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GROWTH EFFECTS OF FOREIGN DIRECT INVESTMENT AND ECONOMIC POLICY REFORMS IN LATIN AMERICA

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ABSTRACT

Both theoretical and empirical literature has identified several channels through which FDI influence economic growth in Latin America. This study however examines the impact on economic output growth using aggregate production function augmented with FDI inflows, policy reforms and the interaction between the two for 22 Latin American countries over 1980-2006 period. The results demonstrate the importance of FDI inflows and policy reforms on economic output growth. Though the interaction between the two highlights complimentary affect, the results are not significant. On the other hand, both FDI and reforms influence economic growth only post 1990s, the period in which many Latin American countries initiated drastic economic policy reforms. Despite these positive outcomes, the coefficient of FDI on economic growth is found to be smaller. This is because, though absolute FDI inflows have increased in the region over the years, the rate of growth of FDI in comparison to other developing regions like Asia is very low. The share of Latin American FDI to total developing countries declined from 1970 to 2006. This suggests that even though there is a positive impact of FDI and policy reforms on economic growth, this effect is only marginal and Latin America as an investment destination is less attractive than other developing regions like Asia today.

Keywords: FDI; Economic growth; Policy reforms; Latin America

JEL classification:

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1. Introduction

It is disappointing to see Latin America making inadequate progress in the last three decades especially in comparison to other developing regions like Asia and Middle East. The average percapita GDP growth rate during 1970 to 2007 in Latin America region was 1.50% in comparison to 2.56% in Asia and 2.86% in Developing countries (World Bank, 2007). In fact, amongst all the regions, Latin America's average percapita GDP growth from 1970 – 2007 was only ahead of 1% average growth of Africa. The problem with previous years was a low growth of GDP, *"typical Latin rate of growth"* which resulted in low percapita income growth. The average GDP of Latin America between 1970 and 1980 grew by 3.68% and average annual percapita GDP growth during this period was 3.22%. This was one of the highest growth rates amongst all the regions in the world (including all developing countries). In next decade (1981 – 1990), the GDP growth rate grew at 1.84% and the result was negative growth in percapita GDP, -0.75%. The performance of Latin America was the worst during this period. Even Africa registered a growth rate of -0.32%, higher than Latin region. For a developing region like Latin America, this growth was inadequate to make any significant impact on overall socioeconomic development. The low growth during the decade was largely attributed to the oil, debt and financial crisis. Often, this period is widely known as "the lost decade" in Latin American growth story. Some initiation was taken up during the 1980s by most of the Latin American governments in implementing market reforms. This improved the average GDP growth rate during 1991 – 2000 to 2.41% and the average percapita GDP also recovered to 1.62%. More countries initiated reforms post 2000 as the region grew on an average at 4.66% with percapita GDP growth of 1.89% during 2001 to 2007. However, despite this, Latin American growth during this period was again the lowest amongst all developing regions, including Africa, which had a growth rate of 2.43% (WDI, World Bank, 2007).

Thus, the biggest challenge before the Latin American countries is how to attain a solid economic growth and more importantly how to sustain it in order to trickle down its benefits to the poor to improve their socioeconomic conditions? Increasing economic growth is extremely important for Latin America to improve its poor socio economic conditions. Many economists like Maddison (2001) opine that this can be attained by a massive increase in investments which should result in sustained economic welfare in the years to come. For that, the overall investment levels should be increased substantially from the present levels in future. In his study he shows how some of the emerging economies achieved an economic growth rate of over 6 to 8% by significantly increasing their investment rate. However, in the case of Latin America, given the fact that the economic growth has slowed down, pushing for higher levels of annual savings and domestic investments will be difficult. This apart, majority of the countries are already reeling under external debt and rising funds through more debt meaning walking straight into a 'debt trap'. Therefore, FDI as an investment financing source becomes very important for the region which can supplement the domestic investable resources for attaining a higher economic growth rates. FDI not only allows overcoming the financing and liquidity constraints, but also provide new capital, allowing additional investment in both human and physical capital, which can be very beneficial for developing countries

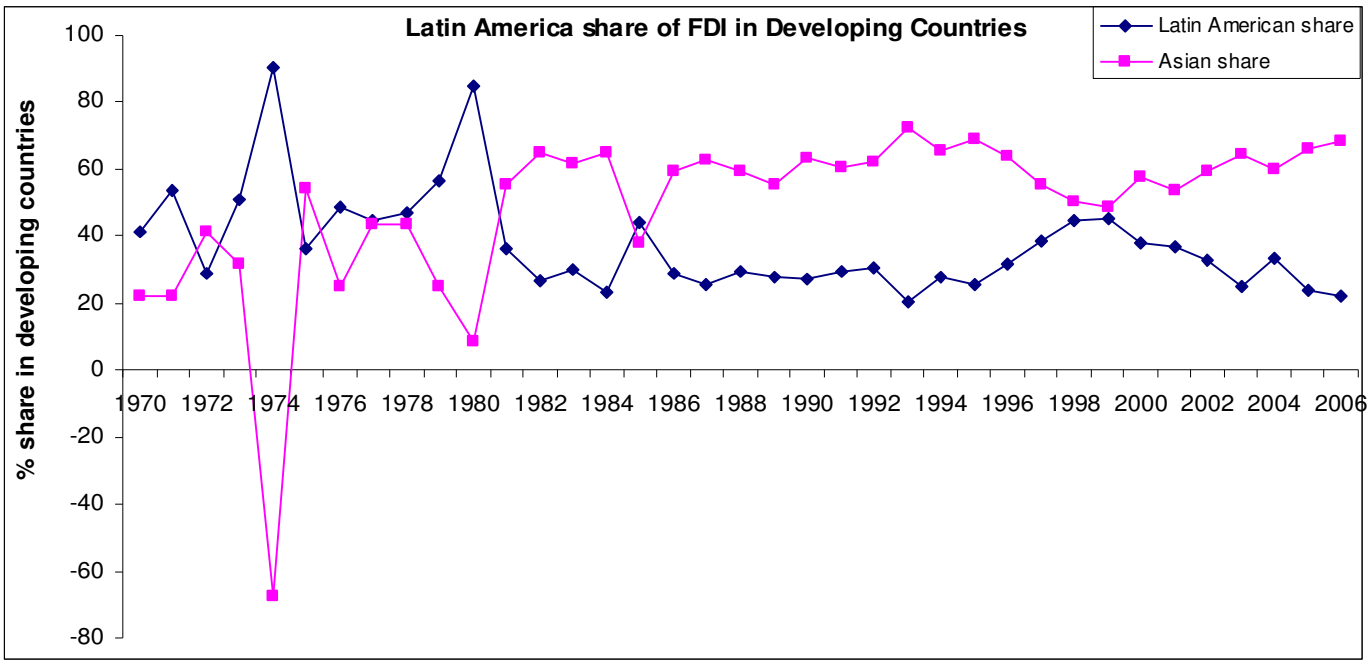
like Latin America. It is also believed that FDI inflows are generally a means to incorporate new knowledge from abroad. The inflow of new knowledge may benefit local firms through imitation and learning (Findlay, 1978; Mansfield and Romeo, 1980; Blomström, 1986), providing employment to the local people, increased competition in local markets, facilitation of human capital mobility among firms (Fosfuri et al., 2001; Glass and Saggi, 2002) and increase the productivity thereby higher economic growth rates (see Rao et. al., 2009 for literature review on FDI vs growth relationship).

In the beginning, Latin America benefited from the surge in FDI inflows into developing countries. The FDI inflows into Latin America were 16 US$ bn in 1970, which was about 42% share in developing countries FDI inflows. Throughout the 1970s, Latin America had attracted good amount of FDI inflows because some of the huge investments were made some natural resources based countries during and following the oil crisis in 1973. In 1980, Latin America could attract FDI inflows worth 65 US$ mn. The average FDI inflows in 1980s (1980 to 1990) was around 68 US$ bn. In 1990, the FDI inflows in Latin America was about 97 US$ bn. This means, an increase in FDI inflows of just 32 US$ mn. Its share in developing countries also kept declining. In 1990, the share of Latin American FDI inflows to developing countries was 27%. The FDI inflows surged in Latin America through out the 1990s. The average inflows of FDI from 1991 to 2000 was 508 US$ bn. This was 440 US$ bn higher than the average FDI inflows during 1981 to 1990 and 476 US$ bn of average FDI inflows between 1970 and 1980. This surge was mainly because liberalization of economies in post 1990s. In 2000, Latin America attracted FDI inflows worth 978 US$ bn but its share shrank to 38% in developing countries. Post-2000, FDI inflows increased rapidly in Latin America, though not up to the expectation levels when compared with other developing regions like East and South Asia. In 2006, FDI inflows in Latin region stood at 837 US$ bn but its share in developing countries came down to 22%. A comparison of FDI share of Latin America to Asia in developing countries is presented in graph 1.

Though the FDI inflows in the recent years have increased in Latin America, its share in developing countries has considerably declined over the years. The graph 1 shows that there is an exact divergent movement in the share of FDI of Latin America vis-à-vis Asia. Post-1980s Asian FDI share in developing countries has surged compared to Latin America whose share has declined. While the share of Latin region declined from 42% in 1970 to 22% in 2006, Asia's share has gone up considerably from 21% in 1970 to 70% in 2006. Many theorists have pointed out various reasons for the loss of Latin America's international competitiveness. Some argue that Latin America lost the race to other regions like Asia because of the presence of natural resources which had significant negative impact of Dutch disease[1]. Dietz (1992) argue that it is economic reforms which made the difference between the two regions both in terms of attracting FDI and stimulating economic growth rate. But increasing number of researchers in the recent past have highlighted that it is not the reforms *per se* but the 'quality of reforms' which made the difference between the two regions.

[1] Dutch disease occurs when booming primary commodity exports cause a massive inflow of foreign exchange and lead to appreciation of local currency, thus reducing international competitiveness of the country (Corden, 1984).

Graph 1



In fact, whatever increase in FDI inflows post 1990s was largely attributed to the consolidation of the economic reform programs like: privatization, trade liberalization, streamlining and simplification of FDI policies, industrial and public sector reforms initiated by many Latin American countries. In majority of the country-years higher economic reforms brought higher FDI inflows into the region. Thus, the role of economic reforms in promoting FDI inflows is vital in terms of the impact it could have on economic growth. To this end, the impact of overall government policy reforms on FDI and its interaction with the economic output growth of the host country has not been analyzed so far in the case of Latin American countries. Taking the case of 22 Latin American countries for the period 1980 to 2006[2], we explore the linkages between government policy reforms, FDI inflows and economic output growth. There is a general perception which is widely recognized that countries may benefit from FDI inflows only if the government policy reforms are initiated. If the government policies are rigid, marked with higher restrictions, regulations and lower incentives, high bureaucratic procedures and rules and regulations for business operations, restrictive labour laws, enforcement of contracts and so on and so forth would not only hinder growth and development in the host country but would also affect productivity and human capital as allocation of resources to other sectors becomes restrictive.

The rest of the paper is organized as follows. Section 2 deals with model specification derived from Solow (1956) growth accounting framework. Section 3 presents some important stylized facts. While, 4 discuss empirical results, section 5 concludes the study.

[2] The choice of the study period was determined by limited availability of the data and by the desire to gather a balanced pool of data for as many Latin countries as possible, see annexure 1.

2. Model Specifications

Let the aggregate production function at time t be:

$$Y_t = A_t L_t^{\alpha} K_t^{\beta} \qquad (1)$$

Where, Y, K, L, denote: output; physical capital and labour respectively. Besides the factor inputs, we also account for the "state of the economy" and "some unexplained technological efficiency gains" of the basic production function. This is reflected in equation (1) as $A_{(t)}$. This also measure of technical change in output per period. $A_{(t)}$ measures the proportionate change in output per period when input level are held constant.

Dividing the above function by L and introducing logs equation (1) would become:

$$ln\left(\frac{Y}{L}\right)_t - ln\left(\frac{Y}{L}\right)_{t-1} = -\left(\frac{\alpha+\beta}{\alpha+\beta-1}\right) lnL_t + \left(\frac{\alpha}{\alpha+\beta-1}\right) ln\left(\frac{K}{L}\right)_t + A_t \qquad (2)$$

The estimation of this equation yields values of (α + β) and *A*. *A* is the value of technical progress which is the rate of technological change. Sum of the partial elasticities (α + β) indicates the extent of economies or diseconomies to scale. The returns to scale are constant, increasing or decreasing if the value of (α + β) is equal to one, more than one or less than one respectively.

Introducing convergence into the equation yields:

$$ln\left(\frac{Y}{L}\right)_t - ln\left(\frac{Y}{L}\right)_{t-1} = \lambda_t\left[-\left(\frac{\alpha+\beta}{\alpha+\beta-1}\right) lnL_t + \left(\frac{\alpha}{\alpha+\beta-1}\right) ln\left(\frac{K}{L}\right)_t + A_t - \left(\frac{Y}{L}\right)_{t0}\right] \quad (3)$$

In the equation (3) how and where do "FDI" and "Policy Reforms" would fit?

As described above, $\mathbf{A}_{(t)}$ reflects two components. Following Bassanini et al. (2001) we assume the first component as $\boldsymbol{\delta}_{(t)}$ which reflects the state of the economy, measured by important policy variables like: policy reforms; trade openness; inflation and state vulnerability. The second component include $\boldsymbol{\psi}_{(t)}$ which reflects other unexplained sources which the model here does not explicitly capture. This in growth theory is called as "exogenous technology progress".

Thus,

$$A_t = \delta_t \psi_t \qquad (4)$$

Where,

$$\delta_t = b_0 + b_1 PV_t$$

$$\psi_t = \psi_{t0} \qquad (5)$$

Where, PV_t in equation (5) is the different policy variables measuring the state of the economy. $\psi_{(t)}$ is the level of stock of technology, which in turn is dependent on the initial level of technology, $\psi_{(t0)}$.

In the above equation (2) there is no distinction between domestic capital stock and foreign capital. It is assumed that FDI would be considered as an addition to existing capital stock. If this were the case, then it would become difficult to gauge its impact on growth performance. The role of FDI has become crucial as it provides new capital, allowing additional investments in human as well as physical capital, which can be beneficial for developing countries which are capital scarce. Most importantly, FDI is widely seen as a means of transferring and incorporating new knowledge from outside the country. The theory of MNE argues that foreign firms possess the technological advantage over the local firms which result is reduction in their cost of operations abroad (Caves, 1996). If this theory holds, then FDI could very well lead to externalities on the domestic production factors. The inflow of new knowledge like: greater production methods; new technologies; organizational and managerial techniques; management and marketing skills and activities may benefit domestic firms through imitation, increased competition, mobility of human capital from foreign firms to domestic firms, thereby leading to increase in overall productivity levels (Findlay, 1978; Blomstrom, 1986; Markusen & Venables, 1999; Glass & Saggi, 2002). On the other hand, the developing countries are keen to attract FDI not only because of the diffusion effects of ideas and innovations but would also provide access to the modern technologies. This is because not only the greater part of world's R&D spending comes from MNCs but they also possess control over much advanced production techniques. Thus, higher FDI inflows coming from advanced countries would lead to increase in the rate of technological progress in host country and hence greater the rate of output growth (Wang, 1990; Ram & Zhang 2002; Peri & Urban 2006).

The above arguments suggest that any increase in foreign capital would show up in $A_{(t)}$. Increase in foreign capital not only includes mere quantity but also the quality of the capital stock. The economic theory has modeled the development of capital stock in three different ways. One, Solow (1956) model of "capital widening" which is mere accumulation of capital through increase in quantitative production of existing capital goods. Two, Aghion & Howitt (1992) model of "technology change" focus is on improving the quality of existing type of capital goods. Three, Romer (1990) model of "technology change" deals with increasing the variety of new type of capital goods[3]. All these three channels of capital stock improvements contribute economic growth through production function. Thus, if $A_{(t)}$ is not growing, it is presumed that most of the economic

[3] Both Aghion & Howitt (1992) and Romer (1990) models are called "capital deepening" models. The former is called "capital deepening via quality improvement" and the later is known as "capital deepening via increase in the variety of capital goods".

growth is coming from mere accumulation of foreign capital stock and not due to its quality. This is in line with the current position of many other developing countries that are in the stage of capital accumulation[4]. It is argued that countries which open up their markets for FDI will first experience an increase in foreign capital stock. In later stages once the capital accumulation has been established, the major part of the FDI will then be associated with improving the quality of existing foreign capital stock in the country. The accumulation of FDI inflows stock can easily be observed in the case of Latin American countries especially in the last two decade. In future, this accumulated stock will be driven by the quality improvements. Thus, currently, at least in the case of Latin American countries, it can be formulated that the economic growth is largely driven by accumulation of capital stock.

According to these theoretical groundings, we assume that the level of $A_{(t)}$ depends on the initial stock of $A_{(t0)}$: $A_t = Ae^0$ and the externalities from FDI inflows: $Ae^0 = FDI_t$

Thus,

$$A_t = Ae^0\left(\frac{FDI}{L}\right)_t \qquad (6)$$

Replacing equation (6) into (3) gives:

$$ln\left(\frac{Y}{L}\right)_t - ln\left(\frac{Y}{L}\right)_{t-1} = \lambda_t\left[-\left(\frac{\alpha+\beta+\psi}{\alpha+\beta+\psi-1}\right)lnL_t + \left(\frac{\alpha}{\alpha+\beta+\psi-1}\right)ln\left(\frac{K}{L}\right)_t + \left(\frac{\psi}{\alpha+\beta+\psi-1}\right)ln\left(\frac{FDI}{L}\right)_t - \right.$$
$$\left. - ln\left(\frac{Y}{L}\right)_{t0}\right] \qquad (7)$$

Denoting by Y; K; FDI for $ln(Y/L)$; $ln(K/L)$; $ln(FDI/L)$, respectively we get:

$$\Delta lnY_t = \lambda_t[-(\alpha+\beta+\psi-1)lnL_t + \beta lnK_t + \psi lnFDI_t - Y_{t0}] \qquad (8)$$

In order to gain access to such advanced technologies provided by MNCs to reach a higher output growth, the host countries are engaged in attracting FDI by ushering policy reforms. Policy reforms are crucial because they provide incentives and relax restrictions thereby promoting FDI. This allows reallocation of human and physical capital in productive sectors and help increase productivity related to exploitation of technology spillovers from FDI inflows (Egger, 2003 and Whyman & Baimbridge, 2006). In such cases, the studies by Rodriguez & Rodrik (2000) and Winters (2004) have argued for a conditional variable in measuring for such effects on economic growth. Similarly we

[4] It should be noted that though FDI inflows are flowing into many developing countries since 1970s, it was only in late 1980s and early 1990s the FDI inflows have actually started to surge. This surge can mostly be attributed to the policy reforms which most of the governments have initiated during this period.

assume that the policy reforms played a crucial role in influencing FDI inflows in African region. Thus, we condition FDI inflows with Economic Policy Reforms. Let this conditionality variable be: $REF_{(t)}$. The extended specification based on equation (8) **is**:

$$\Delta lnY_t = \lambda_t[-(\alpha+\beta+\psi-1)lnL_t + \beta lnK_t + \psi lnFDI_t + \varsigma lnFDI_t xREF_t - Y_{t0}] \qquad (9)$$

Having laid theoretical foundations for the empirical analysis by introducing FDI into the aggregate production function along with policy reforms variables as highlighted by Bassanini et al. (2001), several forms the equation (9) will now be estimated using the two-way Random. This method is used because of the possible unobservable effects (Baltagi, 2005). We regard these effects as random and applied two-way random effects estimator which implied that the unobservable effects were part of the disturbance and therefore independent of the observable explanatory variables. Another reason for usage of two-way random effects is because of the collinearity with time-invariant or largely time-invariant regressors (Beck, 2001). Also, it is not sure whether the unobservable effects are fixed or otherwise, i.e. they do or do not vary by country and time? The pooled time-series cross-sectional (TCSC) data may exhibit Heteroskedasticity and serial correlation problems. While these problems do not bias the estimated coefficients as pooled regression analysis in itself is a more robust method for large sample consisting of cross section and time series data. However, they often tend to cause biased standard errors for coefficients, producing invalid statistical inferences. To deal with these problems, we estimated for all the models the White robust standard errors clustered over countries. These estimated standard errors are robust to both Heteroskedasticity and to a general type of serial correlation within the cross-section unit (Rogers, 1993 and Williams, 2000). The equation (8) and (9) runs over T observations, t = 1…..T periods and applies to all the sample countries i = 1…..N. Attaching country specific indices i to each variable and adding an error term leads to the following econometric formulation:

$$\Delta lnY_{i,t} = lnY_{i,t-1} + \xi_1 lnK_{i,t} + \xi_2 lnFDI_{i,t} + \xi_3 ln(FDIxREF)_{i,t} + \xi_4 PV_{i,t} + \varepsilon_{i,t} \qquad (10)$$

Where, $\varepsilon_{i,t} = \upsilon_i + \epsilon_t + \omega_{i,t}$

Where, $\mathbf{\Delta\ Y_{it}}$ is the dependent variable measured as change in GDP growth of the working age population (20-65) in 2000 US$ constant at PPP in country i at year t. Going by the economic growth theory, we replace traditional measure of population with working age population because the later is much closer to L (labour input in the production function) than the former. The data for both measures are from Conference Board & Groningen Growth & Development Centre, 2008.

Log $Y_{i\ (t-1)}$ is the log of real GDP percapita of the working age population given in the previous year. This variable is used mainly for the purpose of testing for convergence. This is calculated in US$ 2000 constant in PPP to make it comparable across the board.

K_{it} is domestic investments in the host country. Many studies have used Gross Fixed Capital Investments (GFCI henceforth) as proxy for domestic capital. However, we use

'capital stock' computed using Bosworth & Collins' perpetual inventory model. Bosworth & Collins (2003) assumes that growth in capital services is proportional to the capital stock, which is estimated with a perpetual inventory model for 84 countries that represent 95% of the world's GDP and 85% of the population, over a period of 40 years from 1960 to 2003. This includes all the Latin American countries which we use in our study except Barbados. First, we extend the capital stock for all the Latin countries in our sample following Bosworth and Collins (2003) perpetual inventory model till 2006 using:

$$K = K_{t-1}(1 - d) + I_t$$

Where, K is the capital stock in previous year; I is the average of GFCI in t and t-1 years; d is depreciation rate, which is assumed to me 0.05%[5] (same as Bosworth and Collins' assumptions). The basic investment data of GFCI from 2003 to 2006 are taken from a World Bank study. For Barbados, which is not in the sample of Bosworth and Collin, the major problem was to compute the initial value of K. For this, we compare the basic investment to output ratio with nearest possible value of other countries in the sample to take the initial value of that country as proxy for Barbados's initial K value[6].

FDI_{it} is the FDI inflows measured in terms of log of total FDI inflows in the host country in a year. The reason behind selecting FDI inflows over stock is to measure the reaction of investors in terms of increase in inflows to changes in policy reforms. Stock fails to capture this effect because it is a mere accumulation of FDI inflows in each year. Also we do not intend to use net FDI inflows or stock because for most of the years the FDI outflows for Latin countries has been low in majority of the cases. This apart, from economic model point of view it would be imperative to measure the impact of total FDI inflows on economic growth rather than net of inflows. The data for FDI inflows is in US$ current million from UNCTAD database on FDI. Using this data might encounter some estimation problems. For some countries in Africa in the initial years the FDI inflows is registered in negative values. This might be due to disinvestments or new investments being lower than the disinvested amount. Since some of the values are in negative usage of log becomes impossible and if the log is not used then the data may be skewed and can generate inconsistent results. To counter this problem, we make use of Busse & Hefeker (2006) method as follows:

$$Y = \log\left(X + \sqrt{X^2 + 1}\right)$$

Using this formula, we transform the negative values to adopt log format.

[5] The rationale for selection 5% as depreciation rate is because usually in developed countries like USA the average life of industrial equipment and nonresidential buildings are 16 and 31 years, which leads to an annual depreciation of 10% and 3% respectively (Katz & Herman, 1997). Since Latin region is a mixture of developing and underdeveloped countries, we assume the average life of the equipment and machinery assets to be 25 years which leads to a depreciation rate of 7%. Usually majority of the capital stock is dominated with manufacturing sector which leads to an assumption of 5% depreciation rate. Alternatively, we also tried with 7% depreciation rate and there is not much change in the results.

[6] Generally the capital to output ratios is similar for countries using similar technologies and stages of development. This ratio is generally smaller for developing countries to developed countries. This ratio in the early stages of development will be lower and they gradually increase.

REF_{it} is economic policy reforms of the host country. To quantify economic policy reforms and market liberalization, we make use of Economic Freedom Index constructed by Gwartney, Lawson & Easterly (2006) of Fraser institute. This index is ranked on the scale of 0 (not free) to 10 (totally free). The index captures the most objective measures of liberalization process. This index is comprehensive measure made up of five sub indices capturing: expenditure & tax reforms; property rights & legal reforms; trade reforms; reforms related to access to sound money; labour, business & credit reforms.

PV_{it} apart from the main variables of the growth equation, we also include some of the important policy variables which influence economic growth. These include: trade openness and inflation. Higher trade openness means greater the integration and higher the competitiveness. Finding support for trade openness affecting growth includes some of the prominent studies like: Barro & Lee (1994); Dollar (1992); Sachs & Warner (1995); Sala-i-Martin (1997); Bassanini et al. (2001); Barro & Sala-i-Martin (2004). To capture the trade openness we include (exports + imports)/GDP * 100. With respect to inflation, higher the value greater the macroeconomic instability (De Melo, 1997; Bruno & Easterly, 1998). The inflation rate is measured using the rate of growth of consumer price index. Data for both variables are obtained from WDI 2006.

Apart from these two policy variables, we also include two more variables to capture macroeconomic vulnerability in Latin America. These include: natural resources and civil war. The "resource curse" hypothesis propounded by Sachs & Warner (1995) highlights that resource abundance impedes economic growth. Also, natural resources, more particularly fuel and oil are characterized by the cycle of boom and bust lead to exchange rate volatility and increase (decrease) in inflation, increasing macroeconomic uncertainty. However, the positive aspects of natural resources are that they contribute to larger portion of exports and thereby increasing the export earnings. To capture natural resource abundance we include the share of minerals, ores, fuel and oil exports / total exports collected from WTO. Similarly, we also include civil war for macroeconomic uncertainty (Gaibulloev & Sandler, 2008) which is a dummy coded with the value as 1 if there is a presence of civil war in the country and 0 otherwise[7]. In addition, we also include: υ_i representing unobservable country-specific attributes affecting economic growth (country dummies) and ε_t capturing time-specific effects which vary according to time and affects economic growth (time dummies).

3. Economic Growth, FDI & Reforms – Stylized Facts

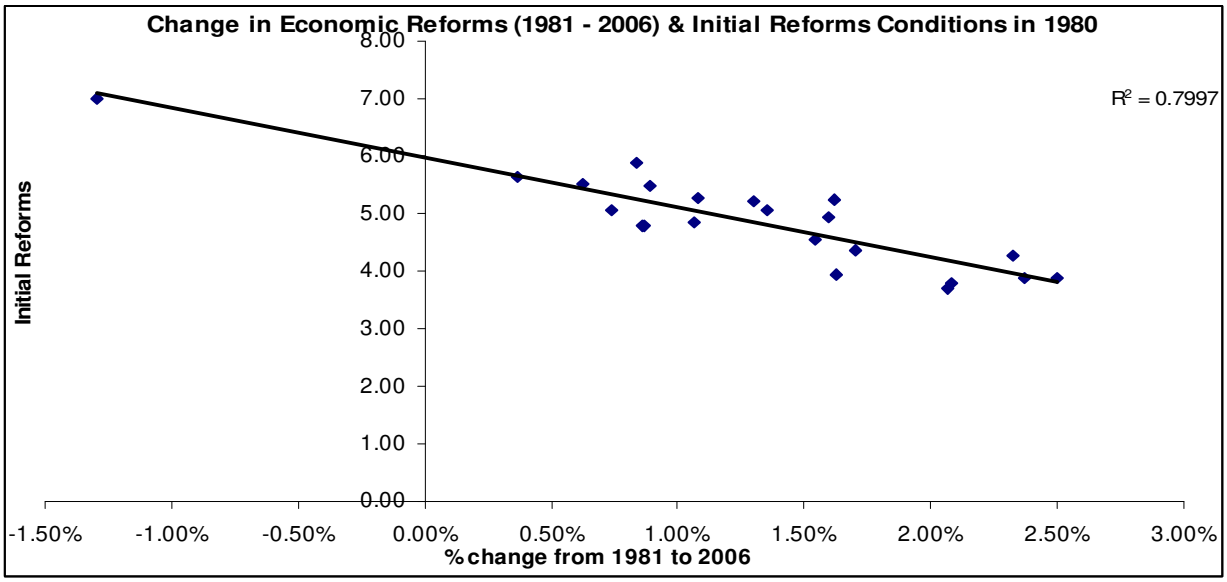
In this section an attempt is made to understand and present some of the important stylized facts with respect to reforms process, FDI inflows and output growth performance of 22 Latin American countries. We briefly examine the reforms conditions and the process of reforms by country and whether reforms have played the expected role to stimulate growth and attract FDI or otherwise.

[7] The detailed information on data sources is given in annexure – 2.

3.1. Initial Conditions of Reforms:

We begin with examining the initial conditions of reforms in Latin America. Our reforms index is an aggregate economic freedom index compiled by Gwartney, Lawson & Easterly (2006) of Fraser Institute. This is scored on a scale of 0 (no reforms) – 10 (full reforms). In its Latin American edition, the economic freedom index covers as many as 22 countries. An increase in the score from the previous year signals the liberalization of economic policies on a whole. We include country's overall policy reforms rather than concentrating only on specific policy issues. The main reason for this comprehensive measure is that, apart from growth performance, attracting FDI also depends on the interplay of various policy issues. The growth performance and attracting FDI would then be a result of a comprehensive policy changes but not of a particular sector reforms.

Graph 2



During our study period, the highest index score was recorded as 8 for Chile; followed by 7.8 for El Salvador; and 7.5 for Costa Rica. Least reformed states in 2006 include: 5 for Venezuela, whose economic reforms score was 7 in 1980. Figure 2 illustrates a negative relationship between initial economic reforms in 1980 and the rate of growth of reforms over 1981 to 2006. As can be seen from graph 2, there is an inverse relationship between the initial level of economic reforms in 1980 and rate of change in the economic reforms occurred during the period 1981 to 2006. This inverse relationship suggests the case for convergence. It can also be inferred from the above figure that those countries which have already obtained a higher degree of economic reforms in 1980 had less potential to liberalize further. However, this argument may be valid in the case of some of the Latin American countries like Chile who started the process of reforms way back in 1970s.

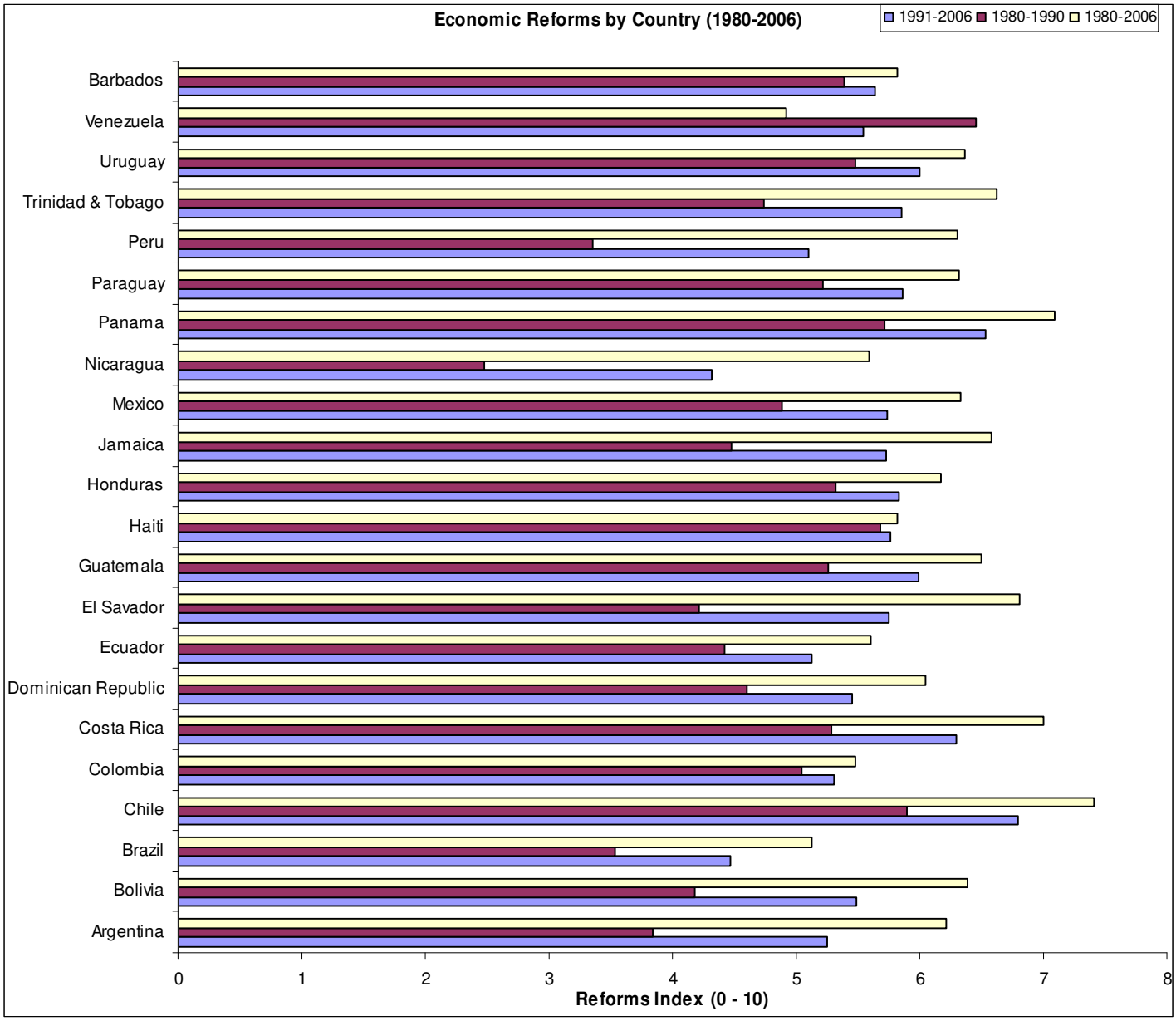
3. 2. Reforms Process by Country:

We now disaggregate the overall economic reforms index by country to show more explicitly the timing and the degree of economic reforms. In graph 3 we show for each country the level of its general reforms index at three points in time: 1980 – 1990; 1990 – 2006; and 1980 – 2006. The average values of reforms index during these three periods is presented. There are some significant surprises in the figure. In particular, Chile, Panama, Costa Rica and El Salvador are the most reformed countries in the region which have highest average values during 1980 – 2006 (in order). While, other early reformers like Argentina, Colombia and Uruguay are lagging behind. Interestingly, the only early reformer, Chile is still leading the race. There are several reasons for this trend. First reason to an extent can be convergence in reforms process. Countries such as Panama, Costa Rica and El Salvador have began reforms much later compared to early reforming countries like Chile, Uruguay, Argentina, and Colombia. Perhaps this is the reason why the reforms in these countries are wholesale and come in package in comparison to selective reforms in early reforming countries. Second, countries like Argentina, Brazil, and Uruguay who adopted the reforms much earlier slowed down considerably in the late 1990s due to macroeconomic and political crisis. For example: Argentina had a reforms score of over 7 during 1999, 2000 and 2001 but ended up with a score of 6 in 2006.

Our next question is who were the major reformers at different points in time? As highlighted earlier, we took two points in time viz., 1980 – 1990 and 1991 – 2006. Average reforms values for each country was taken into consideration for comparison during both periods. During the period 1980 – 2006, major successful reforming country was interestingly, Venezuela. In comparison to other countries, Venezuelan reforms process was much higher. This was followed by Chile, Uruguay, Panama, Costa Rica and Barbados. The least reforming country of the 1980s was Nicaragua, Brazil and Peru. Interestingly, Brazil and Nicaragua remained least reforming countries even in 1990s. For the period 1991 – 2006, we find that Venezuela's reforms have fallen back drastically, though it is still in contention in comparison to other countries Apart from Chile, Costa Rica and Panama, many other new players came into light during this period. A careful look at that graph shows that majority of the countries in the region have performed significantly well in the 1990s compared to their dismal performance in the 1980s. In contrast, the only country whose reforms have in fact declined in 1990s to 1980s was Venezuela. There are several reasons for this. First is its heavy dependence on natural resources exports which not only increases monopoly rents paving way for corruption, but also leading to '*Dutch disease*'. Second is political instability and drastic decline in institutional constraints and democratic accountability[8].

[8] For example: the political constraints index of Henisz (2004) measuring institutional constraints and democratic accountability shows that the institutional constraints in Venezuela have declined from a higher level of 0.75% in 1994 to 0.42% in 2004. This means, the 'checks & balances' in a democracy is significantly eroded. See Collier & Hoffler (2004) for more on importance of a healthy 'checks & balances' for a developing and under developed democratic country.

Graph 3



3. 3. Levels & Changes of Reforms

The changes of reforms from 1980 to 2006 are captured for each country in a three dimensional matrix table 1. We define arbitrarily three aspects of reforms: below average reforms which have a score between 0 – 3.5; average reformers whose score falls under 3.6 – 6.5 and above average reformers where the score of reforms is above 6.6. Based on this we compare the reforms position of the countries in 2006 to 1980.

Table 1: Levels & Changes of Reforms from 1980 to 2006

	2006			
	Rate of Change 1980 / 2006	**Below Average (0.0 – 3.5)**	**Average (3.6 – 6.5)**	**Above Average (6.6 – 10)**
1980	**Below Average (0.0 – 3.5)**	**-------**	**-------**	**-------**
	Average (3.6 – 6.5)	**-------**	Argentina; Barbados; Brazil; Colombia; Dominican Republic; Ecuador; Haiti; Nicaragua; Panama; Paraguay; Trinidad & Tobago;	Chile; Costa Rica; Bolivia; El Savador; Gautemala; Hondarus; Jamaica; Mexicio; Peru; Uruguay
	Above Average (6.6 – 10)	**-------**	Venezuela	**-------**

Source: computed & compiled by authors

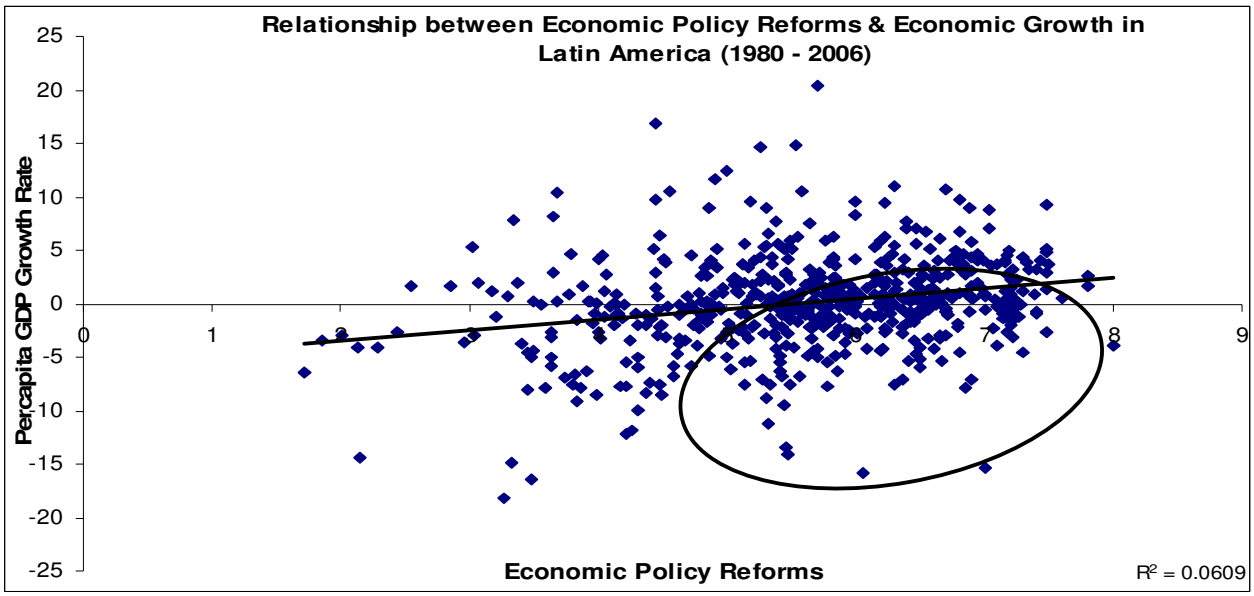
From the table 1 we cannot confidently say that the reforms process in all countries has a degree of convergence. There is an amount of convergence in certain cases. But this cannot be attributed to all the countries. Countries which fall in the middle column of the table under "average" score are those countries whose position has not improved drastically in comparison to countries falling under fifth column of the table under "average – above average matrix". The countries whose reforms scores were average in 1980 improved their performance significantly and are in the category of above average in 2006. While some of the major countries like Argentina, Brazil, Colombia, and Paraguay have remained average in 1980 and in 2006 too. The findings about major countries like: Argentina, Brazil, Colombia, Paraguay should not be mistaken for significant convergence, where countries which tend to relatively liberalize economies in 1980 would introduce fewer additional reforms in future because the scores of economic reforms index of Argentina, Brazil, Colombia, Paraguay, Panama in 2006 are much lower than countries falling in the category of above average in 2006. Hence, these results should be interpreted with caution. The only conclusion which can be drawn from this table is that these countries (Argentina, Brazil, Colombia, Paraguay, and Panama) which started well in 1980 have lost their way in the middle and ended up with lower level of reforms for various reasons which are beyond the scope of this paper. As discussed previously, the only exception to the entire case is Venezuela, whose performance has come down from good to worse.

3. 4. Reforms, FDI & Economic growth

Output growth performance is measured using output growth rate per worker highlighted in section 2. For an overall 594 observations, the output growth rate per worker has a mean of -0.01% with a standard deviation of 0.51% (see annexure 3). A simple correlation between output growth rate per worker and economic reforms demonstrate a very low correlation, r = 0.25 in our 594 sample observations. The scatter plot in figure 4

provides a first impression of the correlation between the output growth rate per worker and economic reforms.

Graph 4

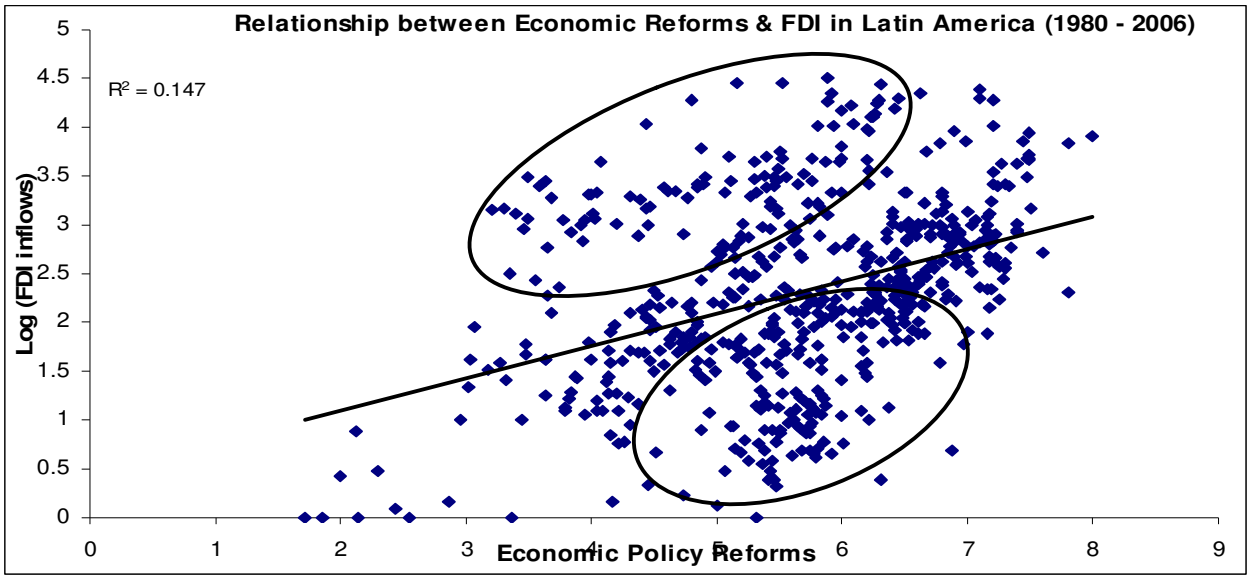


Although the data points in this plot are affected by various other factors which we will control for in the following section in a more systematic analysis, clearly there seems to be a positive effect of reforms on growth. But the interesting point noteworthy is that the positive effect of reforms on growth is only marginal and not very high. The circle inside the graph captures those points (country-years) in which high reforms are not really yielding a higher economic growth. One reason for this could be due to half-hearted reforms.

Similarly, we find in graph 5 the relationship between economic reforms and FDI inflows. This relationship is though positive, has many outliers. As seen inside the graph, we have two circles one above the straight line and another below. The circle covering the data points which are below the line shows that despite reforms FDI inflows are too low. But at same level of reforms or even to a lesser degree of reforms, FDI inflows are very high (see data points in circle above the line). This shows us that reforms though playing important role in attracting FDI, is not really "the" driving force behind attracting FDI inflows. There can be other exogenous factors like natural resources or higher rate of return which seems to attract FDI inflows.

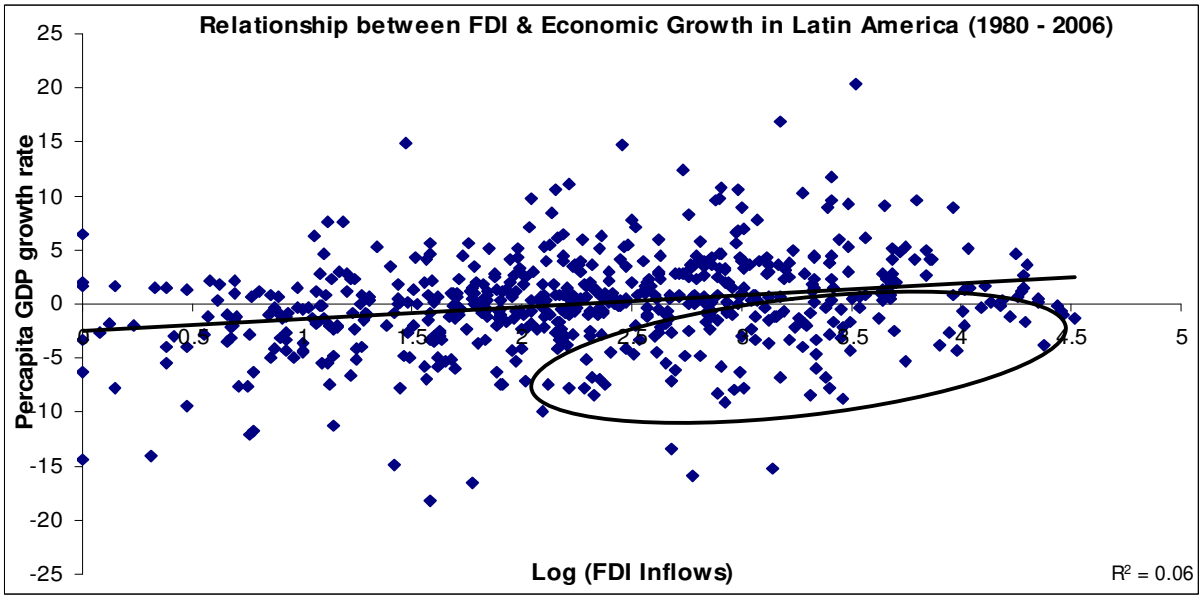
The effect of FDI inflows on output growth is also captured in scatter plot in figure 6. For an overall 594 observations, the Logged FDI inflows have a mean of 5.30 with standard deviation of 2.2 (see annexure 3). Simple correlation between the two demonstrate a lower, r = 0.25. The figure 6 show a positive relation between the level of FDI inflows and output growth rate per worker in Latin countries during 1980 to 2006 period.

Graph 5



However, this positive impact is only minimal and not as high as one would have expected, especially after these countries have undertaken significant policy reforms during the 1990s. The circle inside the graph shows that despite higher FDI inflows, output growth is very low. This also confirms that though FDI inflows are important, is not significantly affecting growth as expected (assuming other things constant).

Graph 6



4. Empirical Results & Discussion

The sample of country-years that we examine in total make up of 594 observations. The results of regression estimates using random effects method in assessing the impact of FDI inflows and policy reforms on output growth performance are presented in seven different models in table 2. We also control for Heteroskedasticity using Huber-White Heteroskedasticity-consistent standard errors & covariance. The summary of data is provided in annexure 3. Before examining the direct effects of FDI on output growth performance, we first examine the existence of convergence in Latin American countries. The model 1 in table 2 shows that the lagged value of output per worker is significant and negative. This suggests convergence of income in Latin America. The results highlight the presence of "unconditional convergence". Model 2 presents the estimated results of trivial regression where output per worker growth is exclusively explained by FDI inflows and conditional convergence (see second column of table 2). FDI inflows are significant and the sign is consistent with the theoretical predictions. The coefficient value is small and shows that for every 1% increase in FDI lead to around 0.092% increase in output per worker growth in long run. The convergence variable still holds to its negative sign and is also statistically significant. Next, we include capital stock variable in model 3. We use this model as a benchmark throughout the study. The long run coefficient on FDI is positive and significant. For every 1% increase in FDI, leads to 0.087% increase in output growth performance. In other words, holding at its mean value, increase in log FDI inflows by its highest value (log 10.4) would increase the economic growth rate in Latin American countries by 0.087%. But surprisingly we find negative sign for capital stock. However, capital stock remains statistically insignificant through out the models. This surprising result could be because of the "crowding out effect" of FDI. The correlation between the two models is only 0.45% (see annexure 4). This explains that there is some degree of crowding out effect of FDI.

In model 4 of table 2, we include our second main variable, economic reforms index along with other control variables. We find that economic policy reforms are positive and have significant impact on output growth performance of Latin American countries (see model 4; table 2). For every 1% increase economic reforms index lead to 0.115% increase in growth of output per worker. On the other hand, though the positive sign and significance level of FDI still holds, the coefficient value has substantially declined. The coefficient value of FDI inflows declined from 0.090% in model 2 to 0.054% in model 4. This means that the output growth in Latin America is not only explained by FDI inflows, but there are also other significant factors that contribute to growth. Most important amongst them include economic policy reforms. The comparison of coefficients between FDI inflows and policy reforms show some interesting trends. While both have positive effect on output growth performance, the impact is marginally higher with respect to policy reforms. In model 5, we interact FDI with economic policy reforms to measure the conditional effects of reforms and FDI on economic growth. The interaction effect variable is found to be insignificant (see model 5; table 2). Though there is a positive effect of this variable on output growth performance, it remains insignificant irrespective of fixed effects of random effects estimations (fixed effects results not shown here, but provided on request).

Table 2: FDI & Economic growth equation function for Latin America

Dependent Variable: Growth rate of Output per worker

Variables	Model 1 Random	Model 2 Random	Model 3 Random	Model 4 Random	Model 5 Random	Model 6 Random	Model 7 Random
Constant	5.4357*** (1.841)	5.7143*** (1.795)	7.5543*** (2.176)	7.8139*** (2.223)	9.0004*** (2.523)	10.443*** (2.489)	10.973*** (2.529)
Log Output per worker (t – 1) (Income Convergence)	-0.6014*** (0.203)	-0.685*** (0.203)	-0.6324*** (0.205)	-0.7263*** (0.214)	-0.8207*** (0.234)	-1.0358*** (0.252)	-1.0097*** (0.253)
Log FDI Inflows	____	0.0902*** (0.030)	0.0876*** (0.030)	0.0543* (0.0305)	0.0011 (0.0597)	____	____
Log Domestic Capital	____	____	-0.1838 (0.123)	-0.1766 (0.123)	-0.1832 (0.124)	-0.1808 (0.123)	-0.1867 (0.123)
Economic Reforms	____	____	____	0.1147*** (0.040)	0.0612 (0.060)	____	____
Minerals Fuels Exports/Total Exports	____	____	____	0.0002 (0.002)	0.0006 (0.002)	0.0021 (0.002)	0.0015 (0.002)
Trade Openness	____	____	____	0.0005 (0.002)	0.0004 (0.002)	-0.0002 (0.002)	0.0001 (0.002)
Inflation Rate	____	____	____	-3.47E-05 (2.92E-05)	-3.63E-05 (2.79E-05)	-3.86E-05 (2.57E-05)	-4.47E-05* (2.72E-05)
Civil War presence	____	____	____	-0.044 (0.087)	-0.075 (0.088)	-0.1200 (0.083)	-0.1709** (0.081)
Log FDI Inflows **X** Economic Reforms	____	____	____	____	0.0251 (0.024)	____	____
Log FDI Inflows **X** 1980s	____	____	____	____	____	0.0465 (0.072)	____
Log FDI Inflows **X** 1990s	____	____	____	____	____	0.2206*** (0.072)	____
Economic Reforms **X** 1980s	____	____	____	____	____	0.0827* (0.045)	____
Economic Reforms **X** 1990s	____	____	____	____	____	0.1711*** (0.059)	____
Log FDI inflows **X** Reforms **X** 1980s	____	____	____	____	____	____	0.0185 (0.013)
Log FDI inflows **X** Reforms **X** 1990s	____	____	____	____	____	____	0.0425*** (0.010)
R-squared	0.2205	0.2412	0.2448	0.2640	0.2654	0.2802	0.2716
Adjusted R-squared	0.1519	0.1728	0.1753	0.1888	0.1888	0.2037	0.1972
F-statistic	3.2127 *	3.5287 *	3.5209 *	3.5090 *	3.4644 *	3.6614 *	3.648 *
Number of Countries	22	22	22	22	22	22	22
Total Number of Observations	594	594	594	594	594	594	594
Country Dummies	YES	YES	YES	YES	YES	YES	YES
Time Dummies	YES	YES	YES	YES	YES	YES	YES

Note: *** Significant at 1% confidence level; ** Significant at 5% confidence level; * Significant at 10% confidence level. White Heteroskedasticity-Consistent Standard Errors are reported in parenthesis.

The coefficient value of FDI inflows is lower than economic reforms index. This shows that the impact of FDI on output growth performance is conditioned by economic policy reforms. Without economic policy reforms, the impact of FDI inflows on economic growth in Latin American countries is nil.

Next, we examine how the effects of FDI and policy reforms may vary over time. Specifically we allow both FDI and policy reforms variables to have different effects over the periods of 1980 – 1990 (1980s) and 1991 – 2006 (1990s). For this purpose we create dummy variables for each time period and interact it with log FDI inflows, economic reforms index and the interactive term of FDI and reforms. Models 6 and 7 in table 2 present the estimation results. The coefficients of both FDI and policy reforms using both methods regain their positive signs. Some interesting findings emerge from these results. First, economic policy reforms are significant in both 1980s and 1990s, while FDI inflows are significant only in 1990s. Second, the coefficient values of both economic reforms and FDI inflows are higher in 1990s than 1980s. This is because the rate of growth in reforms and FDI inflows in 1990s compared to 1980s was higher in Latin America. The entire 1980s period is popularly called as "the lost decade" in the case of Latin America because of frequent macroeconomic turmoil led by oil and debt crisis, which actually caused the FDI inflows to crowd out towards Asia. In model 7, we find that the interactive term of FDI and reforms in 1980s and 1990s is positive, but statistically significant only in 1990s. The coefficient and significance level in the two periods show that the complimentary effect of reforms and FDI inflows on output growth performance worked well in the 1990s to 1980s.

Table 3: Output growth gains from FDI and Economic Policy Reforms in Latin region

Variables	**(full period) 1980 - 2006**	**(1980s) 1980 - 1990**	**(1990s) 1991 - 2006**
FDI inflows	0.054	0.101	0.322
Economic Reforms	0.115	0.198	0.369
FDI **X** Reforms	0.061	0.080	0.123

Source: computed & compiled by authors

The table 3 gives a brief summary of the temporal pattern of the effects of both FDI and economic policy reforms on economic growth rate of Latin countries[9]. These results indicate that both FDI and policy reforms has become increasingly important, especially in the post 1990s period. Though similar such argument can be made for the interactive model, the partial effects coefficient jump from 1980s to 1990s is relatively lower than that of FDI inflows and policy reforms variables. Liberalizing the economies was the most rewarding in Latin regions (reforms in 1990s increased growth by 0.369%

[9] The partial effects for different time periods are calculated as follows: The coefficient values of the 1980s are added to the coefficient of the basic model. Likewise, the coefficient values of the 1990s are added to the new values obtained previously for the 1980s.

compared to 0.198% in 1980s). In the case of FDI, the partial effects in 1980s were only 0.101%. But in 1990s this surged to 0.322%. The interactive effect of FDI and reforms is lower for the whole sample period, but is marginally during the 1990s. Its impact on output growth performance is 0.123% in the 1990s compared to 0.080% in the 1980s.

One credible recommendation which can be derived from these results is that both FDI and reforms individually are important for economic growth. However, reforms are not able to make a greater impact on FDI inflows as expected. This perhaps also mean that that there other significant factors which are driving FDI into the region. The governments in Latin America should strive hard to initiate much more tougher reforms which would not only be growth enhancing but would also play very important role in attracting much needed FDI into the countries. The growth effects of FDI are well known in terms of technology diffusion. Hence, the effective way of attracting FDI into the region, given its costs and locational disadvantages apart from natural resource endowments in few countries, is by implementing policies that will make the host countries an attractive FDI destination.

With respect to control variables, the negative sign of log output per worker highlights the effect of income convergence even after introducing various control variables. The negative impact of domestic capital stock on output growth performance once again confirms the divergent results in the literature with regard to the impact of domestic capital vis-à-vis foreign capital on economic growth in developing countries. Firebaugh (1992) found that the impact of foreign capital on economic growth is lower than domestic capital. Similar such results are found by Dixon & Boswell (1996) who argue that if the foreign capital is less productive than the domestic investments and if the former replaces the later, then its impact on growth is bound to be smaller. Their findings however were self defeating because despite their argument that foreign capital is detrimental to economic growth, they failed to find any significant effect of domestic capital. Moving further, we could not find any evidence of 'resource curse' hypothesis for Latin America. The impact of trade openness on economic growth is positively insignificant but the coefficient values are lower[10]. Both the growth destabilizing variables (inflation rate and presence of civil war) have significant negative impact on output growth performance in Latin America during the period 1980 – 2006.

However, the coefficient estimates in these models may likely to be biased. First, the relationship between economic growth rate and FDI inflows can probably be bi-directional. Our main interest is to examine the hypothesis whether FDI inflows has any positive effect on economic output growth or not in Latin America. But some also argue that a growing economy can attract more FDI than a stagnant or slow growing economy. We do agree with this argument often voiced in the literature because of the uneven distribution of FDI inflows in the developing countries. While select group of growing economies like the East Asia attracts large amount of FDI inflows followed by South Asia and Middle East and on the other hand, the Latin America and African regions receive lesser share. Second, the bi-directional problem in earlier models may also arise

[10] It is important to note that a rigid trade regime may also encourage FDI inflows because of the cost associated with trade. Usually this is labeled as "tariff jumping FDI". For more, see Jun & Singh (1996).

from the causal relationship between the economic reforms and the economic growth rate. If economic policy reforms cause good growth performance, then the reverse may also be true that good growth performance is also good for economic reforms.

A common statistical approach in dealing with causal and reverse causal bias is to use instrumental variables. It is always a matter of supposition whether the particular instrument variables selected would reduce biases or introduce new biases into the models. Also, instrument variable method under two stage least squares method can reduce the endogenity bias but will not completely eliminate the problem. To tackle this we use GMM estimation of Arellano and Bover (1995) and Blundell and Bond (1998) than simple GMM of Arellano and Bond (1991), that exploits the stationarity restrictions and give more robust results. Moreover, Blundell and Bond (1998) show that the differenced GMM estimation has poor finite sample properties when the lagged levels of the series are weakly correlated with the subsequent first-differences. Therefore, the efficiency gains of using the system GMM over the may be higher. The validity of instruments that give a set of over-identifying restrictions has been verified with the standard Hansen test, which confirms that in all cases our set of instruments is valid. Furthermore, the AR(1) and AR(2) tests, that check the hypothesis of absence of serial correlation, are also presented. The standard errors of coefficients are robust to Heteroskedasticity.

Table 4: Robustness Check: GMM estimation

Dependent Variable: Growth rate of Output per worker

Variables	**Model 8**	**Model 9**	**Model 10**	**Model 11**
	GMM-SYS	GMM-SYS	GMM-SYS	GMM-SYS
Constant	1.8941* (0.6155)	2.0453* (0.6061)	0.4465 (0.3594)	-0.4218 (0.4511)
Growth rate of Output per Worker (t – 1)	0.3485* (0.0332)	0.3173* (0.0341)	0.3173* (0.0284)	0.1151* (0.0287)
Log Output per worker (t – 1) (Income Convergence)	-0.2107* (0.068)	-0.2563* (0.0683)	-0.1711* (0.0463)	-0.1017*** (0.0531)
Log FDI Inflows	———	0.0488* (0.0155)	0.0784* (0.0117)	0.0431* (0.015)
Log Domestic Capital	———	———	0.0532* (0.02)	0.0620* (0.020)
Economic Reforms	———	———	———	0.0669** (0.0269)
Minerals Fuels Exports / Total Exports	———	———	———	-0.0036* (0.0013)
Trade Openness	———	———	———	0.0005 (0.002)
Inflation Rate	———	———	———	1.75e-06 (0.0000)
Civil War presence	———	———	———	-0.0408 (0.0750)
J-Stat	398.84	403.89	1219.71	1217.14

AR1	0.000	0.000	0.000	0.000
AR2	0.932	0.721	0.130	0.117
Number of Countries	22	22	22	22
Total Number of Observations	572	572	572	572

Note: J-stat is Hansen's test for over identifying restrictions. AR(1) and AR(2) test refer to the test for the null of no first-order and second-order autocorrelation in the first-differenced residuals. P-values are reported for the Hansen, AR(1) and AR(2) tests. *** Significant at 1% confidence level; ** Significant at 5% confidence level * Significant at 10% confidence level. Heteroskedasticity-Consistent Standard Errors are reported in parenthesis

The results of GMM show some interesting trends. First, our estimate of convergence variable is about four times higher than the one estimated by random effects specification. We observe that the random effects method gives an estimate of unconditional convergence variable that is -0.60% (-0.39%) higher than the one found in GMM estimations (see model 8 in table 4). Similarly, the benchmark model of GMM (model 9 in table 4) gives an estimate of conditional convergence variable that is -0.17% (-0.46%) lower than the estimates of random effects model. Next, the random effects model representing FDI inflows treats correctly the correlated individual effects but fails to account for potential endogenity. The estimated coefficient value of FDI inflows is now smaller in GMM than the one estimated by random affects method (see model 11). Similar conclusions are drawn for economic reforms variable. The GMM estimate of reforms is 0.06% compared to 0.11% in random effects (see model 11). These results suggests that failing to account for endogenity biases the coefficient values upwards and thereby exaggerating the claims of stronger effect of FDI and reforms on output growth performance. The validity of the moment restrictions is checked by Hansen's test fail to reject the null hypothesis. In light of these results, the moment conditions underlying the GMM estimation are supported. At the same time, the fact that there is evidence of first order but not second order autocorrelation implies that the models are correctly specified in levels, as expected.

4. 1. Robustness check

We ran several tests of sensitivity. First, we ran the baseline model with one lagged values for all the independent variables. There is not much change in the results. The coefficient values of FDI and reforms retain their positive signs with same significance level as in baseline model 1. Their impact on economic output growth is also similar to that of baseline model. Moreover, with respect of other control variables we do not find any significant changes in their results[11].

Second, we calculate the share of FDI inflows of each country with that of total FDI inflows of the region. We exclude those countries whose share in the region is above 10% consistently for a period of at least 10 years in the total sample years. Following this method, we found the following countries meeting this criterion: Brazil, Mexico, Chile and Colombia. We re-ran the results with random effects estimation first by removing Brazil and Mexico from the original list of sample. The results are presented in annexure 5. The results highlight the importance of the role played by FDI inflows in these 22 countries. However, the impact of domestic capital is still negative. The importance of

[11] Results are not shown here due to brevity. They will be provided on request.

economic reforms too still holds on (see model 12). In model 13, we also included the interaction effect between FDI and reforms. The results display similar pattern observed for full sample countries. Though the interaction depicts complementary effect, it still remains insignificant. Higher coefficient value of economic reforms highlights the importance of economic policy reforms, if FDI were to make a significant impact on economic growth in Latin America. In models 14 and 15, we exclude Chile and Colombia along with Brazil and Mexico. There are no significant changes in the results.

5. Conclusion

The study deals with the relationship between FDI inflows, economic reforms, the interaction between the two and output growth per worker using the aggregate production function augmented with the aforementioned factors for 22 Latin American countries over 1980-2006 period. We have used different econometric panel data techniques to explain the pointed out relationship. These include: random-effects specification to address possible country specific unobserved heterogeneity and GMM estimation to deal with potential endogeneity of the explanatory variables.

The major findings of the study are: First, the results show the importance of FDI inflows and policy reforms on economic output growth. Both are found to be positive and significant. However, the impact of policy reforms is found to be much stronger than FDI inflows. Also, the lower coefficient value of FDI inflows shows that the positive effect is only marginal. The interactive effect between FDI and policy reforms though found positive remained insignificant in different estimation techniques. This is because of two reasons. One, other things being constant, there are other exogenous factors like natural resources which are the drivers in attracting FDI inflows excluding policy reforms alone. Two, as highlighted in stylized facts, majority of the countries which began economic reforms in 1980 remained half-hearted and their performance during the whole period (1980 - 2006) was unimpressive. Second, we also examined the different period effects of FDI and Policy reforms on output growth performance. For this purpose we created dummy variables coding for 1980s (1980 - 1990) and 1990s (1991 - 2006) and interacted them with FDI inflows and policy reforms index. Both the interactions show significant positive impact on output growth performance only during the 1990s. This is largely due to the fact that majority of the Latin countries have initiated drastic policy changes only after early 1990s. These results also highlight that foreign investors reward countries implementing economic policy reforms

One credible recommendation which comes from this study is that both FDI and reforms are important for economic growth in Latin America. However, reforms are not able to make a greater impact on FDI inflows would mean that that there other significant factors which are driving FDI into the region. But, our results have also shown that if governments initiate higher reforms as happened in the 1990s, the rewards would follow. Thus the governments in Latin America should strive hard to initiate much more tougher reforms which would not only be growth enhancing but would also play very important role in attracting much needed FDI into the region. The growth effects of FDI are well known in terms of technology diffusion and employment generation. Hence, the effective

way of attracting FDI into the region, given its costs and locational disadvantages apart from natural resource endowments in few countries, is by implementing policies that will make the host countries an attractive FDI destination.

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ANNEXURES

Annexure 1: Countries under Study

Argentina	Dominican Republic	Jamaica	Trinidad & Tobago
Bolivia	Ecuador	Mexico	Uruguay
Brazil	El Salvador	Nicaragua	Venezuela
Chile	Guatemala	Panama	Barbados
Colombia	Haiti	Paraguay	
Costa Rica	Honduras	Peru	

Annexure 2: Data Sources

Variables	Data Source
Output per worker growth rate	Conference Board & Groningen Growth & Development Centre Total Economy Database, 2008
Log (FDI inflows)	FDI statistics 2007, UNCTAD
Log (Domestic capital stock)	World Development Indicators, 2007; World Bank
Economic Reforms Index	Economic Freedom Index, Fraser Institute
Oil Exports share	Trade Statistics, World Trade Organization
Trade Openness	World Development Indicators, 2007; World Bank
Inflation rate	World Development Indicators, 2007; World Bank
Civil War presence dummy	Upssala / PRIO, 2008

Annexure 3: Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Standard Deviation	Observations	Countries
Output per worker growth rate	-0.01	0.02	2.04	-3.20	0.51	594	22
Log (Output per worker (t-1))	9.05	9.41	10.68	5.22	1.14	594	22
Log (FDI inflows)	5.30	5.30	10.40	0.00	2.22	594	22
Log (Domestic capital stock)	12.52	12.76	18.95	6.19	2.94	594	22
Economic Reforms Index	5.63	5.72	8.00	1.72	1.12	594	22
Oil Exports share	24.91	11.41	97.89	0.00	28.01	594	22
Trade Openness	63.95	56.05	198.77	11.55	32.93	594	22
Inflation rate	81.02	11.71	12339.27	-11.45	579.03	594	22
Civil War presence dummy	0.15	0.00	1.00	0.00	0.36	594	22

Annexure 4: Correlation Matrix

	Log (Output per worker (t-1))	Log (FDI inflows)	Log (Domestic capital)	Economic Reforms	Oil Exports	Trade Openness	Inflation rate	Civil War dummy
Log (Output per worker (t-1))	1.00							
Log (FDI inflows)	0.33	1.00						
Log (Domestic capital stock)	0.35	0.45	1.00					
Economic Reforms Index	-0.04	0.38	0.02	1.00				
Oil Exports share	0.43	0.21	0.32	-0.08	1.00			
Trade Openness	-0.43	-0.13	-0.08	0.36	-0.07	1.00		
Inflation rate	0.01	-0.03	-0.01	-0.20	0.10	-0.10	1.00	
Civil War presence dummy	0.01	-0.11	0.09	-0.32	-0.06	-0.29	-0.01	1.00

Annexure 5: Robustness check

Dependent Variable: Growth rate of Output per worker

Variables	**Model 12** Random	**Model 13** Random	**Model 14** Random	**Model 15** Random
Constant	7.486995*** (2.240)	9.328382*** (2.640)	8.350613*** (2.773)	9.305733*** (3.106)
Log Output per worker (t – 1) (Income Convergence)	-0.695439*** (0.217)	-0.843130*** (0.241)	-0.767394*** (0.251)	-0.846743*** (0.273)
Log FDI Inflows	0.058269* (0.032)	-0.026490 (0.071)	0.052994* (0.032)	0.003836 (0.072)
Log Domestic Capital Formation	-0.181324 (0.127)	-0.191766 (0.131)	-0.217544 (0.146)	-0.219280 (0.148)
Economic Reforms	0.120300*** (0.042)	0.039941 (0.065)	0.122245*** (0.042)	0.075381 (0.066)
Log FDI Inflows **X** Economic Reforms	------	0.039275 (0.029)	------	0.022937 (0.029)
Minerals Fuels Exports / Total Exports	-0.000493 (0.002)	-0.000278 (0.002)	0.000386 (0.002)	0.000343 (0.002)
Trade Openness	0.000633 (0.002)	0.000558 (0.002)	0.000829 (0.002)	0.000784 (0.002)
Inflation Rate	-3.44^{E-05} (3.15^{E-05})	-3.64^{E-05} (3.00^{E-05})	-4.31^{E-05} (3.36^{E-05})	-4.36^{E-05} (3.27^{E-05})
Civil War presence	-0.040794 (0.097)	-0.083340 (0.096)	-0.047059 (0.098)	-0.071817 (0.096)
R-squared	0.264979	0.267814	0.257387	0.258378
Adjusted R-squared	0.184822	0.186292	0.170121	0.169314
F-statistic	3.30576 *	3.28518 *	2.94946 *	2.90106 *
Number of Countries	20	20	18	18
Total Number of Observations	540	540	486	486
Country & Year Dummies	YES	YES	YES	YES

Note: *** Significant at 1% confidence level; ** Significant at 5% confidence level; * Significant at 10% confidence level. White Heteroskedasticity-Consistent Standard Errors are reported in parenthesis.