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Human Capital Development and FDI in Developing Countries

Muhammad Tariq Majeed and Eatzaz Ahmad*

Abstract

This paper evaluates the proposition that development of human capital can be instrumental in attracting FDI in developing countries by using fixed effects models on the panel data of 23 selected developing countries and 35 years (1970-2004). For the purpose, we employ two indicators of human capital development that are health expenditures and illiteracy rate and our empirical estimates confirm the efficiency seeking behavior of the MNEs. This study differs from the existing empirical literature-earlier FDI was mainly driven by market seeking motive and latter on by efficiency seeking motive- by finding the importance of both motives at the same time. Excessive government consumption and military expenditures are comparatively more significant, reflecting non-market friendly approaches. The impact of real lending interest rate on FDI is positive because higher lending interest rate in host countries mean MNEs have cost advantages in term of financing by home countries.

JEL Classification: F21, J24

Keywords: Human Capital, Investment, Foreign Investment, and FDI.

I. Introduction

Human resource development (HRD) and foreign direct investment (FDI) are generally considered among the key drivers of economic growth in developed and developing countries. While HRD and FDI individually affect growth, they also reinforce each other through complementary effects. In general, enhanced HRD increases incoming FDI by making the investment climate attractive for foreign investors. This is done through a direct effect of upgraded skill level of the workforce, as well as via indirect effects such as improved socio-political stability and health. On the other hand, FDI contributes to HRD since multinational enterprises (MNEs) themselves can be active providers of education and training, bringing new skills, information and technology to host developing countries. Ultimately, this complementary

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effect leads to a virtuous circle of HRD and FDI where host countries experience continuous inflow of FDI over time by increasingly attracting higher value-added MNEs, while at the same time upgrading the skill contents of preexisting MNEs and domestic enterprises.

As most developing countries experience a shortage of capital, this is reflected in their respective savings-investment and import-export gaps, which implies that developing countries have insufficient savings and/or foreign exchange to finance their investment needs. To bridge this gap they need an inflow of foreign capital. FDI is an important source of capital for growth in developing countries. In the 1960s and 1970s many countries maintained a rather cautious and sometimes an outright negative, position with respect to foreign investment. In the 1980s, however, the attitudes shifted radically towards a more welcoming policy stance. This change was mainly due to economic problems facing the developing world. While FDI is surging, other forms of capital flows to developing countries are diminishing. Aid has continuously declined as a share of capital inflows since the 1960s. Commercial loans, a major source of capital flows in the 1970s has virtually disappeared since the debt crisis of the 1980s.

In earlier literature the determinants of FDI were described theoretically without giving empirical results [for example Lall (1978)]. Latter on, the studies based on empirical analysis have increasingly appeared in the literature. These studies differ from the earlier studies on the basis of theory. First the pure economic theory, that of international trade and the theory of firm were adopted as the theoretical base for empirical study of FDI determinants. These theories assume the presence of perfect competition and identical production function and attribute FDI flows to difference in the interest rates across countries. But it hardly explains the large volume of FDI flows across countries.¹

Recent theories as a base for FDI, and in particular of MNCs (multinational corporations) growth, have turned to the explanations based on market imperfections, oligopolistic interdependence and the possession of the monopolistic advantage. It is assumed that for FDI to take place a necessary condition is that the investing firms have some monopolistic advantages, not possessed by local competitors.

Wang and Swain (1995) point out that most literature published in both the West and East on the determinants FDI and joint ventures (jvs) in Eastern Europe and China is of rather

¹The FDI flows to developing countries increased manifold, rising from us \$ 33.7 billion in 1990 to \$ 172.9 billion in 1997[Government of Pakistan (2000-2001)].

general nature and is based on the author's own experience and news paper clippings. These "quick – shut" studies are not very useful for the purpose of building up a good research base. They, therefore, design to shed light on these issues by exploring and analyzing the factors that explain foreign capital inflow into Hungary and China during the period 1978-92. More specifically, they test the relative importance of independent variables, including market size, cost of capital, labor costs, tariff barriers, exchange rates, import volumes and economic growth in OECD countries as well as political stability, within the framework of a one-equation model.² Time series data between 1978 and 1992 for Hungary and China were fitted into one-equation models and were estimated by ordinary least squares (OLS) regression. Estimates suggest that the size of host country market plays a positive role, while the cost of capital variable and political instability are negatively correlated with investment inflows. These results support the hypotheses that low-cost labor and currency depreciation are important factors in explaining how much capital inflow in to particular country. There is little evidence to support classical hypotheses concerning tariff barriers and import variables. The OECD growth rates show significant positive correlation with FDI in Hungary.

In a survey article, Mello (1997) discuss the latest development in literature on the determinants of FDI and impact of inward FDI on growth in developing countries. The study argues that policy regime of the host countries is a potentially important FDI determinant. The recent literature has provided policy makers in developing countries with more adequate tools and more accurate benchmarks for cross-country comparisons and policy evaluation.

The study further argues that the foreign investors are motivated primarily by international rent seeking under standard profit maximizing assumptions. The most important factors explaining the surge of FDI inflows into the developing countries in recent years have been the foreign acquisition of domestic firms in the process of privatization, the globalization of production, and increased economic and financial integration.

Mello (1997) also present a brief summary of the case studies such as O, Sullivan (1993), Bajorubio and Sovilla-Rivero (1994), Wang and Swain (1995), Milner and Pentecost (1996), and

² Except the cost of capital and the average growth rates in home countries, most of these independent variables could be found in Agrawal's (1980) article. Many empirically studies (for example, Petrochilos1989) have supported Jorgenson's (1963) hypotheses that FDI is determined by cost of capital. Other suggests that faster growth of the home countries has played a role in promoting FDI in host countries (Jeon1992). A variable OECD growth rate is, therefor, applied to test whether economic prosperity in the major FDI home countries helps directly or indirectly parent firms to get bigger and accumulate assets for both licensing and FDI in both Hungary and China.

Lee and Mansfield (1996), which specify inflation, exchange rate, domestic expenditures, and net trade ratio as important determinants of FDI.

Although the theoretical literature on FDI presumes human capital to be among the key ingredients of inward FDI (Dunning, 1988; Lucas, 1990; and Zhang and Markusen, 1999), there are only few cross-country analyses done to identify the determinants of inward FDI in developing countries. Perhaps the reason for this lack of studies comes from the difficulty in constructing quality explanatory variables, especially for the indicator of human capital. This becomes even harder when one tries to gather consistent cross-country variables. The literature on cross-country analyses can be divided into two groups.

The first uses datasets that cover the period between the 1960s and 1980s while the second is based on datasets between the 1980s and mid-1990s. All studies adopt cross section and time-series analysis covering different sets of developing countries. The first group includes Root and Ahmed (1979), Schneider and Frey (1985), Hanson (1996), and Narula (1996). Root and Ahmed show that among the 58 developing countries, none of their proxies for human capital: literacy, school enrolment, and the availability of technical and professional workers, are statistically significant determinants of inward FDI. Schneider and Frey, using data for 54 developing countries, find the share of an age group with secondary education to be a less significant determinant as compared with other economic and political influences. Hanson, using a sample of 105 developing countries, shows that the adult literacy rate was not an important determinant of FDI as compared with other socio-political variables. Finally, Narula demonstrates that the number of tertiary education per population was not a statistically significant explanatory variable for FDI inflows among the 22 developing countries. Thus, all four cross-country studies show that human capital is not necessarily an important input for inward FDI. This conclusion is consistent with the fact that the period of the 1960s to 1970s was when FDI in the developing countries was concentrated on market and resource seeking and/or lower-end manufacturing types and that cheap labor and/or abundant natural resources were more important (Deyo, 1989; Ritchie, 2002; and Dunning, 2002). Thus, demand for higher-educated labor appears to be less crucial during this period.

The second group of cross-country analyses includes Noorbakhsh *et al.* (2001), UNCTAD (2002a), and Nunnenkamp and Spatz (2002). Using a dataset that covers the 1980s to mid-1990s, Noorbakhsh *et al.* find that both the stock and flow measures of the human capital

show statistically significant and positive effects on FDI inflows, and that the effects became more significant over time. The major difference in the results compared with the first group of studies, apart from the econometric precision, should come from the fact that they used a more recent dataset that contains relatively more high value-added manufacturing firms. Indeed most MNEs operating in developing countries during the late 1980s and 1990s tend to be efficiency-seeking types and/or subcontracting (Dunning, 2002; Nunnenkamp and Spatz, 2002) and high skilled labour force is expected to be crucial.

Nunnenkamp and Spatz use average years of education of total population aged 15 and above in the 28 developing countries and finds that education becomes an increasingly important determinant from the mid-1980s to the late 1990s. Thus, cross-country evidence indicates that human capital is an important determinant for inward FDI especially among efficiency-seeking MNEs, while not being an important determinant among market or resource-seeking MNEs. This is consistent with evidence that none of the Southeast Asian countries had institutions for industrial upgrading with skills development before the influx of FDI, at least in the low-end manufacturing sector (Deyo, 1989; Ritchie, 2002). This is also consistent with the experience in the African region, where much of the growth in FDI was in natural resources and market-seeking MNEs that were accompanied by stagnant growth in human capital.

Does this evidence indicate that countries seeking natural resources and/or market-seeking MNEs do not necessarily need to improve the level of human capital, while countries that seek higher value-added MNEs need to have a solid human capital base? To the extent that increased human capital contributes to civil liberties, political stability, health and reduced crime/corruption, all of which are considered to be key determinants of any type of FDI, human capital can still be a determinant for any type of FDI. One possible reason why human capital was not a significant determinant among studies using FDI data for the 1960s and 1970s is that other control variables may have captured the effect of improved socio-political stability due to improved human capital.

Another reason may be that it may take longer time for improved human capital to have an impact on improved socio-political stability. Although supported by limited evidence, education at the secondary school level appears to be the minimal level of education that is necessary for attracting relatively high value-added, efficiency seeking FDI. The evidence, however, does not inform us which type of human capital, be it level or types of education or

firm-based training experience, is most effective in facilitating inward FDI. Most cross-section studies use secondary or tertiary level of schooling as a proxy of human capital. None of the studies compare different levels or types of human capital to identify the most effective level/type of human capital.

To sum up, the literature on human capital and FDI indicates that human capital is an important determinant of FDI, especially for efficiency-seeking FDI that requires a skilled workforce as one of its key inputs. Although higher human capital does not appear to affect inflows of resource/market seeking FDI directly, it can indirectly affect FDI by improving civil liberties, health and crime rates. Basic schooling (until lower-secondary school level) appears to be the minimal level of schooling required for FDI after the mid-1980s. Given that the tendency of FDI in recent years is towards relatively skill-intensive production and services, and less towards primary and resource-based manufacturing, basic schooling should be the absolute minimum level of education the developing countries must provide. For countries seeking to attract higher value-added MNEs, it is necessary to upgrade human capital way above the basic schooling level.

The present study aims to find out the factors that determine the market, efficiency and resource seeking behavior of MNEs. In this study we will follow panel data estimation procedure for selected 23 developing countries. The rest of the discussion is organized as follows: section II explains the model and framework of analysis: section III introduces the data set and the construction of variables. Section IV puts forward the main findings from empirical analysis. Section V presents a summary results with some policy implications.

II. Methodology.

In this chapter, we formulate a framework of analysis to trace out the effects of various factors on FDI in developing countries, which we have taken in our sample. The underlying objective is to explain the rational behind foreign direct investment. It is generally believed that MNCs invest in those countries where they expect higher rates of return on their investments. There are many economic and non-economic factors, which determine the profits of firms on foreign direct investment. The economic factors include macro-economic indicators of performance problems like external debt, high rates of inflation, trade and investment policies of the government and physical infrastructure. The non-economic factors are political instability,

bureaucratic bottlenecks and law and order situation of the country. The model, which we have developed, takes into account those factors, which play an important role in the determination of FDI in the developing countries.

In the model specification we include exclusively human capital related variables. Nevertheless, in this specification we lost many countries from the analysis. The importance of this specification can be justified in the following lines. Human capital has a great deal with education and health expenditures. Education and health has the complementary effects on workers productivity and learning skills. The increasing size of military expenditures at the cost of mass poverty and decreasing development expenditures adversely affects the productivity of human capital.

An increase in the productivity of investment can only be achieved if there is already a sufficiently high level of human capital in the recipient economy. Accordingly, the human capital stock in the host country is prerequisite for production relocation across country borders. Local production only takes place when the basic skills needed for production with a minimum level of efficiency are present and further training is possible, such that foreign investors can use domestic non-reproducible inputs and labor of the quality level needed to set up operations in the host country and sustain productive activities thereafter. Labor has to be sufficiently well educated and trained to justify investment and technology transfers into the host country [De Mello (1999)].

The specified equation for FDI inflow is as follow.

$$FDI_{it} = f(GDP_{it}, HEL_{it}, ILL_{it}, MLT_{it}, WAGE_{it}, OD_{it}, IT_{it}, RL_{it}, UP_{it}, RAIL_{it}, VEHI_{it}, ROAD_{it}, REM_{it}, REM_{it})$$

Where the subscript i ($=1, \dots, n$) represents country and t ($= 1, \dots, T$) the period of time (years). The variables appearing in the equation are defined as follows.

FDI = Foreign Direct Investment as a percentage of GDP,

GDP = Gross domestic production in constant prices of 1989,

HEL = Expenditures on health sector in per capita terms,

ILL = Illiteracy rate percentage of total population

MLT = Expenditures on defense sector as percentage of GDP,

WAGE = Expenditures by central government on wages and salaries as percentage of total expenditures,

OD = Official development assistance as a percentage of GDP,

- IT* = Indirect taxes as a percentage of GDP,
RL = Real lending interest rate in percentage,
UP = Urban population as a percentage of total population,
RAIL = It is measured as the tonnage of goods transported times kilometers traveled per million dollars of GDP measured in PPP terms,
VEHI = Number of vehicles per 1000 people,
ROAD = Annual percentage of growth of roads pavement,
REM = Remittances are measured in per capita terms,

Justification of FDI Determinants

Market size

The market size hypotheses argue that inward FDI is a function of the size of the host country market, usually measured by GDP. We take gross domestic product as a proxy for market size. High demand, prospects for economies of scale, good economic health and absorptive capacity are the factors that give green signal to foreign investors. Combined effect of such factors can be captured by market size. Large market size is expected to have a positive impact on FDI. The positive impact is also justified in literature by Reuber (1973), Schneider and Fry (1985), Wheeler and Mody (1992), and Zhang and Markusen (1999).

Health Expenditures

Health is the chief gift of nature, which need utmost care and preserved all the time. Its importance has been narrated by Marshall as following: -“Health and strength, physical, mental, and moral. . . . are the basis of industrial wealth; while conversely the chief importance of material wealth lies in the fact that when wisely used, it increases the health and strength, physical, mental and moral, of the human race”

[WDR, 1991]

The historical experience of nations bear witness to this statement. Good health plays a vital role in economic and human development and is a crucial part of well being. Spending on health can also be justified on pure economic bases.

Good health positively determines productivity of workers. It also increases the learning skills of workers that lead to innovations. It reduces the leaves due to illness. On the bases of such arguments we can conclude that the effect of this variable positively determine FDI.

Literacy

It is a proxy variable for the skilled labor force. We expect that education enhance the capabilities of workers, which increases their productivity so this variable is expected to have positive effect on FDI. The importance of education for human resource development does not need any elucidation. However, its importance may be realized from the following quotation. “If you plan for a year, plant a seed, if for ten years, plant a tree, if for hundred years, teach the people. When you sow a seed once, you will reap a single harvest. When you teach the people, you will reap hundred harvests.”[WDR-91]

Globally, it has been observed that countries attach the highest priority to education due to complementarity with other sectors, for example; higher levels of education lead to higher returns to the health, agriculture, and industrial sector etc investment. Higher education is the source of communication easiness. No problem of language is a favorable factor for foreign investors [Chitrakar and Weiss (1995)].

Military expenditures

A lion share of budget for defense expenditures reveals uncertainty about future, cut in development expenditures and wastage of resources. Such factors create an adverse climate for investment. Moreover weapon accumulation race adversely effect the foreign relations. So we expect a negative influence of military expenditures on FDI.

In developing countries sectors regarded as ‘strategic’, related to national defense or sovereignty, are frequently targeted by protectionist policies. These polices nevertheless tend to distort social and private returns to capital and hence reduce the efficiency of FDI [De Mello (1999)].

Wages

We employ this variable in term of government size. Larger expenditures mean government size is dominating in an economy. In this situation, government uses larger resources of an economy and role of private is lessened. Further, bureaucratic inertia and management instability in host countries creates hurdles for foreign investors. In this state of affair room for FDI is reduced. Although the size of government can be measured by government expenditures, but government expenditures are confronted with fluctuations and not stable. We consider expenditures on wages and salaries as a stable measure.

Official Development Assistance

Official development assistance expenditures are the indicator of development activities. Such expenditures favorably determine infrastructure and also indicate the good terms with

international institutes that buildup the confidence of foreign investors. So foreign investors like to come in these countries. Luger and Shetty (1985) have presented suggestive evidence issue.³

Indirect Taxes

It is expected to have negative effect on FDI because higher taxes enhance cost of production rate that is a disincentive for foreign investors [Coughlin, Terza and Arromdee (1991)]. However, in empirical literature the effect of this variable is controversial.⁴

Real Lending Interest Rate

FDI is basically financed in the home country. If the cost of borrowing in the host country is higher, than in the home country, home country firms can have a cost advantage over host country rivals, and are in a better positions to enter the host country market via FDI. Grosse and Trevino (1996) confirm the positive relationship between FDI and real lending interest rate in the host country. However, if the foreign investors avail the finance facilities in the host country, the effect would be negative.

Urbanization

The extent of urbanization is a social variable, which is expected to have positive impact on FDI as proposed by Root and Ahmad (1979). Urban demand for manufacturing is higher than rural. Moreover, if a country covers a vast area under urbanization, the production environment for MNCs would be better. However urbanization also creates overcrowding, crime, and burden existing facilities, hence its negative influence on FDI is also expected.

Infrastructure

The expenditure on transport and communication is used for the quality of infrastructure, as proposed by Root (1979), Teece (1977) and Moody (1992). The provision and existence of infrastructure are expected be an incentive for FDI.

Transport is widely defined by its two dimensions: space and time. Better transport mean that goods can be moved more cheaply from the production points to the consumption points. In this dimension, transport expands markets with all possibilities of economic growth and save time that has a high value. The saving in time is always more important than the growth of markets, as it also reduces the cost of carriage per kilometer. Transport, therefore, occupies a strategic place in the process of development.

³ See for more detail Luger and Shetty (1985)

A society seems to be developed and industrialized, if it has a sophisticated and widespread transport system. The presence or lack of such facilities shapes the boundaries of the nations, states and local governments. More extensive transportation infrastructures are associated with increased FDI [Coughlin, Terza and Arromdee (1991)]. Furthermore, Bartik (1985) has presented empirical support for the importance of roads in the location decisions by foreign investors.

Remittances

It is evident by history that a flood of foreign remittances toward developing countries in 1970s led to high demand of manufacturing goods. Moreover, bandwagon effect worked as a multiplier for such demand. So we expect the positive effect of remittances on FDI.

III. Data and Estimation Procedure

The data for this study have been taken from *World Development Indicators (WDI) 2005*. Originally a sample of 155 countries was selected but after screening process 23 countries were chosen for which data on most of the variables were available for at least 15 years. All the variables are measured in US dollar at current prices.

Construction of variables

Gross foreign direct investment is measured as percentage of GDP. Gross foreign direct investment is inflows of foreign direct investment recorded in the balance of payments financial account.

Health expenditure is measured as per capita. Total health expenditure is the sum of public and private health expenditures as a ratio of total population. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation. Adult illiteracy rate is the percentage of people aged 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life.

Military expenditure are measured as percentage of GNP. Military expenditures for NATO countries are based on the NATO definition, which covers military-related expenditures of the defense ministry (including recruiting, training, construction, and the purchase of military supplies and equipment) and other ministries. Civilian-type expenditures of the defense ministry

⁴Evidence of conflicting results is plentiful. For example, Carlton (1983) concludes that taxes did not have major effects on the location of new plants. However, Bartik finds that taxes deter the location decisions of MNCs.

are excluded. Military assistance is included in the expenditures of the donor country, and purchases of military equipment on credit are included at the time the debt is incurred, not at the time of payment. Data for other countries generally cover expenditures of the ministry of defense (excluded are expenditures on public order and safety, which are classified separately).

Wages and salaries are measured in percentage of total expenditure. Wages and salaries consist of all payments in cash, but not in kind, to employees in return for services rendered, before deduction of withholding taxes and employee contributions to social security and pension funds. Data are shown for central government only.

Official development assistance and net official aid record the actual international transfer by the donor of financial resources or of goods or services valued at the cost to the donor, less any repayments of loan principal during the same period. Aid dependency ratios are computed using values in U.S. dollars converted at official exchange rates.

Net indirect taxes are measured as percentage of GDP. These taxes are the sum of indirect taxes less subsidies. Indirect taxes are those taxes payable by producers that relate to the production, sale, purchase or use of the goods and services. Subsidies are grants on the current account made by general government to private enterprises and unincorporated public enterprises. The grants may take the form of payments to ensure a guaranteed price or to enable maintenance of prices of goods and services below costs of production, and other forms of assistance to producers.

Lending interest rate is measured in percentage points. Lending interest rate is the rate charged by banks on loans to prime customers. Vehicles are measured as the number of vehicles per 1,000 people. Motor vehicles include cars, buses, and freight vehicles but do not include two-wheelers. Population refers to mid year population in the year for which data are available.

Railways, goods transported ton-km per PPP million US dollars of GDP containing of goods transported by rail. It is measured as the tonnage of goods transported times kilometers traveled per million dollars of GDP measured in PPP terms. Roads paved are measured in percentage of growth per annum. Paved roads are roads that have been sealed with asphalt or similar road-building materials. Urbanization is measured as the urban population as percentage of total population.

We now discuss estimation procedure for our model. Since time series data have the problem of autocorrelation and cross sectional data have the problem of heteroscedasticity. The use

of pooled time-series and cross-section data provide large sample that is expected to yield efficient parameter estimates. Since political, structural and institutional characteristics vary from country to country, imposing a single relationship to all units is likely to suppress information. In order to overcome this problem we will use the approach of uniform shifts. The econometric literature suggests two approaches for uniform shifts [Green (1993), Kmenta (1986) and Maddala (1977)] the fixed effects and random effects model.

The Fixed Effects Model

This approach assumes that the shifts are deterministic. Here the intercept term is allowed to vary while random variations are assumed to be independent across the cross sections. The formulation of the model for FDI is

$$FDI_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it}$$

Where α_i is country specific fixed effects. In this form X_{it} is vectors. By applying OLS with dummies is called fixed effects model.

IV. Empirical Results and Interpretation.

In this chapter we report the empirical results based on pooled data for 25 developing countries over the period 1970 to 2004. The panel data model is estimated by allowing the deterministic and random shifts across the countries. Since the model uses panel data, it is likely to suffer from autocorrelation as well as heteroskedasticity. Both are removed by applying appropriate econometric techniques. The results of estimation are presented in Tables 1a and Table 1b.

Table 1a: Parameter Estimates of the Fixed Effects Model

Variables	Fixed Effects Model	Variables	Fixed Effects Model
GDP	9.02E-12 (3.78)*	RAIL	0.00038 (2.07)*
MLT	-0.0022 (-5.66)*	VEH1	0.000105 (2.82)*
OD	0.023145 (3.07)*	ROAD	1.13E-13 (0.96)
REM	-2.26E-05 (-1.08)	UP	0.002637 (9.34)*
Wage	-0.00081 (-6.98)*	Hel	1.27E-05 (2.13)*
IT	-4.23E-13 (-3.99)*	ILL	-0.00036 (-1.35)
RI	0.000143 (3.50)*		
R²	.60	Adjusted R²	.43
D W	2.47	F statistics	485

Note: The numbers in parentheses are the computed t-values. The statistics significant at 5 % level are indicated by *.

Table 1b: Country Specific Intercepts of the Fixed Effects Model

Countries	Fixed Effects	Countries	Fixed Effects	Countries	Fixed Effects	Countries	Fixed Effects
Argentina	-0.20882 (-1.81)**	Dominican Republic	-0.10385 (-1.58)	Sri Lanka	-0.01804 (-1.49)	Peru	-0.12938 (-1.70)**
Burkina Faso	0.029168 (0.24)	Egypt, Arab Rep.	-0.05511 (-1.05)	Lesotho	0.146987 (-0.69)	Philippines	-0.08978 (-1.79)**
Bolivia	-0.09666 (-1.52)	Indonesia	-0.05313 (-1.68)**	Madagascar	-0.03283 (-0.88)	Poland	-0.13744 (-1.83)**
Cameroon	-0.0648 (-1.32)	India	-0.03715 (-0.92)	Mexico	-0.13844 (-1.75)**	Togo	0.034515 (-0.21)
Colombia	-0.14706 (-1.83)**	Jordan	-0.11344 (-1.69)**	Nicaragua	-0.08979 (-1.66)**	Trinidad and Tobago	-0.07884 (-1.65)**
Costa Rica	-0.05833 (-1.67)**	Korea, Rep.	-0.15769 (-2.05)*	Panama	-0.07755 (-1.78)**		

Note: The numbers in parentheses are the computed t-values. The statistics significant at 5 % level are indicated by *.

The effect of health expenditures is significant in explaining FDI inflows. Good health, as we know from our own experience, is a crucial part of well being, but spending on health can also be justified on purely economic grounds. Improved health contributes to economic growth in four ways. It reduces production losses caused by worker illness; it frees for alternative uses resources that would otherwise have to be spent on treating illness. It increases the learning capacity of workers; and above all fewer workdays are lost to illness. Increased productivity, greater opportunities to obtain better paying-jobs, and larger worker lives potentially contribute to investment climate⁵.

The effect of illiteracy is negatively associated with FDI inflows. However, it is not much significant. Quantitatively speaking, an elementary education for the mass of people in a society leads to great economic gains. The people can learn through the written word and transmit their record their ideas more exactly. It enables them to keep accounts and assess the profitability of their business activities and alternative ways of allocating their resources. A literate population can be made to cooperate for beneficial economic activities more easily than an illiterate one. It can thus work more effectively under a plan as well as independently in the pursuit of their self-interest. The result is that an increase of expenditure of a moderate amount on education produces very high returns.

Furthermore, for the advancement of knowledge education is a basic factor. Scientific knowledge itself is a basis for improvement of techniques of production in many industries in the contemporary world. Advanced education usually accompanied by research leads to the discovering of new frontiers of knowledge and opens up new possibilities of its applications in the interest of economic development. Existing techniques can be adapted to new situations and new technique can be discovered, thus leading to a more productive utilization of resources or even discovering of new resources. Such all factors attract foreign investors.

The effect of transport facilities is positively significant in explaining FDI flows. There is a well known saying that, transport is civilization. Easy means of transport and communication are of the utmost importance for the economic development, social progress and political stability of a country. From the economic point of view, transport expands the area of division of labor, facilitates the movement of raw materials from their place of production to the place of

⁵ To take a classic example, leprosy is a disease that effect people in the prime of life, with peak incidence rates among young adults. As many as 30 % of those affected may be seriously, and their working lives will be shortened as well.

their utilization; in return, it helps the movement of goods from producing centers to consuming centers at home and abroad. All this returns in more and better production, in leveling up the deficit areas and in the economic absorption of surpluses of the surplus areas. Economic history of all advanced countries show that their economic development was accelerated, if not actually initiated, by increased facilities of transport. The Indian subcontinent consisted of self-sufficient village units before the coming of railways and roads, which removed this isolated and home backward economy⁶. All such arguments show that transportation facilities are the potential source of production cost advantages. Hence, such facilities in host countries favorably affect the investment decisions by foreigners. Our results are also consistent with Coughlin, Terza and Arromdee (1991).

The affect of real lending interest rate on FDI is found significant with positive sign. FDI is basically financed in the home country. If the cost of borrowing in the host country is higher, than in the home country, home country firms can have a cost advantage over host country rivals, and are in a better positions to enter the host country market via FDI. Our results are also consistent with Grosse and Trevino (1996).

Classical and Keynesian both agree that lending interest rate negatively affect investment decisions.⁷ Lower interest rates stimulate the investment opportunities for domestic investors. Higher domestic investment leaves little room for the foreign investors, so lending interest rate positively determine FDI flows⁸.

Generally, developing countries face the problem of fiscal deficit. The major source of such financing is taxes and our study reveals that the impact of indirect taxes is negative. Not only this, when developing countries extend deficit by spending on military and on other non productive sectors like bureaucracy at the cost of market friendly approaches like infrastructure.

⁶ Socially speaking, improved transport facilities encourage the mixing and mingling of the people. Mind has impact upon mind resulting in stimulation of mental process, relaxing of hide-bound traditions and conservative habits and encouragement of a fresher and progressive outlook on men and affairs. They promote the spread of education, make possible medical relief whenever necessary, and enrich in a thousands other ways the material, intellectual and more pattern of social life. Communication and transport also help in the maintenance of law and order with in the country.

⁷ However Keynes also consider marginal efficiency of capital as a determinant of investment.

⁸ This affect has already been captured by domestic investment variable.

V. Conclusion.

The objective of this study has been to find out the main factors that are important in determination of FDI inflow in developing countries. For this purpose the study used a sample of panel observations for 23 developing countries over the period 1970-2004. The data are derived from the *World Development Indicators (WDI) 2005*. Fixed effects (country specific intercepts) model is employed for the estimation of the relationship of FDI with its potential determinants based on the panel data. A number of conclusions can be drawn from the study, which are summarized as follows.

The study finds that the effect of health expenditures is positively associated with FDI flow. The main reason underlying the fact is that the productivity of labor force is highly dependent upon their health. Moreover, good health enhances the learning abilities of workers. The impact of illiteracy rate on FDI is less significant with negative sign. Higher the illiteracy rate means labor force is unskilled that unfavorably affect FDI.

The variables government consumption, military expenditures, wages and salaries expenditure; all of them are significant with negative signs. The expansionary trends of these variables discourage market friendly approaches and indicate the dominance of government sector.

The official development assistance is significant in explaining FDI inflows. The flow of such expenditures from international institutes buildup the confidence of foreign investor. Such expenditure has positive effect on infrastructure growth that has a favorable effect for FDI inflows. The study finds positive impact of real lending interest rate on FDI. Higher lending interest rate in host countries mean MNCs have cost advantages in term of financing by home countries. The effect of transportation facilities is significant with positive sign in explaining FDI flow. Such facilities expand markets with all possibilities of economic growth and save time that has a great value.

The policy implications that we are offered are:

- Expenditures on health facilities and education financing programs may be increased in the host countries at the cost of military expenditures and other non-productive spending.
- It is of critical importance to maintain a high and sustainable level of GDP. Evidence has shown that a sustainable level of GDP attracts FDI.

References

- Aggarwal, J. P. (1980). "Determinants of FDI: A Survey", *Weltwirtschaftliches Archive*, 116: 739-773.
- Bajorubico, O. and S. Sosvilla-Rivero (1994). "An Econometric Analysis of FDI in Spain", *Southern Economic Journal*, 61: 104-120.
- Bartik, T. J. (1985). "Business Location Decisions in the United States: Estimates of the Effects of Unionization, Taxes, and Other Characteristics of States", *Journal of Business and Economic Statistics*, 3: 14-22.
- Broadman, H.G. and X. Sun (1997), "The Distribution of Foreign Direct Investment in China", *The World Economy*, 20 (3): 339-361.
- Chitrakar, R. and J. Weiss (1995). "Foreign Investment in Nepal in the 1980s: A Cost Benefit Evaluation", *The Journal of Development Studies*, 31(3): 451-466.
- Coughlin, C. C., J. V. Terza and V. Arromdee (1991) "State Characteristics and the location of FDI within the United States", *Review of Economics and Statistics*, 73: 675-683.
- Coughlin, C.C. and E. Segev (2000), "Foreign Direct Investment in China: A Spatial Econometric Study," *The World Economy*, 23 (1): 1-23.
- De Mello L. R. (1999) " Foreign Direct Investment – Led Growth: Evidence from Time Series and Panel Data", *Oxford Economic Papers*, 51: 133-151.
- De Mello, L. R. (1997). " FDI in Developing Countries and Growth: A selective survey" *The Journal of Development Studies*, 34 (1): 1-34.
- Deyo, F.C. (1989), "Beneath the Miracle: Labor Substitution in the New Asian Industrialism", *University of California Press*, Berkeley.
- Dunning J. H. (1981). "Explaining the International Direct Investment Position of Countries: Towards a Dynamic or Development Approach", *Weltwirtschaftliches Archive*, 117: 30-64.
- Dunning, J. H. (1973). "The Determinants of International Production", *Oxford Economic Papers*, 25: 289-336.
- Dunning, J. H. (1993). "Multinational Enterprises and The Global Economy", *Working-ham: Addison- Wesley*.

Government of Pakistan, Economic Survey. Islamabad: Economic Advisors Wing Ministry of Finance. (Various Issues).

Green, W. H. (1993). "*Econometric Analysis*", Second Edition, New York: MacMillan.

Grosse, R. and L. J. Tervino (1996). "Foreign Direct Investment in the United States: An Analysis by Country of Origin", *Journal of International Business Studies*, 27(1): 139-155.

Hanson, J.R., Jr. (1996), "Human Capital and Direct Investment in Poor Countries", *Explorations in Economic History*, 33: 86-106.

Hausman, J. and W. Taylor (1985). "Panel Data and Unobserved Individual Effects", *Econometrica*, 49: 1377-1398.

Jeon, Y. D. (1992). "The Determinants of Korean Foreign Direct Investment in Manufacturing Industries", *Weltwirtschaftliches Archiv*, 128: 527-541.

Jorgenson, D. W. (1963). "Capital Theory and Investment Behavior", *American Economic Review*, 53: 247-259.

Kmenta, J. (1986). "*Elements of Econometrics*", Second Edition, New York: MacMillan.

Lall, S. (1978): "Transnationals, Domestic Enterprises and the Industrial Structure in Host LDCs: A Survey", *Oxford Economic Papers*, 30: 217-248.

Lee, J.Y. and E. Mansfield (1996). "Intellectual Property Protection and US Foreign Direct Investment", *Review of Economics and Statistics*, 30: 217-248.

Luger, M. I. and S. Shetty (1985) "Determinants of Foreign Plant Start-Ups in the United States: Lessons for Policymakers In the Southeast", *Vanderbilt Journal Of Transnational Law*, 18: 223-245.

Luger, M. I. and S. Shetty (1985) "Determinants of Foreign Plant Start-Ups in the United States: Lessons for Policymakers In the Southeast", *Vanderbilt Journal Of Transnational Law*, 18: 223-245.

Maddala, G. S. (1977). "*Econometrics*", New York: McGraw-Hill.

Milner, C. and E. Pentecost (1996). "Locational Advantage and US Foreign Direct Investment in UK", *Applied Economics*, 28: 605-615.

- Mody, A., S. Dasgupta and S. Sinha (1998), "Japanese Multinational in Asia: Drivers and Attractors", mimeo, World Bank, Washington, D.C.
- Narula, R. (1996), *Multinational Investment and Economic Structure: Globalization and Competitiveness*, Routledge, London.
- Noorbakhsh, F., A. Paloni and A. Yousef (2001), "Human Capital and FDI to Developing Countries: New Empirical Evidence", *World Development*, 29 (9): 1593-1610.
- Nunnenkamp, P. (1991). "Developing Countries' Attractiveness for Foreign Direct Investment, Debt Overhang and Sovereign Risk as Major Impediments?" *The Pakistan Development Review*, 3(4): 1145-1158.
- Nunnenkamp, P. and J. Spatz (2002), "Determinants of FDI in Developing Countries: Has Globalization Changed the Rules of the Game?" *Transnational Corporations*, 2: UNCTAD.
- O'Sullivan, P. J. (1993). "An assessment of Ireland's Export-Led Growth Strategy via Foreign Direct Investment, 1960-1980", *Weltwirtschaftliches Archive*, 129: 139-158.
- Petrochilos, G. A. (1989). "Foreign Direct Investment and the Development Process: The Case of Greece", *Avebury: Gower Publishing Company Ltd.*
- Petrochilos, G. A. (1989). "Foreign Direct Investment and the Development Process: The Case of Greece", *Avebury: Gower Publishing Company Ltd.*
- Ritchie, B.K. (2002), "Foreign Direct Investment and Intellectual Capital Formation in Southeast Asia", *OECD Development Centre*, 194: Paris.
- Root, F. and A. Ahmed (1979). "Empirical Determinants of Manufacturing Direct Foreign Investment in Developing Countries", *Economic Development and Cultural Change*, 27: 751-767.
- Schneider, F. and B. S. Frey (1985) "Economic Political Determinants of FDI" *World Development*, 13 (2): 161-175
- Teece, D. J. (1977). "Technology Transfer by Multinational Firms: The Resource Cost of International Technology Transfer", *Economic Journal*, 87: 242-261.
- Todaro, M. P. (1997) "*Economic Development*" Sixth Edition. New York: Longman.

UNCTAD (2002a), “World Investment Report”, *UNCTAD*, Geneva.

Wang, Z.Q. and N. J. Swain (1995) “The Determinants of Foreign Direct Investment in Transforming Economies: Evidence from Hungary and China”, *Weltwirtschaftliches Archive*, 131: 359-382.

Wheeler, D. and A. Mody (1992). “International Investment Location Decisions: The Case of US Firms”, *Journal of International Economics*, 33: 57-76.

Zhang, K. H. and J.R. Maskusen (1999). “Vertical Multinationals and Host Country Characteristics”, *Journal of Development Economics*, 59: 233-252.