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Qayoom Ab, Ramachandran Muthiah, and Sofi Irfan

DETERMINANTS OF FDI INFLOWS TO DEVELOPING COUNTRIES: A PANEL DATA ANALYSIS

ABSTRACT

The aim of this paper is to identify, by estimating a panel econometric model, the factors determining FDI inflows to developing countries over a long period. The study is based on a sample of 32 developing countries. In our analysis, FDI inflows are modeled as a function of the market size, total reserves, infrastructure, labour cost and degree of openness-for the host countries. Using data from 1982 to 2008, a panel data estimator suggests that the market size, total reserves, infrastructure and labour costs are the main determinants of FDI inflows to developing countries. Our interesting finding is that openness of an economy is insignificant in determining the FDI inflows.

Key Words: FDI Inflows, fully modified ordinary least squares (FMOLS), Pedroni's Ppanel cointegration methodology, developing countries

Qayoom Ab and Sofi Irfan
Indian Institute of Technology Indore (IIT Indore), India
Ramachandran Muthiah
Pondicherry University, India

Correspondence: Qayoom Ab
M-Block, Indian Institute of Technology Indore
E-mail: eco.quyoom@gmail.com

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INTRODUCTION

FDI has been one of the fastest growing economic activities across the world. There has been a substantiated rise in the FDI inflows across the globe over the period 1990 to 2010. In 1990 the global FDI inflows stood at US$207.45 million and reached a record level of US$1,970.94 million. In 2010 the global FDI inflows were of the amount US$1,243.67 million (UNCTAD STAT.). The most striking fact about the global FDI inflows is that the share of developing countries out of total FDI is rising continuously. This share was only 16.79 percent in 1990 and it rose to 29.07 percent in 2007 and then to 46.11 percent in 2010.

The increasing FDI inflows to developing countries since 1990s acts as an evidence that foreign investors are very much keen to invest in developing countries and that the host developing countries are the profitable investment destinations for them. The marked rise of FDI inflows to developing countries since the early 1990s has incited sizeable empirical research into the underlying factors, for at least two reasons. First, FDI happen to an important part of the domestic economy. Second FDI plays and still play a crucial role in transforming the host developing counties from centrally planned economies to the market economies, providing substantial financial capital, technological know-how and modern managerial practices.

Yet the patterns of absolute and relative FDI inflows have been quite erratic, with respect to developing countries. Therefore, an in-depth analysis of the factors determining FDI inflows to developing countries is needed not only to understand these aspects but also to predict future patterns of FDI relating to these countries and provide policy makers with guidelines on how to improve FDI inflows. In addition it would be useful to evaluate FDI behavior in selected developing countries in relation to important determinants of FDI, which have been highlighted in previous studies.

Various determinants have been identified that influence location of investment of multinational corporations (MNC's). Theoretical and empirical studies have looked at the characteristics and behaviour of multinationals and have identified management skills, economies of scale, and innovative product technologies as important determinants of FDI. Market structure, the dynamics of oligopoly, political and economic stability, market size and growth, infrastructure, exchange rate risks, labour costs, and more have been singled out as additional influences that can explain FDI (Chakrabarti, 2001; Asiedu, 2002). Rather than analyzing a broad range of heterogeneous determinants of FDI, this paper

focuses on economic determinants of FDI and tries to identify those economic determinants that matter most for multinationals.

This paper is organized as follows. Section 2 explains the theoretical framework of FDI. Section 3 gives empirical evidence of earlier studies on determinants of FDI. Data and methodology are discussed in section 4 and section 5 explains the econometric results. Conclusion of the study is given in section 6.

THEORETICAL BACKGROUND

There are many theories which attempt to explain the determinants of FDI. These theories are significant steps towards the development of a systematic framework for the emergence of FDI. However, the capacity to serve as a self contained general theory, which could explain all types of FDI (i.e., outward as well as inward FDI at the firm, industry, and country level), has been questioned in the works of various scholars. Agarwal (1980), Parry (1985), Itaki (1991) can be given as examples.

Hymer's (1976) pioneering contribution was the first explanation of FDI in the industrial organization tradition. Hymer explains that MNCs indulge in FDI only if they possess some advantages or have an edge over local firms arising from intangible assets such as well-known brand name, patent- protected technology, managerial skills, and other firm specific factors. FDI may arise because it is difficult to sell or lease these intangible assets even thought the MNCs want to do so.

In comparison to Industrial organization theory, the Internalization approach emphasizes that firms carry out FDI because of the imperfections in product and factor markets and as a result of which firms try to replace market transactions with internal transactions. They do so because it helps them to save certain marketing costs. The advantage of internalization is the dodging of time lags, bargaining and buyer uncertainty. In contrast to it, the location theory states that the main cause of FDI is the immobility of some factors of production such as labour and natural resources across nations. This stillness in factors of production leads to location-related discrepancy in their costs.

The most conclusive justification of FDI as to what motivates outside investor to invest in other markets is given by Dunning (1980) in his eclectic theory of FDI. He explained the determinants of FDI in Ownership, Location and Internalization advantages i.e., OLI framework. He says that a country should have any of these three advantages to attract FDI. Firstly, the firms should possess ownership advantages which enable them to

compete efficiently in the local market e.g., firm's production process, firm's competitive advantage over domestic firms, and also include patents, copyrights, technical know-how and management skills. Secondly, the host countries should possess some locational advantages which encourage outside firms to serve local market directly rather than going for exports, example, lower production and transportation cost, favourable tax treatments, lower risks, access to protected markets. And finally, the firms should have sufficient incentives to serve foreign firms through internal networks, example, lower transaction costs, minimum technology imitation, effective management and good quality control.

EMPIRICAL EVIDENCE

So for various empirical studies have been conducted to identify the factors that influence the inflow of FDI. Nevertheless, the variables which were identified as determinants of FDI vary from study to study and from country to country. Therefore, in reviewing these studies it is difficult to derive one list of determinants, especially as some have gained or lost importance over time. This review focuses on the empirical studies conducted by various researchers on determinants of FDI in developing countries.

Reuber and Emersen. (1973) in their study on the determinants of US FDI into Western Europe found that the main factors that attracted the US investment were lucrative market, liberal host govt. policies, technological infrastructure and cultural proximity. In contrast to it Agarwal (1980) in his study named as "Determinants of FDI", a Survey based on developing countries experience tried to make use of some factors as FDI determinants. The factors used were comparative labour cost, country size, the nature of exchange rate regime and political factors including political stability and he got satisfied results.

Similarly Schneider and Frey (1985) conducted a research on 80 developing countries and concluded that the country's level of development plays a major role in attracting overseas capital. Moreover, they found that political instability in a country leads to a sharp decline in the inflow of foreign capital. Likewise Rolfe, Ricks, and Pointer (1993) in his studies found that MNCs desire to operate within a developed nation, possessing a reliable infrastructure because that will result in more efficient distribution system.

The World Investment Report of 1998 published by UNCTAD states that infrastructure definitely exerts its influence on the inflow of FDI. Wheeler and Mody (1992) too have shown, "well developed infrastructure" as a determinant of capital investment by multinationals. In line with above, Lucas (1993) conducted a study to find

out the main determinants of FDI on seven East and South-East Asian economies over the years 1960-87 used an innovative theoretical model based on derived demand for foreign capital of a profit maximizing multiple product monopolists.

Two versions of the model were employed. The basic model is estimated in logarithmic and linear form separately for each country. The empirical results reflect that for five of the seven countries studied, FDI positively respond to the rental equivalent of cost of capital and the product price.

Tsai (1994) in his empirical study used economic variables like market size and growth factors, trade balance and hourly wage rate in manufacturing to examine their effect on inflows of FDI. The study uses Simultaneous Equations Approach to find out whether the said variables affect the FDI inflows or not. The time span of the study was split into two different time periods viz. 1975-78 and 1983-86. The results of the study show that market size and growth have positive impact on FDI inflows.

Likewise Shamsuddin (1994) used cross section data for the year 1983 on 36 developing countries found that per capita GDP, wage cost, investment climate represented by per capita debt, volatility of prices and availability of energy have significant effects on foreign investment. Whereas Clegg, Buckley, Wang, and Cross (1995) have found that the variation of FDI inflow into developing countries can be explained by various factors such as GDP and its growth, R&D intensity, economies of scale, per capita exports and imports, exchange rate differentials, the level of development of the country's infrastructure, tariff barriers, dependence on host country's raw materials, the level of political stability and political risk, proximity of host country to investing country and availability of skilled manpower.

Similarly Urata and Kawai (2000) conducted a study on determinants of Japanese FDI in 117 developing, developed and Asian countries over the period 1980-1994. They conducted the analysis for four manufacturing sub-sectors, viz. textiles, general machinery, electric machinery and transport machinery which account a dominant share of Japanese FDI. They employed the conditional Logit model to examine their objectives. They had taken profits of firm as a dependent variable and included demand and supply side factors such as cheap labour, infrastructure, good governance, industrial agglomeration, and exchange rate and its variability, schooling and market size as explanatory variables. They found that supply side variables are important for attracting Japanese FDI in developing

countries while demand side variables account for attracting Japanese FDI to developed countries.

In an attempt to analyze the determinants of FDI in transition economies Garibaldi, Mora, and Sahay (2001), while examining the determinants of foreign capital in 26 transition over a period 1990 to 1999 concluded that the important factors that influence the FDI inflows in these economies were market size, fiscal deficit, inflation, and exchange rate regime, risk analysis, economic reforms, trade openness, availability of natural resources, barriers to investment and bureaucracy.

Nunnenkamp and Spatz (2002) in their study on the FDI determinants analyzed the data from 28 countries from 1987-2000 and found that per capita GNP, risk factors, years of schooling, foreign trade restrictions, administrative bottlenecks and cost factors were very important in determining FDI inflows. Whereas population, GNP growth, firm entry restrictions, post-entry restrictions and technology all proved to be insignificant.

Aqeel and Nishat (2004) examined the determinants of foreign capital inflows into Pakistan for the years 1961-2003. To examine the objectives of their study they used Johansen Cointegration and Error Correction Model (ECM). The study included FDI inflows as dependent variable and market size, wage rate, exchange rate, tariff rate, tax rate, credit to private sector and index of general share prices as independent variables. Their empirical results reflect that all the explanatory variables except wage rate and share price index are statistically significant and exert a great influence in attracting FDI inflows into Pakistan.

In contrast to it, Sahoo (2006) conducted a study to identify the determinants of FDI in South Asian countries over the period 1975-2003.The countries included in sample were India, Pakistan, Bangladesh, and Srilanka. The methods used to find out the FDI determinants were Panel Cointegration and Pooled OLS and variables included in the model were FDI as dependent variable and other 11 explanatory variables. The empirical results of the study reflect that major determinants of FDI were market size, labour force growth rate, infrastructure index and trade openness. The study suggests that in order to attract more and more inflows of foreign capital these countries have to maintain growth momentum to improve their market size, trade policies, to make better use of their abundant labour supply, address infrastructure bottlenecks and follow more open trade policies.

A study by Azizov (2007) on determinants of FDI in CIS countries with transition economy using dynamic panel model suggests that key determinants of FDI inflows to

transition economies of Commonwealth of Independent States were market size, inflation rate, and fiscal balance, main telephone lines are all significant and have expected sign. The results also indicate that FDI inflow is not influenced by corruption in host countries.

Results show that control of corruption has no significant effect on FDI inflows into these economies. Similar other study conducted by Dawn and Nigel (1998) on the determinants of FDI in the Transitional Economies using panel data suggests that method of privatization, proximity to the EU and the extent of trade linkages with the advanced economies have significant effects on the level of foreign investments. The authors also detect a role for risk and relative labour costs in host countries, suggesting a degree of competition to attract inward investment.

A large number of (time series and cross section) studies have been conducted to identify the determinants of FDI inflows but no consensus view has emerged, in the sense that there is no widely accepted set of explanatory variables that can be regarded as the "true" determinants of FDI. Chakrabarti (2001) attributes the lack of consensus to "the wide differences in perspectives, methodologies, sample-selection and analytical tools". Results in the literature have been found to be very sensitive to these factors, indicating a lack of robustness. For example, factors such as labour costs, trade barriers, trade balance, exchange rate and tax have been found to have both negative and positive effects on FDI.

Chakrabarti (2001) concludes "the relation between FDI and many of the controversial variables (namely, tax, wage, openness, exchange rate, tariffs, growth and trade balance) are highly sensitive to small alterations in the conditioning information set". What complicates matters is the fact that the underlying theory does not provide a definite prediction for the direction of the effect of a particular variable on FDI.

This paper contributes to the literature by examining a limited set of potential explanatory variables. Some of our variables come from the set of variables used by the UNCTAD (2002) to benchmark the "key measurable factors that are expected to affect inward FDI". The reason why these variables are chosen is that they are deemed by the UNCTAD as being the most important variables out of a pool of a large number of variables. Besides, we have employed one of the advanced and well behaved econometric techniques, the Fully Modified Ordinary Least Squares method to analyse the determinants of FDI inflows to developing countries.

DATA AND METHODOLOGY

The data set consists of yearly observations for the period 1982-2008 for the 32 developing countries. All the selected countries belong to the category of developing economies according to the classification given in the UNCTAD (2003). As many of the developing countries started the process of financial sector reforms since middle of 1980s therefore the reference period for the study is taken from 1982 to 2008.

The required data set for the selected countries were obtained from UNCTAD-World Investment Reports (various issues), World Bank (2009), RBI (2012), CMIE, and IMF (2011). The choice of selecting 32 developing countries as our sample size is based on two factors; firstly, availability of desired data and second balancing our panel. Although, balancing of panel would have been possible even if we select a sample size of less than 32 countries. But in that case our sample would have shrinked which might influence the robustness of our results. On the other hand going for a sample size much greater than the one we used results in an unbalanced panel as some of the data are missing for some years for some of the countries. As a result calculations and running of the regression models will get a bit mind-numbing.

Foreign Direct Investment (lnfdi): FDI have been taken as the inflows of foreign capital. It is the sum of equity capital, reinvested earnings, and other long-term and short-term capital as shown in the capital account of balance of payments. In the study the variable is used in its natural log form and is denoted as lnfdi. The figures of the FDI are in current US$ and are compiled from various issues of World Investment Report.

Gross Domestic Product (lngdp): Gross domestic product is the measure of all final goods and services produced domestically in a given year. It is the sum of gross value added by all residents in the domestic country plus any taxes minus subsidies. It is calculated without making deductions for depreciation of capital. In our study it is used in natural log form and is denoted as lngdp. The GDP figures are in current US$ and the data are collected from World Bank (IBRD) and International Monetary Fund (IMF).

Total Reserves (lntr): Total reserves comprise holdings of monetary gold, special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities. The variable is used in its natural log form and

is denoted as lntr. Data are in current U.S. dollars. The data has been compiled from World Bank website.

Electric power consumption (lnpc): Electric power consumption measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants. We have used log of electric power consumption as a proxy for infrastructure. The variable is symbolized as lnpc. The data has been taken from World Bank (2009).

Wage rate (lnwgr): Wage rate is the Workers' remittances and compensation of employees. It comprises current transfers by migrant workers and wages and salaries earned by non-resident workers. Wage rate is used as a proxy for labour cost. The variable is denoted as lnwgr. Data are in current U.S. dollars and has been taken from World Bank staff estimates based on IMF balance of payments data.

Openness (opn): Openness is used to measure the trade openness of a country. It is computed as the ratio of imports and exports of goods and services to gross domestic product. The data for the variables used to construct the openness variable are in current US$ and is taken from World Bank. The variable openness is constructed as

$$Opn = exp + imp / gdp * 100$$

Where "opn" is for openness, "exp" is for exports, "imp" for imports and "gdp" denoted gross domestic product.

Methodology

The study uses panel data technique to estimate the model since panel data has some advantages over cross- section and time series data in using all the information available, which is not detectable in pure cross-sections or in pure time series. Panel data controls for individual heterogeneity whereas time-series and cross-section data did not control it and as a result run the risk of obtaining biased results. Further, panel data are capable of identifying and measuring the effects that are not detectable in pure cross-section or pure time-series data.

To identify the factors that influence the FDI inflows, the above mentioned variables are incorporated in the following equation:

$$\ln fdi_{it} = \beta_{1i} \ln gdp_{it} + \beta_{2i} \ln tr_{it} + \beta_{3i} \ln pc_{it} + \beta_{4i} \ln wgr_{it} + \beta_{5i} opn_{it} + \varepsilon_{it}$$

(i=1…….N, where N=number of cross sectional units; t=1…....t, where t is the time period, ε_{it} is the error term and β's are the slope coefficients).

The study uses recently developed panel unit root and panel cointegration tests and Fully Modified Ordinary Least Squares (FMOLS) to identify and estimate the impact of factors that exert influence on the inflows of overseas capital. The FMOLS technique was first proposed by Pedroni (2000). FMOLS technique is having an edge over the Ordinary Least Square (OLS) technique in the sense that it is able to take into account both the serial correlation and endogeneity problems present in the variables which is not true in case of OLS.

The OLS estimator is only used in case of exogeneity of the regressors and homogeneous dynamics across the individual members of the panel. Since most of the macroeconomic variables employed in this study are likely to exhibit stochastic and/or deterministic time trends and therefore non-stationary; thus the reported estimates are likely to be spurious in nature. It is therefore highly important to test for the presence of unit roots (non-stationarity) of the variables in the model.

We have employed several panel unit root testing methodologies to determine the order of integration of the variables included in the model. If the order of integration is zero, the series is considered to be stationary and thus free from a unit root. Traditionally Dicky Fuller (DF) or ADF Augmented Dicky Fuller (ADF) tests have been used to test for the unit roots in time series data.

However, these tests suffer from low power in rejecting the null of non-stationarity series as well as limiting distributions which are complicated and not well defined. In order to avoid these problems, the study uses the more reliable and well –behaved panel unit root tests such as Levin, Lin, and Chu (2002), and Im, Pesaran, and Shin (2003), Fisher type-ADF and Philips-Perron (Fisher-PP) tests. These tests are based on the null of a unit root against the alternative of stationarity of the series. The results of the panel unit root tests for the chosen variables, both in level and first difference are reported in Tables 1 and 2 presented in "data and methodology" Section.

Panel Cointegration Tests

Once the presence of the unit root is detected in the variables, then it becomes necessary to check for the presence of a co-integrating relationship among the variables. If the variables are of the same order, and if there is a long run relationship between the variables, an estimation of such a relationship will give errors which are stationary. To determine if such a long run relationship exists among the variables, panel co-integration techniques generated by Pedroni (2000) are employed.

Pedroni developed seven different statistics to test for panel co-integration and they are based on either a within-dimension or between-dimension statistics. Within-dimension based statistics are referred as panel co-integration statistics, while between-dimension statistics are termed as group-mean co-integration statistics. Pedroni extends the two step residual-based strategy of Engle and Granger (1987) to develop the panel co-integration tests.

These tests are based on the null of no co-integration and work with the assumption of heterogeneous panels. The major advantage of Pedroni test is that it allows for individual member-specific fixed effects, deterministic trends and slope coefficients. The methodology involved in testing for co-integration among a set of variables is discussed below with respect to the model used in this study

$$\ln fdi_{it} = \beta_{1i} \ln gdp_{it} + \beta_{2i} \ln tr_{it} + \beta_{3i} lpc_{it} + \beta_{4i} \ln wgr_{it} + \beta_{5i} opn_{it} + \varepsilon_{it} \quad (1)$$

The variables in (1) are integrated of the same order and are said to be co-integrated if the error term (ε_{it}) is a stationary process. Hence testing for co-integration among variables requires that a regression of the following form is performed on the residuals from (1)

$$\varepsilon_{it} = \rho_i \varepsilon_{i,t-1} + \omega_{it} \quad (2)$$

The null is $\rho_i = 1$ implies that ε_{it} has a unit root. Based on the estimation of (2), seven different statistics are calculated. Panel-v, panel-rho, panel-PP and panel-ADF are based on the within-dimension while, group-rho, group-PP and group-ADF are based on the between-dimension of the panel. In the within-dimension framework, the null of no

co-integration is H_0: $\rho_i = 1$ *for all i* against, the alternative of H_1: $\rho_i = \rho < 1$ for all *i*. The alternative hypothesis implies that there is co-integration among all the variables in the panel. On the other hand the null hypothesis pertaining to between-dimension framework is defined as H_0: $\rho_i = 1$ for all *i* against the alternative of H_1: $\rho_i < 1$ for at least one *i*. Thus, the between-dimension test is less restrictive and allows for heterogeneity across members. In case of within-dimension test a common value for all cross section is imposed i.e., $\rho_i = \rho$

Fmols method

Once co-integration has been established among the relevant variables, the model is estimated utilizing the FMOLS technique first proposed by Pedroni (2000). According to Pedroni (2000), standard OLS estimation of a panel will lead to an asymptotically biased estimator because the estimates would be dependent on the nuisance parameters that are associated with the dynamics of the underlying system. He argues that only in case of exogeneity of the regressors and homogenous dynamics across the individual members of the panel, the OLS estimates are unbiased.

The FMOLS estimator accounts for both serial correlation and endogeneity problems, and hence is preferable to simple OLS estimation. One of the merits of using FMOLS techniques is that it allows for the country-specific fixed effects to be heterogeneous while estimating long run relationships (Pedroni, 2000). He argues that the t-statistic for group mean panel FMOLS offers more flexible alternative hypothesis than pooled FMOLS because the former is based on the between-dimension as opposite to within-dimension of the panel: Thus it estimates the cointegrating vectors for a common value under the null hypothesis, while under the alternative hypothesis the values for the cointegrating vector are allowed to vary across groups.

EMPIRICAL RESULTS

This section presents the integration properties of the variables included in the model using various panel unit root tests. The results were obtained by using LLC, IPS, Fisher-ADF and PP-Fisher unit root tests. Tables 1 and 2 below respectively report panel unit root results in level and at first difference for the various variables included in the study.

Table 1: Panel unit root results (level)

Variables	LLC	IPS	Fisher-ADF	PP-Fisher
lnfdi	-1.58	0.96	60.95	62.88
	(0.06)	(0.83)	(0.58)	(0.51)
lnpc	-5.40	1.79	67.56	77.38
	(0.00)	(0.97)	(0.35)	(0.12)
lntr	2.97	7.71	13.31	13.86
	(0.95)	(1.00)	(1.00)	(1.00)
lngdp	6.26	11.93	11.64	8.27
	(1.00)	(1.00)	(1.00)	(1.00)
lnwgr	3.12	6.30	38.07	25.14
	(0.99)	(1.00)	(0.99)	(1.00)
opn	3.60	4.34	51.57	42.27
	(0.99)	(1.00)	(0.87)	(0.94)

Note: The numbers in parenthesis are p –values and all the variable in the table are in natural log form expect 'opn' (openness).

As is clear from the Table 1.1, the LLC, IPS, Fisher-ADF and PP-Fisher test fail to reject the null hypothesis that "lnfdi" in level is non-stationary. Hence we test for stationarity of "lnfdi" in first difference. The results are reported in Table 2 and it is clear that all the test results for 'lnfdi' indicate that in first difference it is stationary. This means that for all the countries under study, the variable "lnfdi" follows an I(1) process.

Next, we examine whether the explanatory variables included in the model such as lnpc, lntr, lngdp, lnwgr and openness "opn" are stationary. From table 1.1 all these variables are non-stationary in levels as evident from the reported p-values. Therefore, we test for stationary of these variables at first difference. The results are presented in Table 2 given below.

Table 2: Panel unit root results (first difference)

Variables	LLC	IPS	Fisher-ADF	PP-Fisher
lnfdi	-26.02	-27.86	635.64	723.17
	(0.00)	(0.00)	(0.00)	(0.00)
lnpc	-18.57	-16.34	373.04	408.48
	(0.00)	(0.00)	(0.00)	(0.00)
lntr	-16.64	-18	406.61	485.21
	(0.00)	(0.00)	(0.00)	(0.00)
lngdp	-15.84	-15.08	333.55	337.33
	(0.00)	(0.00)	(0.00)	(0.00)
lnwgr	-21.67	-20.35	454.97	495.83
	(0.00)	(0.00)	(0.00)	(0.00)
opn	-20.3	-19.6	435.88	462.48
	(0.00)	(0.00)	(0.00)	(0.00)

Note: The numbers in parenthesis are p –values and the entire variables in the table are in natural log form except 'opn'.

From the p-values obtained by using various tests it is evident that all the variables are stationary at first difference. This implies that all the variables included in this study are I(1) for all the countries under consideration. Since all variables follow an I(1) process and therefore we suspect that there may exist cointegration between them.

To test for cointegration, we employ panel cointegration test proposed by Pedroni (2000). He proposes two sets of tests for cointegration within-dimension and between-dimension. The panel tests based on the within dimension approach includes four statistics (i.e., panel cointegration statistics): Panel v-statistics, panel rho-statistics, panel pp-statistics, and panel ADF-statistics. These statistics essentially pool the autoregressive coefficients across different countries for the unit root tests on the estimated residuals and take into account common time factors and heterogeneity across countries.

The group statistics are based on between dimension approaches which include three statistics (i.e., group mean panel cointegration statistics): Group rho-statistics, group pp-statistics, and group ADF-statistics. These statistics are based on averages of the individual autoregressive coefficients associated with the unit root tests of the residuals for each country in the panel.

Of the seven tests, the panel v-statistic is one- sided test where large positive values reject the null of no cointegration, whereas large negative values for the other test statistics reject the null of no integration among variables. Table 3 below reports the Pedroni panel cointegration statistics. All the statistics reject the null hypothesis of no cointegration. From the estimates, it is evident that the variables are cointegrated and there exists a long run equilibrium relationship between them.

Table 3: Panel cointegration test results

Within dimension		**Between dimension**	
Test statistics		**Test statistics**	
Panel-v	109.74 (0.00)	**group-rho**	-72.10 (0.00)
Panel pp-statistic	-6.41 (0.00)	**group pp-statistic**	-11.17 (0.00)
Panel ADF-Statistic	-7.96 (0.00)	**group ADF-statistic**	-9.09 (0.00)

Note: The numbers in parenthesis are p-values

To identify the determinants of foreign direct investment the study employs the group mean panel FMOLS method developed by Pedroni (2000). The results are reported below in Table 4.

Table 4: Group mean panel FMOLS results

variables	Coefficient	t-stat
lngdp	0.88	3.39***
lntr	0.45	6.18***
lnpc	0.45	3.53***
lnwgr	-0.27	-3.84***
opn	0.00	0.72

Note: ***Denotes1% level of significance.

The results show that coefficients of lngdp, lntr, lnpc and lnwgr are highly significant. Except openness coefficient all other coefficients are statistically significant at 1% level and given that the variables are expressed in natural logarithms the coefficients can be interpreted as elasticities. The results suggest that a 1% increase in GDP increases FDI inflows by 0.88%; a 1% increase in total reserves causes FDI inflows to rise by 0.45%, and a 1% rise in energy usage boosts FDI inflows by 0.45%. Further, the results reveal that a 1% rise in wages is associated with a decline of 0.27% in FDI inflows. The empirical results depict that market size, total reserves, infrastructure and wage rate significantly determine the inflows of foreign direct investment to a country. The market size, total reserves, and infrastructure are positively related to FDI inflows. And low wage rate seem to stimulate the FDI inflows.

CONCLUSION

This study makes an attempt to identify the factors determining overseas investment in developing countries. The empirical results derived using the technique of FMOLS clearly reveals that all the variables (except openness) have a strong bearing on the inflows of overseas capital. There is strong empirical evidence of positive relation between FDI and the level of GDP. It implies that the countries with large market size (higher GDP) are getting a large amount of overseas investments.

The result commensurate with the Dunning's OLI Paradigm according to which a great deal of market-seeking investment flows into the countries with large market size. The positive impact of total reserves on the inflow of FDI implies that the adequacy of reserves stimulate the FDI. Foreign investors regard large international reserves as reflecting a vital local economy, and they tend to have confidence in such an economy. Robust international reserves, therefore, attract foreign investors, while lower levels of international reserves have the opposite effect (Stevee and Hemanta, 2004).The variable

power consumption which is used as a proxy for infrastructure is also one of the main determinants of FDI as revealed by the empirical results.

This implies countries with better and improved infrastructure facilities out-compete others in attracting the foreign investment. Infrastructure facilities increase the productivity of the investments and therefore may stimulates FDI inflows into the country. The impact of wage rate on inflows of foreign capital is found to be negative and significant as expected. This means that higher labour cost would discourage inflows of FDI.

In other words, countries with availability of cheap labour are preferred FDI destinations. Earlier, empirical research has also found an inverse relation between labour cost and FDI particularly for the foreign investment in labour intensive industries and for export oriented subsidiaries. Interestingly, the empirical results reveal that the variable openness is insignificant that is contradictory to some of the theories as well as to some empirical studies (Garibaldi et al., 2001; Compos and Kinoshita, 2002) but matching with tariff jumping hypothesis, which argues that FDI to developing countries is tariff- jumping type and hence least affected by trade restrictions.

The result is also in accord with some of the empirical studies like Schmitz and Bieri (1972), Wheeler and Mody (1992), and Blonigen and Feenstra (1997) which have shown that FDI is either unaffected or least effected by openness. The insignificant impact of openness on FDI in our study may be attributed to the type of investment the developing countries are receiving. When investments are market seeking, trade restrictions (and therefore less openness) cannot be of much hindrance to inflows of FDI.

It connotes that foreign firms locate production facilities within destination country and seek to serve local markets in order to avoid trade costs. In general, the impact of openness on FDI is linked to the type of foreign investment (Asiedu, 2002). Horizontal FDI or Market-seeking FDI may be attracted by higher trade barriers, which also protect the output of the foreign investor in the local market against imports of competitors. Therefore, it may be concluded that FDI for the selected set of developing countries in this study is more likely to be market seeking and hence least affected by openness.

The study proposes that in order to compete with advanced countries to attract more FDI, developing countries should make the investment climate much better and conducive to foreign players. This requires a critical examination of the firm-specific motivations that make them to indulge in FDI. The study proposes that there is a need to

increase the productive efficiency which is possible only if the infrastructure bottlenecks are properly addressed and the wages and other relative costs are kept low.

The findings of the present study suggest that in order to attract more inflows of FDI and to maximize the gains from it, the improvement in infrastructure, adequacy of foreign exchange reserves and growth in GDP should be the key agenda of the foreign policy of developing countries. The limitation of this study is that it doesn't take into account institutional and political factors while analyzing the determinants of FDI. The exploration of the role of institutional and political factors in attracting FDI and their comparative weightage in determining such flows would be an interesting area to investigate.

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