
Domestic Investments	15.59	18.55	24.15	24.77	33.89	15.79	18.48	18.93	17.22	21.68	18.94	33.76	22.20	28.03	28.67
Domestic Savings	15.49	15.40	22.74	23.85	31.06	8.89	6.87	11.10	15.98	13.66	15.8	11.18	14.32	17.43	17.13
Inflation	5.09	11.36	8.97	4.00	5.79	5.35	11.93	9.05	4.37	7.92	5.86	26.14	21.50	6.18	13.69

	BANGLADESH					NEPAL				
	1970	1980	1990	2000	2006	1970	1980	1990	2000	2006
GDP Growth rate	5.61	0.81	5.94	5.94	6.63	2.57	-2.32	4.47	6.10	2.80
Percapita GDP	2.98	-1.56	3.53	3.91	4.77	0.46	-4.51	1.97	3.73	0.76
Agriculture Sector	---	31.55	30.25	25.51	19.61	67.29	61.77	51.63	40.82	34.36
Industry Sector	---	20.63	21.47	25.28	27.91	11.53	11.91	16.23	22.13	16.33
Services Sector	---	47.81	48.28	49.20	52.48	21.17	26.30	32.13	37.05	49.31
Fiscal Deficit	13.37	6.14	4.20	4.57	5.54	---	6.70	8.66	8.95	8.79
Trade Deficit	---	-3.87	-1.32	-0.65	1.93	---	-1.97	-7.97	-2.38	1.68
Imports	12.50	17.88	13.53	19.22	25.24	8.30	18.73	21.66	32.42	31.68
Exports	8.31	5.49	6.12	13.98	18.97	4.90	11.54	10.52	23.28	13.60
FDI Inflows	0.0	0.0	0.001	0.59	1.13	---	0.001	0.16	-0.008	-0.007
Domestic Investments	11.34	14.44	17.05	23.02	24.65	5.96	18.29	18.13	24.31	25.98
Domestic Savings	7.15	2.05	9.64	17.77	18.38	2.56	11.10	6.99	15.17	7.91
Inflation	---	---	6.13	2.21	6.77	15.23	14.68	8.24	2.48	7.55

Source: World Development Indicators, World Bank, 2006

Annexure – 2:

Economic Reforms Index: Construction of Composite Index

A comprehensive measure for Economic reforms for India was developed in the form of Economic Reforms Index for the period 1975 to 2006. For this purpose, I use the methodology developed by Morris and McAlpin in 1982-83 for constructing the Physical Quality of Life Index (PQLI)[10]. The need for composite indices aroused because, the ratios have different numerators and denominators and hence their simple summation is not possible.

Economic Reforms Index (ERI) =

Social Sector Reforms Index (SSRI) + Fiscal & Tax Reforms Index (FTRI) + Domestic Financial Sector Reforms Index (DFSRI) + International Financial Sector Reforms Index (IFSRI) + Trade Reforms Index (TRI) + Structural Reforms Index (SRI) + Public Sector Reforms Index (PSRI)

Earlier, many attempts were made in this direction by many eminent experts and scholars who have developed indices for measuring various variables at central level. The work of Dholakia and Solanki (2001) focused on developing a composite index of fiscal performance consisting of six different fiscal indicators and the states were ranked on the basis of the value of the index for different years. Similarly, Bhide and Panda (2002) had come up with another composite fiscal index, made up of five components, for judging the quality of central government budgets. Again, Dholakia (2005) and Vadlamannati (2005) constructed a composite index for all states and Andhra Pradesh respectively by taking eight key ratios, based on which ranks were given for the states for their fiscal performance from 1991 to 2003. Using similar methodology, I construct a comprehensive measure of Economic Reforms Index for India.

In the first step, we identify the appropriate indicators under each head. While selecting the indicators under each head, excess care is taken to identify the difference between "cause & affect" to best represent the *policy aspect of reforms* carried out in each sector/area. For example, reforming spending on Social Sector needs is the "cause" and the "affect" is higher literacy rate, higher primary and secondary school enrollment ratios. So I was very careful to the maximum extent to NOT to mix "cause" with "affect" while selecting indicators for each indices. Second, the objective of this index is to make it as comprehensive as possible covering all the reforms policy aspects. Unlike Lora (2001) and Morley et al. (2000) reforms index for Latin American countries, this reforms index captures even most sensitive and important issues like: Tariff rates, Exports subsidies, tax rates, tax efficiencies, corporate governance issues, stock market and banking reforms,

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[10] PQLI was developed in a research work by Morris and Mc Alpin in 1982-83 for measuring the conditions of poor in India.

Trade Openness (in a new way of calculation) & public sector reforms[11]. The selected indicators under each group are listed as under:

Table 4: List of Indicators selected under various sub heads

1. Social Sector Reforms Index	2. Fiscal & Taxation Reforms Index	3. Public Sector Reforms Index	4. Trade Reforms Index	5. Domestic Financial Reforms Index	6. International Financial Reforms Index	7. Structural Reforms Index
Social Sector Spending	Fiscal Deficit/Govt expenditure	Privatization Proceeds / GDP	Trade Openness ({Imports + Exports / GDP PPP} / Population)	Average Lending Rates	Exchange Rate Stability/Instability	Number of Industries De-licensed
Rural Development Spending	Revenue Deficit/Fiscal Deficit	Levels of Employment in PSUs	Total Customs Collections Rate	Number of Scheduled Commercial Banks	Number of Months Imports are covered by Forex Reserves	Registration of companies under MRTP Act
------	Highest Corporate Tax Rates	Average Government stake in PSUs	Duty Collection Rate on Agriculture products	Number of New Public Issues (Listing & Pricing requirement relaxation	Capital Account Convertibility Index	Industrial Licenses issued
------	Highest IT Rates	Govt Equity holding in PSUs/total Equity of Corporate India	Duty Collections Rate on Industrial Products	Total Reserves / Total Deposits (Liabilities) of banking system	Repatriation of Profits & Dividends Risk	Number of Foreign Collaborations approved
------	Corporate Tax Efficiency	------	Anti Exports Bias (Exports Subsidies)	Access to Money (5 years average of M3 - 10 years Avg. of GDP growth)	------	Entry of Foreign Firms
------	IT Tax Efficiency	------	------	Share Holder Protection Index	------	Dismantling of Capita Import Goods
------	Average Effective Indirect Tax Rates	------	------	------	------	Dismantling of TDF approvals for Design & Consultancy

In the next step, the values under each indicator were converted into an index, namely individual indicator indices. This is because, the selected indicators are ratios with different numerators and denominators and hence their simple summation is not possible. For this purpose, the paper used the methodology of Physical Quality of Life Index (PQLI). Accordingly, the worst and best values of each indicator during the period of 1975 to 2006 were identified. For each indicator the performance of each indicator in each year was put on a 0 to 100 scale where, 0 represents an absolutely defined worst

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[11] If there are any drawbacks, to the best of my knowledge, they are two: i. Due to lack of any data, I couldn't capture & quantify "Non Tariff Barriers" and "Administrative Reforms" (like slow relaxation in rules & regulations related to FDI norms).

performance and 100 represents an absolutely defined best performance and to aid the calculations, one unit point was added to the best values of the indicators[12].

Thus,

$$\text{Indicator Index} = \frac{1}{m_i}\frac{1}{n_i}\sum_{j_i}^{m_i}\sum_{t_i}^{n_i}\left(\frac{\text{Actual value}_j - \text{Minimum value}_{jit}}{\text{Maximum value}_j - \text{Minimum value}_j} * 100\right)$$

Where, *Indicator Index* is a value of *j*-th variable of *i*-th country (India) in time *t*, *n* stands for the number of the years and *m* for the number of variables. One main advantage of such transformation is that it allows the reform index to be measured over the same scale. This is an easy method to find out the performance of the Reforms, as an increase in the value of an indicator index would necessarily mean improvement in the economic reforms process and vice versa.

Once the indicator indices are formed, the comprehensive Composite Index is then calculated as a simple average of the indicator indices.

$$\textit{Composite Index} = \frac{\sum \text{Individual Indicator Indices}_i}{N} * 100$$

Where, *composite index* is the summation of all the individual indices and N is the total number of individual indicator indices.

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[12] The best & worst values are defined in such a way that all the indexes could become unidirectional, i.e. an increase in value of an index would necessarily mean improvement in the fiscal performance of the state.

Annexure – 3

Data Sources of the variables used in the study

Variables	Data Sources
Actual FDI Inflows	http://stats.unctad.org/FDI/TableViewer/tableView.aspx?ReportId=334
India effect variables	Constructed from Actual FDI inflows data (Authors' calculations)
Economic Reforms Index	Adapted from database created of Vadlamannati Krishna Chaitanya (2007)
Cost of Reversal of Economic Reforms	Authors' own calculations
Economic Growth (GDP Growth rate)	http://ddp-ext.worldbank.org/WDI
Economic Development (Percapita GDP)	http://ddp-ext.worldbank.org/WDI
Population Levels	http://ddp-ext.worldbank.org/WDI
Human Capital (Secondary School Enrollment Ratio)	http://www.gdnet.org/middle.php?oid=241 http://www.uis.unesco.org/ev.php?ID=2867_201&ID2=DO_TOPIC
Institutional Quality (Average of Civil Liberties + Political Freedom)	http://www.freedomhouse.org/
Inflation	http://ddp-ext.worldbank.org/WDI
Infrastructure (Number of Telephone lines per 1000 inhabitants)	http://ddp-ext.worldbank.org/WDI
Gross Fiscal Deficit (%GDP)	http://ddp-ext.worldbank.org/WDI
Volatility in FDI Inflows	Authors' own calculations
Liberalization Dummies	Nandini Gupta & Kathy Yuan (2006)
Exchange Rate	http://ddp-ext.worldbank.org/WDI
Exchange Rate Stability	Authors' own calculations
Capital Account Convertibility	Ito & Chinn (2006); NBER

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