



## **Determinants of Foreign Direct Investment: Evidence from Developing Countries**

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### **ABSTRACT:**

The objective of this studies is to shed light on the determinants of foreign direct investment FDI in developing countries. In order to conduct this study, I applied step wise multiple regression model (backward elimination) on three data sets belonging to the periods 1989-94, 1995-2000, 2001-2003 for as many as 62 developing countries. The study has brought out two important findings (1) the explanatory power of the model as a whole is of moderate level and (2) per capita GDP stood as a significant influencer of FDI inflows during each period.

**Keywords:** Foreign Direct Investment, Developing Countries, Determinants of FDI, Multiple Regression Model.

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### **1. Backdrop**

Capital and investment along with human sources are the essential hub of development. But the short supplies of domestic capital limit the growth of developing countries. Low GDP keeps the savings and investment rates low, which in turn, limit growth. Poor technological base of production is another factor impinging upon growth of the developing countries. FDI mitigate these constraints to growth of the developing and emerging countries. FDI vvand foreign Technology also brings with them the modern managerial practices. Market size, as manifested by population size and growth environment, including economic policy, specially the reform process, prevailing growth rates and future growth potential, beside others, may together affect the level and sectoral directions of inflows of FDI into the recipient (Sharma and Sharma, 2003)

The inflows of FDI to both developed and developing countries have been progressively increasing through out the decade of 1990. In the press release United Nations Conference on Trade and Development (UNCTAD) stated that FDI flows for the year 2004 have risen to US dollars 612 billion and US dollars 255 billions in the developed and developing countries respectively (Surjan 2005). However a observation of the trends in FDI inflows would provide us a fact that the volume of FDI differs from country to country. That is some countries are attracting more foreign direct investment as compared to the others. For instance China is out performing the Asian region in this regard. Keeping in view the fact that now a days almost every developing country is in a raised to attract more and more foreign direct investment to them its would be of atmost importance to identify the facts influencing inward flows of FDI full stop the present paper is an effort in this direction.

Numerous empirical investigations (clegg, 1995; Chen, 1997and Gribold and others, 2001) have found that this variation can be explained by various factors such as Gross Domestic Product and its growth, R&D intensity, economies of scale, per capita exports and imports, exchange rate differentials, the level of development of country's infrastructure, tariff barriers, dependence on host country raw materials, the level of political stability and political risk, proximity of the host country to investing country and availability of skilled manpower.

Three important types of FDI for developing countries are : export oriented FDI, domestic market oriented FDI and infrastructure FDI. All three bring their own benefits. Export oriented FDI links the local economy to the international economy. Openness to both imports and exports have been shown to be a powerful force for growth(Sachs and Warner, 1995). The growth has so far been the only credible means of alleviating absolute poverty. Domestic market oriented FDI brings new products and services to market. These maybe new on many dimensions either goods and services that were previously unavailable, or goods and services that were previously available but at a different level of quality. In some cases, domestic market oriented FDI can supply intermediate inputs that otherwise would be unavailable. This would help expand not only the efficiency and profit opportunities of local industry, but also the range of local industries that may exist. The infrastructure FDI, though riskiest for the investor, probably it is the most promising and sensitive for the country receiving the FDI. Without reliable power, telephone, transport networks and information technology network- a country cannot hope to increase its industrial production and economic growth. This is specially true with increased globalization (Ahluwalia, 1998).

Each type of FDI has its own special set of attractors. However, a bird eye view of the published literature (Lizondo 1990) offers that despite much theoretical discussion on determinants and motivations for foreign investment flows, no single theory so far has been able to include all possible factors and motivations for investing overseas. The empirical studies also reveal the same degree of ambiguity as no fixed set of variables can help explain In 1960s, the attempts were made to explain the variations in FDI. These efforts were chiefly in the form of surveys of Multinational Enterprises to

understand their expectations and reasons behind going global. However, the late 1960s saw a shift in focus. The reswere busy in proving the hypothesis of Product Life Cycle and expanding the scope of the existing theory on FDI. Hymer(1976) made an important contribution to the FDI theory. He came out with the industrial organization expectations of FDI, and advocated that the capital-arbitrage hypothesis of international capital movement was inconsistent with the obvious motives and patterns of multinational companies investment. The doctoral thesis of Hymer (1976) brought out that the organizations investing abroad should possess certain ownership advantages, or firm specific advantages, to compete with the domestic firms of another country.

Location factor costs and trade policy play particular importance in attracting foreign investment. In a comprehensive work Dunning (1993, 1998) made a scanning of the explanations of the past researchers regarding determinants of FDI. He suggested three conditions for FDI inflows. These conditions are popularly known as OLI i.e., O-ownership advantages, L- location advantages and I-internationalization advantages. Given the nature of FDI and the fact that the main source of FDI is the developed countries in the world, the ownership advantages exist no more. Beckley and Caisson(1976), recommended the application of internationalization theory to explain the FDI based on the theory of transaction costs. As per Schatz (1999), location plays as especially large role as a determinant of investment for production of goods intended for export back to the investing country. For instance, US has an enormous level of such investment in Mexico. Germany moved very quickly into Hungry during the 1990s. And Japan maintains an expanding web of intermediate goods affiliates in developing Asia. In fact, the locational advantages for FDI arise due to the existence of certain pull factors in the recipient countries. These factors might include large and glowing markets, low wage rates, export orientation, economic and tariff policies conducive to foreign investment, open and market driven economies, the level of infrastructure, political stability, better labour laws, etc.

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## 2. Review of past studies

A review of the existing studies on the subject under consideration is essential so as to offer a complete and besides view on it. Accordingly some past studies have been reviewed and the selected findings regarding determine and soft FDI enclose are summarised below.

According to Mandell (1957) quoted in Stephen at al., 1993), FDI should ultimately flow into those countries that are importing goods from abroad. Hymer (1970) concluded that given oligopolistic structure of markets and international integration, imports and the level of FDI are complementary and thus, hypothesized relationship between imports and FDI inward flows is positive. Similarly, countries adopting the export promotion strategy, are likely to attract more FDI than countries adopting import substitution strategy, since export promotion strategy promotes more efficient utilisation of FDI inflows (Bhagwati, 1978), Harvey (1989) and Stephen at al. (1993) found that while the estimated coefficient of the previous periods imports is positive and significant, the coefficient of the previous periods Exports is negative and significant. It indicates that with a similar volume of Exports from the developing country, the more likely it is that the country will receive foreign direct investment.

Market size plays a key role in attracting FDI flows. Host country market as a determinant to FDI has two facets- market size and market growth rate. Studies conducted by Hill and Monday (1992) and Lucas (1993) show that market size is a significant determinant of FDI. A recent study (Chen, 1997) of 33 developing countries also found the market size as a significant determinant of inward FDI. However Clegg (1995)[quoted in Castro (2000)], in his study with data from 1951-1990, found that when the data for the entire period was taken, market size and growth rate, were significant. Interestingly on his splitting the data into two sub periods 1951- 1972 and 1973- 1990, market size turned significant in the earlier period and the growth rate in the letter period. Therefore, he concluded that new investment requires for a big market and subsequent investment needs growing market. Holland and others (2000) reviewed several studies for Eastern and Central Europe, producing evidence of the importance of market size and growth potential as determinants of FDI. Campos and Kinoshita (2003) reached the conclusion that FDI is influenced by market size, the low cost of labour and abundant natural resources.

Natural resources used to be very important determinant of FDI in past. However, recently the relative importance of the this factor has decreased. The results of the studies of Achinivu(1990) on Malaysia and Taiwan indicated that the availability of raw materials was one of the significant determinants of FDI. Soon(1990), however, in his study of German FDI in ASEAN found this factor to be insignificant. World investment report (1998) also shows that the relative importance of natural resources for FDI has decreased over the years. The report attributes this to the entry of increased number of domestic enterprises of the host countries into the production and distribution of primary products.

Labour cost play an important role in attracting foreign investment. Achinivu (1990) and Lucas (1993)observedlabour costs to be a significant determinant of FDI. Wheeler and Mody(1992), however, concluded labour cost to be an insignificant determinant even within a developing country sample. They opined that as national income increases, market size offsets the importance of labour costs as a location factor.

Yet another factor determining FDI is the 'ability to repatriate capital and remit profits'. With regard to this factor too, there is strong statistical evidence to suggest that investors view in ability to repatriate capital and remit profit as one of their main concerns (world Economic Forum (1997). High openness would imply lesser restrictions on remittance of capital income that may be in the form of interests, dividends, profits or capital gains

Education is the key to a flexible socio culture that deals with different models of thinking and acting. Education builds human capital and prepare it for successfully handling the rapidly changing global economy. Educational fitness creates an environment attractiveness to FDI, because it improves the ability to process information, enhances creativity in research, development and technology and thus prepares a fertile ground for FDI (SaskiaWilhelms, July1998).

Infrastructure is a basic requirement for any investment. Vernon(1966) has suggested that for production to migrate abroad the host nation must provide an adequate infrastructure. Like wise Munteanu (1991) (quoted in Stephen at al., 1993) has described the essential dilemma of the foreign investor. That is, the multinational corporation desires to operate within a developed nation, possessing reliable infrastructure since it will result in a more efficient distribution system. The UNCTAD World Investment Report (1998) also conforms that level of infrastructure can definitely influence the inflow of FDI. The above wood allow us to hypothesis a positive relationship between FDI and level of development of the country's infrastructure.

There is also some evidence that firms pay special attention to labour quality. Mody, Das Gupta, and Sinha (1999) in their firm level survey of Japanese firms and their investment in Asia, revealed that relatively poor perceptions of Indian labour quality is an impediment to Japanese investments in India. Lansbury at al.(1996) [quoaoted in Castro (2000)] concluded that MNEs were attracted to Central and Eastern Europe by labour skills as much as by labour costs.

Shin-ya and Tsuyoshi(1998), in their study found that FDI is highly sensitive to the Yen exchange rate. Goldberg and Klein (1998) identified a clear relationship between real exchange rates and FDI from Japan and the United States into South East Asian countries (Indonesia, Malaysia, the Philippines and Thailand). They also found that FDI from Japan into South East Asian countries has been very sensitive not only to changes in the Yen exchange rate but also the yen-dollar exchange rate in that a dollar depreciation leads to spur in investments from Japan. Exchange rates may affect FDI through several channels. The most important path, however, lies in their effects on labour and other costs, which change the comparative advantages of certain goods between two countries and thus encourage the transfer of production bases from one country to another. Goldberg and Kolstad(1995) provided a model to explain the impact of exchange rate volatility on the location of MNEs. Achinivu (1993) found the access to foreign exchange to be a significant variable as also the ease in repatriation. Lucas (1993) found a positive association between FDI and the level of foreign exchange reserves. Moore (1993), however, found no evidence that German investors favour countries with fixed exchange rates with Deutsche mark.

The literature of UNCTAD (1998) regarding the importance of government incentives offers that the same are not very strong determinants of FDI. Instead they help choose the location of the organisation within the country, once the decision to invest in it is taken. Soon (1990), in his study of German investment in ASEAN also reported an insignificant correlation between host country incentives and FDI in flows.

The existence of political risk should have a depressing effect on the attractiveness of foreign direct investment. Lucas (1993) considers political risk as one of the major reasons why capital does not flow from wealthy to poor nations as freely as predicted by neo- classical theorists. The study of Soon (1990) also concluded that political stability was a significant determinant of FDI. You know that managers attempt to avoid risk in their investment decisions, however, many dimensions of risks are difficult to measure. Thus, the political risk associated with foreign direct Investment has a high subjective content. A friendly host country government for instance may attract FDI into the country in spite of high political risk.

Macroeconomic factors, legal framework and structural reforms are also among the important determinants of FDI. Garibaldi and others (2001), based on a dynamic panel of 26 transition economies between 1990 and 1999, indicated that macroeconomic variables, such as fiscal deficit, inflation, exchange rate regime, risk analysis, economic reforms, barriers to investment and bureaucracy all had a significant impact on FDI inflows. NunneKamp and Spatz (2002) find a significant Spearman's correlations between FDI flows and per capita GNP, risk factors, foreign trade restrictions, administrative bottlenecks and cost factors.Venkateswarlu and Rao (2004) bring out a strong relationship between per capita GDP (positive) and FDI.

The review of existing studies on the determinants of inward FDI indicates lack of uniformity in the independent variables considered for determining their relationship with FDI. Similarly, the results of these studies differ from each other. Further, all the important variables were not considered in a single model, and not all the determinants were found relevant for each country. The present research study is carried out to identify determinants of FDI flows by addressing the above limitations.

### 3. Database and Methodology

In order to achieve objective of identifying the factors having influence on inward flow of FDI, I have taken a large sample size comprising of 62 countries (**Appendix1**). All the selected countries belong to the category of developing economies, as per the classification given in the World Investment Reports 1999, 2001 and 2003. As many of the developing countries initiated the process of financial sector reforms since 1988, the reference period for the study is taken from 1989 to 2003. With a view to make the study useful and interesting, the reference period has been divided into three segments for analysis purpose. These data sets are (i) 1989 to 1994 (ii) 1995 to 1999 and (iii) 2000 to 2003. It also needs mention that the sample includes only those countries which could attract and average annual inward FDI of US dollars 80 million during the period 1995 to 2003.

To determine the factors influencing FDI inward flows, the use has been made of the following step wise multiple regression (backward elimination) equation:

$$Y=a+b_1x_1+b_2x_2+b_3x_3+b_4x_4+b_5x_5+b_6x_6+b_7x_7+b_8x_8+\mu$$

In this equation, y is the dependent variable,  $x_1$  to  $x_8$  are independent variables, a is constant, b, are regression coefficients for various variables and  $\mu$ = error term. The independent variables include:  $x_1$  = per capita GDP;  $x_2$  = GDP growth,  $x_3$  = power consumption per capita;  $x_4$  = exports as percentage of GDP;  $x_5$  = external debt as percentage to exports;  $x_6$  = adult literacy;  $x_7$  = inflation rate,  $x_8$  = secondary grade

enrolment of females. The data on both dependent and independent variables have been collected from the various issues of World Investment Report, World Development Report and Human Development Report. Average of data for the respective durations on the various variables is being used for the analysis. The expected nature (i.e. +ve or -ve) of relationship between the various independent variables and the dependent variables is shown in

Table 1.

**Table 1. Expected sign of partial regression coefficients in regression analysis**

Sr.No.	Variable (Abbreviation)	Expected relationship with FDI inflows
1	GDP per Capita (GDPPC)	Positive
2	GDP growth (GDPGR)	Positive
3	Power Consumption per Capita (POWCOM)	Positive
4	Export as a percentage of GDP (EXPGDP)	Positive
5	External debt as a percentage to exports ( EXDET )	Negative
6	Adult Literacy (ADLIT)	Positive
7	Inflation rate ( INFL)	Negative
8	Secondary grade enrolment for females ( SECEDFEM )	Positive

The data is processed by considering per capita FDI as the dependent variable. SPSS software is applied to process the data pertaining to this study.

The study strives to test the null hypothesis that all the regression coefficients are equal to zero.

Statistically-

Ho:  $b_1=0, b_2=0, b_3=0, b_4=0, b_5=0, b_6=0$  and  $b_7=0, b_8=0$ .

Ha: at least one  $b_i \neq 0$ . Alternative hypothesis that y depends on at least one of the  $x_i$  variables. The significance of regression effect is tested by computing the F-test statistic (ANOVA). In order to examine whether the cross-country data suffers from the problem of auto-correlation, Durbin Watson test is applied.

The Independent variables considered for this study have been decided after reviewing the existing studies on the subject. These variables are briefly explained below:

As stated earlier, Per-Capita FDI inflows is taken as dependent variable. The FDI inflows have been measured in millions of US dollars for each country and divided by the population in the beginning of the respective year for determining per capita FDI.

Independent variables: While the first independent variable, per capita GDP in purchasing power parity (\$ terms) shows the level of economic development of a market and purchasing power of the people, the second variable (GDP growth rate) represents the growth in markets of the host country. Per capita power consumption (POWCOM) is an independent variable considered as an indicator of the level of infrastructure development in the host country.

Exports as a percentage of GDP (EXPGDP) is a ratio between the exports of a particular year and GDP of the same year. This variable is considered because it is representative of openness of the economy and the level of liberalisation in the economy in terms of international trade and foreign transactions. External debt as a percentage of Exports (EXDET) is the ratio of the amount of outstanding external debt of a country at the end of a Particular year and the exports of that year. It is a variable that represents the debt burden of the country. Actually, this ratio may be revealing the pressure on the foreign exchange reserves.

As the inflation level of a particular country can influence the prices of inputs of production in the host country, this variable has been considered in this study. In fact, unduly high inflation may affect the FDI inflows adversely.

Adult Literacy Rate (ADLIT) refers to the literacy ratio among the adult population of the host country. This ratio is an indicator of the availability of skilled manpower in the host country. Literacy rates of 1990, 1995 and 2000 have been considered for first, second and third data sets respectively. Secondary School Enrolment for Females (SECEDFEM) is an another independent variable considered in the present study. According to Human Development Report, the variable represents the percentage of girls, aged between 11 to 17, who are enrolled into secondary grade education. The assumption taken while selecting this variable is that higher the percentage of female education in a country, higher will be the potential for development in that country. This variable is also considered as an indicator of skilled labour supply and signals FDI attractiveness of a country.

Besides above, there are other variables, which are important determinants of FDI. Some of them include political risk, legal issues, corruption level, tariffs level, rail, road, and I.T.infrastructure. Due to the non-availability of the data on these variables for each year and each country, they were not considered for this study.

#### 4. Results and discussion

At the outset the multiple regression model was fitted on the data set belonging to the duration 2000-03. We may recall here that this data set is made of average data on eight independent variables mentioned already and per capita FDI as a dependent variable. Tables 2 and 3 exhibit the results of multiple regression model fitted. It is obvious from the former table that the data series do not possess the problem of auto-correlation as indicated by Durbin Watson Test, which is approximately 2.

The ANOVA values (F) as shown in the table are indicative of the fact that the regression as a whole is significant at 0.01 level (Model-7). It implies that variation brought into the per capita FDI by the various independent variables is significant. This evidence of significant variation in per capita FDI allows us to proceed further and to identify the more important factors influencing FDI.

**Table 2. Model summary and ANOVA (Data set 2000-03)**

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Durbin-Watson	F	Sig
1	.513a	0.263	0.135	459.1642		2.054	0.061
2	.510b	0.26	0.149	455.3086		2.356	0.038
3	.505c	0.255	0.162	451.9857		2.738	0.023
4	.500d	0.25	0.173	448.921		3.262	0.013
5	.495e	0.245	0.185	445.8199		4.056	0.006
6	.495f	0.245	0.2	441.5517		5.503	0.002
7	.482g	0.233	0.203	440.7503		7.878	0.001
8	.458h	0.209	0.194	443.1095	1.986	14.056	0

a Predictors: (Constant), SECEDFEM, GDPGR, EXDET, POWCOM, INFL, GDPPC, ADLIT, EXPGDP

b Predictors: (Constant), SECEDFEM, GDPGR, EXDET, POWCOM, INFL, GDPPC, EXPGDP

c Predictors: (Constant), GDPGR, EXDET, POWCOM, INFL, GDPPC, EXPGDP

d Predictors: (Constant) GDPGR, EXDET, POWCOM, GDPPC, EXPGDP

e Predictors: (Constant), GDPGR, POWCOM, GDPPC, EXPGDP

f Predictors. (Constant), GDPGR, POWCOM, GDPPC

g Predictors: (Constant), GDPGR, GDPPC

h. Predictors: (Constant), GDPPC

i Dependent variable: PERCAFDI

**Table 3 Regression coefficients [Dataset 2000-03]**

Model	Unstandardised Coefficients		Standardized Coefficient	t	Sig	Correlations		
	B	Std. Error	Beta			Zero order	Partial	Part
1. (Constant)	617.11	430.517	-	1.433	0.159	-	-	-
EXDET	406	0.43	-0.123	0.945	0.349	-0.151	-0.138	-0.12
EXPGDP	425	0.658	0.953	0.646	0.521	-0.041	0.095	0.082
ADLIT	-3.908	5.204	-0.114	0.751	0.456	-0.026	-0.11	-0.095
GDPGR	-8.51	-8.51	-0.062	0.463	0.646	-0.099	-0.068	-0.059
GDPPC	6.512E.02	6.512E.02	0.507	3.427	0.001	0.458	0.451	0.434
INFL	5.462	-5.462	-0.104	-0.732	0.468	-0.138	-0.107	-0.093
POWCOM	2.364 E 05	2.364E.05	-0.96	0.65	0.519	-0.034	-0.095	-0.082

SECEDFEM	-1.646	-1.646	-0.081	-0.513	0.61	0.053	-0.075	-0.065
2.(Constant )	572.747	416.224	-	1.376	0.175	-	-	-
EXDET	0.391	0.425	-0.118	-0.919	0.363	-0.151	-0.133	0.115
EXPGDP	.41 3	0.652	0.926	0.634	0.529	-0.041	0.002	0.08
ADLIT	-3.89E+00	5. 160	-0.113	-0.754	0.455	-0.026	-0.109	-0.095
GDPPC	6.679E.02	0.018	0.52	3.61	0.001	0.458	0.466	0.453
INFL	-4.53E+00	7, 122	-0.086	-0.636	0.528	-0.138	-0.092	-0.08
POWCOM	-2.30E-05	0	-0.932	-0.637	0.527	-0.034	-0.093	-0.08
SECEDFEM	-1.745	3.1 75	-0.086	-0.549	0.585	0.053	-0.08	-0.069
3. Constant	550.249	411.182	-	1.338	0.187	-	-	-
EXDET	-0.413	0.42	-0.125	-0.983	0.331	-0.151	-0.14	-0.122
EXPGDP	0.413	0.647	0.927	0.639	0.526	-0.041	0.092	0.08
ADLIT	-5.057	4.668	-0.147	-1.083	0.284	-0.026	-0.155	-0.135
GDPPC	6.417E.02	0.018	0.5	3.617	0.001	0.458	0.463	0.451
INFL	-4.082	7.023	-0.077	-0.581	0.564	-0.138	-0.084	-0.072
POWCOM	-2.247E.05	0	-0.913	-0.628	0.533	-0.034	-0.09	-0.078
4. (Constant )	465.097	382	-	1.219	0.229	-	-	-
EXDET	-0.387	0.415	-0.117	-0.934	0.355	-0.151	-0.132	-0.116
EXPGDP	0.364	0.637	0.815	0.571	0.571	-0.041	0.081	0.071
ADLIT	-4.64E+00	4.581	-0.135	-1.013	0.316	-0.026	-0.143	-0.125
GDPPC	6.592E.02	0.017	0.514	3.796	0	0.458	0.477	0.47
POWCOM i	-1.964E.05	0	-0.798	-0.558	0.579	-0.034	0.079	0.069
5 (Constant )	4.70E+02	378.841	-	1.241	0.22	-	-	-
EXDET	-0.362	0.409	-0.109	-0.884	0.381	-0.151	-0.124	-0.109
EXPGDP	9.357E.03	0.056	0.021	0.168	0.867	-0.041	0.024	0.021
ADLIT	-5.13E+00	4.465	-0.149	-1.15	0.256	-0.026	-0.161	-0.141
GDPPC	6.322E.02	0.017	0.493	3.87	0	0.458	0.475	0.469
6 (Constant )	463.51	373.118	-	0.1242	0.22	-	-	-
EXDET	-3.65E-01	0.405	-0.11	-0.901	0.372	-0.151	-0.125	-0.11
ADLIT	-5.017	4.368	-0.146	-1.149	0.256	-0.026	-0.159	-0.14
GDPPC	6.284E.02	0.016	0.49	3.867	0	0.458	0.476	0.471
7 (Constant )	431.707	370.77	-	1.164	0.25	-	-	-
ADLIT	-5.431	4.336	-0.158	-1.253	0.216	-0.026	-0.171	-0.152
GDPPC	6.407E.02	0.016	0.499	3.963	0	0.458	0.482	0.482
8 ( Constant)	-21.289	82.139	-	-0.259	0.796	-	-	-
GDPPC	5.873E.02	0.016	0.458	3.746	0	0.458	0.458	0.458
Dependent Variable FDIPC								

The coefficients of multiple correlation (R) in various regression models ranges between 0.458 and 0.513. Thus a moderate correlation exists between per capita FDI and its determinants under investigation. However, the values of coefficient of determination ( $R^2$  and adjusted  $R^2$ ) under various models indicate low explanatory power of the independent variables as a whole. While  $R^2$  ranges from 0.209 to 0.263, the value of adjusted  $R^2$  is the maximum in case of model seven. Thus around one-fifth of the variation in per capita FDI is caused by the various independent variables under study. This implies that there are some other more important factors, which have a bearing on FDI flows to developing countries. As quoted many times in

practical surveys of FDI companies, these variables may include the behaviour of the bureaucrats heading different departments assigned the responsibility of attracting foreign investments (like FIPB), the cultural, social and political factors.

Nonetheless, there is need to measure the relationship between per capita FDI and various independent variable. The regression coefficients resulting from the present data set could be visualised from Table 3. A look at the table offers that except per capita GDP, none of the independent variables turn as significant. The per capita GDP is found to have positive relationship with FDI inflows to developing countries. The partial regression coefficient for per capita GDP is significant at 0.01 level of significance. In contrast to expectation, the growth rates in GDP and per capita power consumption are seen having negative relationship with FDI inflows in the developing countries. However, the negative relationship of inflation rate and exports as percentage to external debt with per capita FDI inflows is on the expected lines. None of the independent variables possessing a negative relationship with FDI, however, is significant.

Tables 4 and 5 present the outcome of the multiple regression model when applied on the dataset for the duration of 1995-99. Here per capita GDP was taken as a dependent variable and the same set of eight Independent variables. It can be seen from Table 4 that Durbin Watson is 2.103 and F is significant at 0.01 level of significance. This indicates that The dataset does not have the problem of auto-correlation and the impact of independent variables is significant. Interestingly, R, R<sup>2</sup> and adjusted R<sup>2</sup> resulting from this dataset are relatively higher than those found in case of the recent data (2000-03). Adjusted R<sup>2</sup> is the highest (0.391) in case of model six where R and R<sup>2</sup> obtain 0.661 and 0.437 values respectively. Hence around 40 per cent of the variation in pModeler capita FDI is attributed to the independent variables under reference.

**Table 4. Model summary and ANOVA (Data set 1995-99)**

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	F	Sig
1	.677a	0.459	0.324	70.6986		3.393	0.006
2	.676b	0.456	0.341	69.7763		3,959	0.003
3	.675c	0.456	0.36	68.7781		4.749	0.001
4	.673d	0.454	0.375	67.9368		5.81	0.001
5	.671e	0.451	8390	67.156		7.387	0
6	.661f	0.437	0.391	67.0887		9.559	0
7	.643g	0.413	0.382	67.577	2.103	13.366	0

a Predictors: (Constant), SECEDFEM, GI)PGR, EXDET, POWCOM, INFLI GDPPC, ADLIT, EXPGDP

b Predictors: (Constant), SECEDFEM, GI)PGR, EXDET, POWCOM, INFL, GDPPC, EXPGDP

c : (Constant), GDPGR, EXDET, POWCOM, INFC, GDPPC, EXPGDP

d Predictors: (Constant), GDPGR, EXDET, POWCOM, GDPPC, EXPGDP

e Predictors: (Constant), GDPGR, POWCOM, GDPPC, EXPGDP

f Predictors: (Constant), GDPGR, POWCOM, GDPPC

g Predictors: (Constant), GDPGR, GDPPC

h. Predictors: (Constant) GDPPC

i. Dependent variable: PERCAFDI

**Table 5 Regression coefficients [Database 1995-99]**

Model	Unstandardised Coefficients		Standardized Coefficient	t	Sig	Correlations		
	B	Std. Error	Beta			Zero order	Partial	Part
1. (Constant)	-81.16	65.857	-	-1.232	0.227	-	-	-
GDPPC	2.412E.02	0.0009	0.596	2.798	0.009	0.604	0.443	0.364
INFL	-0.107	0.281	-0.094	-0.38	0.706	0.086	-0.067	-0.049
GDPGRO	-2.345	5.435	-0.085	-0.431	0.669	0.067	-0.076	-0.056
SECEDFEM	2.366E.02	0.057	0.096	0.414	0.682	0.118	0.073	0.054
ADLIT	0.892	0.84	0.199	1.062	0.296	0.441	0.184	0.138
EXDET	0.428	0.909	0.083	0.47	0.641	0.446	0.083	0.061
POWCOM	-1.429E.02	0.023	-0.168	-0.615	0.543	0.347	-0.108	-0.08
EXPGDP	1.179	0.799	0.221	1.475	0.15	0.189	0.252	0.192
2.( constant)	-80.343	64.963	-	-1.237	0.225	-	-	-
GDPPC	2.474E.02	0.008	0.611	2.961	0.006	0.604	0.458	0.38
GDPGRO	1.87	5.221	-0.068	-0.358	0.722	0.067	-0.062	-0.046

SECEDFEM	6.207E.03	0.034	0.025	0.185	0.854	0.118	0.032	0.024
ADLIT	0.897	0.829	0.2	1.082	0.287	0.441	0.185	0.139
EXDET	3.86E-01	0.891	0.075	0.433	0.668	0.446	0.075	0.056
POWCOM	-1.758E.02	0.021	-0.207	-0.826	0.414	0.347	-0.142	-0.106
EXPGDP	1.279	0.744	0.24	1.719	0.095	0.189	0.287	0.221
3. (Constant )	-76.525	60.71	-	-1.26	0.216	-	-	-
GDPPC	2.477E.02	0.008	0.612	3.008	0.005	0.604	0.458	0.381
GDPGRO	-1.975	5.116	-0.071	-0.386	0.702	0.067	-0.066	-0.049
ADLIT	0.914	0.812	0.204	1.126	0.268	0.441	0.19	0.142
EXDET	0.363	0.87	0.071	0.418	0.679	0.446	0.071	0.053
POWCOM	-1.835E.02	0.021	-0.216	-0.892	0.378	0.347	-0.151	-0.113
EXPGDP	1.208	0.731	0.238	1.734	0.092	0.189	0.285	0.219
4. (Constant )	-83.18	57	-	-1.447	0.157	-	-	-
GDPPC	2300E.02	0.007	0.568	3.41	0.002	0.604	0.499	0.426
ADLIT	0.903	0.801	0.201	1.126	0.268	0.441	0.187	0.141
EXDET	3.62E-01	0.859	0.07	0.421	0.676	0.446	0.071	0.053
POWCOM	-1.288E.02	0.015	-0.152	-0.876	0.387	0.347	-0.146	-0.109
EXPGDP	1.22E+00	0.712	0.229	1.714	0.095	0.189	0.278	0.214
5 (Constant )	-6.81E+01	44.397	-	-1.533	0.134	-	-	-
GDPPC	2.396E.02	0.006	0.592	3.826	0	0.604	0.538	0.473
ADLIT	1.064	0.695	0.237	1.531	0.134	0.441	0.247	0.189
POWCOM	-1.382E.02	0.014	-0.163	-0.962	0.342	0.347	-0.158	-0.119
EXPGDP	1.278	0.69	0.24	1.853	0.072	0.189	0.295	0.229
6 (Constant )	-54.771	42.146	-	-1.3	0.202	-	-	-
GDPPC	2.149E.02	0.006	0.531	3.767	0.001	0.604	0.526	0.465
ADLIT	7.89E-01	0.633	0.176	1.247	0.22	0.441	0.201	0.154
EXPGDP	1.09E+00	0.662	0.205	1.651	0.107	0.189	0.262	0.204
7 (Constant )	-13.229	26.007	-	-0.509	0.614	-	-	-
GDPPC	2.490E.02	0.005	0.615	4.941	0	0.604	0.625	0.614
EXPGDP	1.18E+00	0.663	0.381	2.123	0.052	0.189	0.276	0.22
Dependent Variable FDIPC								

The regression coefficients based on data set for 1995-99 (Table 5) provide that two variables per capita GDP (GDPPC) and exports as percentage to GDP (EXPGDP) contribute significantly to the FDI inflows in developing countries, while the former factor was significant at 0.001 level. The latter being so at 0.052. From the above we may conclude that economically strong and export oriented economies can contribute more FDI towards them.

Interestingly, the regression output based on the oldest dataset i.e. (1989-94) confirms more or less to that of middle period (1995-99). F ratio also turns significant here. Model seven is found as the best predictor as it reveals the highest value of adjusted R (i.e. 0.311). R and R<sup>2</sup> values are, however, moderate in this period table 6. As revealed by (Table 7), GDPPC and EXPGDP are again found the only two significant independent variables. While GDP per capita is significant at 0.03 level, export as percentage to GDP is found so at 0.005 level of significance. Literacy Rate, inflation, external debt, power consumption and GDP growth are judged as insignificant variables.

**Table 6. Model summary and ANOVA [Dataset1989-94]**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	F	Sig
1	.626a	0.392	0.19	39.6962		1.937	0.101
2	.625b	0.39	0.219	38.9628		2.285	0.06
3	.622c	0.387	0.245	38.3104		2.734	0.034
4	.618d	0.381	0.267	37.7603		3.329	0.018
5	.611e	0.373	0.284	37.3268		4.167	0.009
6	.606f	0.367	0.302	36.8518		5.609	0.004
7	.595g	0.354	.311	36.6151	2.104	8.21	0.001



a Predictors: (Constant), SECEDFEM, GDPGR, EXDET, POWCOM, INFL, GDPPC, ADLIT, EXPGDP

b Predictors: (Constant), SECEDFEM, GDPGR, EXDET, POWCOM, INFL, GDPPC, EXPGDP

c Predictors: (Constant), GDPGR, EXDET, POWCOM, INFL, GDPPC, EXPGDP

d Predictors: (Constant), GDPGR, EXDET, POWCOM, GDPPC, EXPGDP

e Predictors: (Constant), GDPGR, POWCOM, GDPPC, EXPGDP

f Predictors: (Constant), GDPGR, POWCOM, GDPPC

g Predictors: (Constant), GDPGR, GDPPC .

h Predictors: (Constant) GDPPC

i Dependent variable: PERCAFDI

**Table 7. Regression coefficients [Dataset 1989-94]**

Model	Unstandardised Coefficients		Standardized Coefficient	t	Sig	Correlations		
	B	Std Error	Beta			Zero order	Partial	Part
1. (Constant)	-17.228	31.535	0.409	0.409	0.546	-	-	-
GDPPC	1.291E.02	0.007	0.092	1.79	0.086	0.394	0.343	0.285
INFL	1.763E.02	0.061	0.11	0.291	0.774	0.069	0.059	0.046
GDPGRO	-1.814	3.061	0.101	0.593	0.559	0.005	0.12	0.094
SECEDFEM	0.213	0.534	0.066	0.399	0.694	0.286	0.081	0.063
ADLIT	-8.618E.02	0.222	0.162	0.388	0.702	0.086	-0.079	-0.062
EXDET	-1.382E.02	0.027	0.205	0.512	0.614	-0.144	-0.104	-0.081
POWCOM	-8.756E.03	0.011	0.476	0.795	0.434	0.215	-0.16	-0.127
EXPGDP	1.409	0.488	-	2.885	0.008	0.491	0.508	0.459
2.(Constant )	-20.041	29.463		0.68	0.503	-	-	-
GDPPC	1 308E.02	0.007	0.415	1.853	0.076	0.394	0.348	0.289
GDPGRO	-1.991	2.944	-0.12	0.676	0.505	-0.005	-0.134	-0.106
SECEDFEM	275	0.48	0.131	0.573	0.572	0.286	0.114	0.089
ADLIT	-0.8029E.02	0.217	-0.062	-0.37	0.715	0.086	-0.074	-0.058
EXDET	-7.376E.03	0.015	-0.087	-0.486	0.631	-0.144	-0.007	-0.076
POWCOM	-9.75E-03	0.01	-0.228	-0.95	0.351	0.215	-0.187	-0.148
EXPGDP	1.387	0.474	0.469	2.929	0.007	0.491	0.505	0.457
3. (Constant )	-24.069	26.914	-	-0.894	0.379	-	-	-
GDPPC	1.305E.02	0.007	0.414	1.881	0.071	394	0.346	0.289
GDPGRO	-2.121	2.874	-0.128	-0.738	0.467	-0.005	-0.143	-0.113
SECEDFEM	249	0.467	0.119	0.533	0.599	0.286	0.104	0.082
EXDET	-7.152E.03	0.015	-0.084	0.48	0.635	-0.144	-0.094	-0.074
POWCOM	-9.864E.03	0.01	-0.231	0.977	0.337	0.215	-0.188	-0.15
EXPGDP	1.364	0.462	0.461	2.955	0.007	0.491	0.501	0.454
4. (Constant )	-30.208	23.339	-	-1.294	0.207	-	-	-
GDPPC	1.330E.02	0	0.422	1.951	0.061	0.394	0.352	0.295
GDPGRO	1.549	2.579	-0.094	0.601	0.553	-0.005	-0.115	-0.091
SECEDFEM	275	457	0.131	0.601	0.553	0.286	0.115	0.091
POWCOM	-1.006E.02	6010	-0.235	-1.012	0.321	0.215	-0.191	-0.153
EXPGDP	1.371	455	0.463	3.013	0.006	0.491	0.502	0.456
5 (Constant )	-2.11E+01	17.579	-	-1.202	0.239	-	-	-
GDPPC	1.45E-02	0.006	0.459	2.243	0.063	0.394	0.39	-
GDPGRO	-1.299	2.515	-0.078	-0.516	0.61	-0.005	-0.097	0.336
POWCOM	-7.37E-03	0.009	-0.172	-0.84	0.408	0.215	-0.157	-0.077

EXP GDP	1.14E+04	449	0.465	3.063	0.005	0.491	0.501	-0.126
6 (Constant )	-24.688	15.964	-	-1.546	0.133	-	-	0.458
GDPGRO	1.393 E-02	0.006	0.442	2.216	0.035	0.394	0.381	-
POWCOM	-6.728E.03	0.009	-0.157	-0.785	0.439	0.215	-0.144	0.327
EXP GDP	1.365	0.443	0.461	3.08	0.004	0.491	0.497	-0.116
7 (Constant )	-24.931	15.859	-	-1.572	0.126	-	-	0.455
GDPGRO	1.065E.02	0.005	0.338	2.283	0.03	0.394	0.385	-
EXP GDP	1.328	0.438	0.449	3.033	0.005	0.491	0.484	0.335
								0.445
Dependent Variable FDIPC								

## 5. Conclusion

In this article, I have made an attempt to bring out the factors influencing FDI inflows in case of developing countries. In order to achieve this objective multiple regression model has been applied to three datasets 1989-94, 1995-99 and 2000-03, made-up of eight independent variables and one dependent variable. Per capita FDI inflow is taken as a dependent variable in each of the

period. Sample comprised 62 developing countries of the world. The study has brought out two important findings (i) The explanatory power of the model as a whole is of moderate level, and (ii) per capita GDP stood as a significant influencer of FDI inflows during each period. Another variable found as a significant determinant of FDI for the periods 1989-94 and 1995 to 1999 is

exports as percentage to GDP. The rest of the socio-economic variables such as adult literacy, external debt, inflation rate and power consumption which are generally considered as important determinants of foreign investment resulted as having insignificant affect in the present study. The above findings hint towards the need of investigation of the other quantitative and qualitative factors, which influence foreign investment. These variables may include the role of bureaucratic set-up, political stability, country brand building, attitude of local partners, administrative procedures, etc.

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#### Appendix 1 : List of sample countries

1	Angola	2	Hong Kong	3	Philippines
4	Argentina	5	Hungary	6	Papua New Guinea
7	Belarus	8	India	9	Poland
10	Bolivia	11	Indonesia	12	Republic of Korea
13	Brazil	14	Jamaica	15	Romania
16	Bulgaria	17	Jordan	18	Russian Federation
19	Cote d'Ivoire	20	Kazakhstan	21	Saudi Arabia
22	Chile	23	Lesotho	24	Singapore
25	China	26	Lebanon	27	Sri Lanka
28	Colombia	29	Latvia	30	Slovenia
31	Costa Rica	32	Lithuania	33	Slovakia
34	Croatia	35	Morocco	36	Tunisia
37	Czech Republic	38	Mexico	39	Turkey
40	Dominican Republic	41	Malaysia	42	Thailand
43	Egypt	44	Namibia	45	Uruguay
46	Ecuador	47	Nigeria	48	Uzbekistan
49	El Salvador	50	Nicaragua	51	Ukraine
52	Estonia	53	Paraguay	54	Vietnam
55	Ghana	56	peru	57	Venezuela
58	Guatemala	59	Panama	60	Zambia
61	Honduras	62	Pakistan		