

TRADE OPENNESS, FDI AND ECONOMIC GROWTH A Panel Study

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Abstract. The main purpose of this paper is to investigate the impact of FDI and trade openness on per capita GDP growth. For this purpose we used the data from 1971-2000 for 23 developed countries. The method, we used in this paper, is fixed effect and control set of variable. Results in both types of estimation methods are robust. In both type of method, we found openness is significant and positively affecting GDP per capita growth, while FDI appeared to be insignificant. We also test the granger causality among these variables. Only openness does cause GDP and reverse causality does not hold.

I. INTRODUCTION

The role of international trade is very crucial for the development process of countries. The multinational trade serves as a transmission belt for the transfer of benefits of industrialization and modern technology from the developed to under developed countries. Behind the process of multinational trade is trade liberalization and important component of liberalization is trade openness. The proposition is that openness affects growth positively that is supported by Romer (1986) and Lucas (1988) in the new theories of growth. Romer (1992), Grossman and Helpman (1991) and Barro and Sala-i-Martin (1995), among others, have argued that countries that are more opened to the rest of the world have a greater ability to absorb technological advances generated in leading nations. So the process of trade liberalization not only increases trade but also foreign direct investment (FDI). FDI also plays an important role in the process of growth. Theoretically, combination of

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'endogenous' growth models with studies on the diffusion of technology is an attempt to emphasize the major role played by FDI in the economy (see Barro, 1990; Lucas, 1988).

The purpose of this paper is to examine the empirical relationship between FDI, openness and per capita GDP growth in selected developed countries for the year 1971-2000. For this purpose, we estimate a Barro type equation with two methods. First is fixed effect method and second with set of control variables. The causality relationship among these variables is also investigated in this paper. The main findings of the paper are FDI that the FDI is not significantly contributing in the per capita GDP growth, while openness is significant and positively affecting the growth of GDP per capita. As concerned to granger causality, GDP per capita growth does not cause FDI and openness but only openness causing to GDP per capita growth.

The rest of the paper is organized as follows. Section II presents a relationship between openness, FDI and growth with some literature. In section III discussions on variables and theoretical model with basic results is presented in section IV. Section V includes the granger causality test, while conclusion is in section VI.

II. OPENNESS AND GROWTH

Openness to international trade accelerates development. This is one of the most widely accepted beliefs in the economics literature. The countries with lower barriers to international trade experience faster economic growth, this view is widely been investigated in the economic literature, for example Krueger (1998), judges that it is straight forward to demonstrate empirically the superior growth performance of countries with "outer-oriented" trade strategies. In neoclassical growth models developed by Solow (1957) and others, technological change is exogenous that is unaffected by a country's openness to world trade. However, the new growth theories pioneered by Romer (1986) and Lucas (1988) have provided persuasive intellectual support for the proposition that openness affects growth positively. Romer (1992), Grossman and Helpman (1991, 1992) and, Barro and Sala-i-Martin (1995), among others, have argued that countries that are more open to the rest of the world have a greater ability to absorb technological advances generated in leading nations. In these models, openness to trade provides access to imported inputs, which embody new technology; increases the effective size of the market facing producers that raises the returns to innovation; and affects a country's specialization in research intensive

production. Sebastian (1998) finds that more open countries experienced faster productivity growth. So the more rapid growth may be a transition effect rather than a shift to a different steady state growth rate. But clearly the transition takes a couple of decades or more, so that it is reasonable to speak of trade openness accelerating growth, rather than merely leading to a sudden, one-time adjustment in real income. In this type of analysis, measures of openness play important role. For example Harrison (1996) used seven openness measures. Only one was significant and positively affect the economic growth when he used cross-sectional data, three out of seven proxies for openness reveal a positive association with growth when the data were averaged over five-year periods, and six out of seven measures were statistically significant when he used annual data. Anyway openness is statistically significant in all the specifications, and openness is associated with higher growth.

Another study by Romer and Jeffrey (1999) examined the correlation between trade and income which cannot identify the direction of causation between the two. Countries geographic characteristics however, have important effects on trade, and are reasonably uncorrelated with other determinants of income. Therefore they construct measures of the geographic components of countries, trade, and use those measures to obtain instrumental variables estimates of the effect of trade on income. They found that affect of trade is large and robust, but moderately statistically significant and have positive effect on income.

All this process of openness starts from trade liberalization. In particular the liberalization process is expected to increase not only trade but also foreign direct investment (FDI). In next section we also explained the linkage between growth and FDI.

FDI AND GROWTH

As above we have explained that there is a linkage between FDI and growth. FDI play an important role in growth process of developing countries through technology diffusion. Technology diffusion can take place through a variety of channels that involve the transmission of ideas and new technologies. Imports of high-technology products, adoption of foreign technology and acquisition of human capital through international study are certainly important tools for the international diffusion of technology. Besides these channels, FDI by multinational corporations (MNCs) is considered to be a major channel for the access to advanced technologies (see Borensztein *et al.*, 1995). The rapid growth of FDI and its overall

magnitude has sparked numerous studies dealing with the channels of transmission from FDI to growth. The "endogenous" growth models were recently combined with studies on the diffusion of technology in an attempt to emphasize the major role played by FDI in the economy (see Barro, 1990; Lucas, 1988). Moreover, the extensions of the neoclassical models to allow for international mobility of capital and technology have reinforced the notion that low-income countries tend to grow at higher rates (see Barro, 1991). Findlay (1978) explained that FDI increase the rate of technical progress in the host country through "contagion" effect from the more advanced technology, management practices, etc. used by the foreign firms.

There is increasing agreement on the types of benefits which are likely to accrue the host economy from FDI. This is particularly the case for technology and management expertise, as multinational enterprises seem to be one of the principal vehicles for the international transfer of technology. The link between technology and economic growth has been highlighted by an OECD study of both, OECD and developing countries, which found a significant effect on economic growth from the innovation and diffusion of technology (OECD, 1991). Furthermore, foreign investors can contribute to economic growth because they tend to be more productive than local firms. A study by Wilmore (1986) concluded that foreign firms have a significantly higher ratio of value-added to output than domestic firms. De Gregorio (1992) obtains similar results in twelve Latin American countries and by Borensztein *et al.* (1995) for a sample of 69 developing countries.

Another mechanism through which FDI can affect growth is by the generation of productivity spillovers (see Blomstrom and Persson, 1983). This affect may arise from a process of competitive interaction between foreign and domestic firms as discussed by Kokko (1994) that spillovers are more likely in Mexican manufacturing where foreign and domestic firms are in direct competition and where the technological gap between them is not too large.¹ In addition, FDI can positively affect the host economy through a variety of externalities. For example, local firms may successfully learn advanced technologies by doing business with multinational firms' local affiliates, or by hiring workers trained by them. The presence of multinational firms can increase local competition, pushing local firms to improve efficiency. Moreover, multinational firms may indirectly help local

¹The entry of a foreign investor into a market can pose a competitive challenge to local firms or to existing investors (OECD, 1998).

firms to enter export in markets by spreading information about foreign markets or improving transport infrastructure in the host country. The extent of spillovers obviously depends on conditions in the local markets (Blomstrom and Kokko, 1998; UNCTAD, 2000).

So during the process of trade liberalization country lifts its barrier and therefore, major component of liberalization becomes trade openness and FDI. So these both variables have played an important role in the process of economic growth in the liberalized countries.

III. VARIABLES AND THEIR RELATIONS

The degree of association between FDI, openness and growth will be tested using data from a sample of 23 OECD (Organization of Economic Cooperation and Development) countries during the period of 1971-2000. These countries include Australia, Austria, Belgium, Canada, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Malta, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Turkey, United Kingdom and United States. The countries in the sample are chosen on the basis of data availability. With one exception, all data variable constructed from WDI 2000. The one variable human capital, taken from Barro-Lee data set 2000 from Internet. The procedure we adopted here in this study is fixed effect regression technique, allowing for differences across countries due to omitted country specific variables. We also used control set of variables for comparison. The further detail of variables is as follows.

1. Dependent Variable

The dependent variable is the growth rate of real per capita GDP. We used five-year average of data period 1971-2000 to avoid the short run correlations. So we have 6 observations for each country.

2. Independent Variable

In fixed effect regression we have four independent variables, that is, individual constants used in each panel for each period, log of real GDP per capita lag, openness ratio is, the ratio of exports plus imports to GDP and Foreign Direct Investment (FDI) ratio, is the ratio of FDI to GDP. Beside this we also used numbers of variables in control set. The selection of these variables is also based on the availability of data. These variables are human capital measure as average years of school attainment for aged 25 and over at the upper level (secondary and higher) are measured at the beginning of each period. Government expenditure ratio to GDP includes both current and

capital expenditures. This data set is related to central government only. Inflation is measured by the consumer price index. Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay at the same level throughout its life. And total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with prevailing age-specific fertility rates. All this data is collected from WDI 2000, except human capital which is taken from Barro-Lee data set.

3. Relation among Main Variables

The first relation between GDP per capita growth and log of real GDP per capita lag. This relation ship describes the convergence theory. As the level of GDP per capita increases, the growth rate of GDP per capita declines. It means there is negative relation between these two variables.

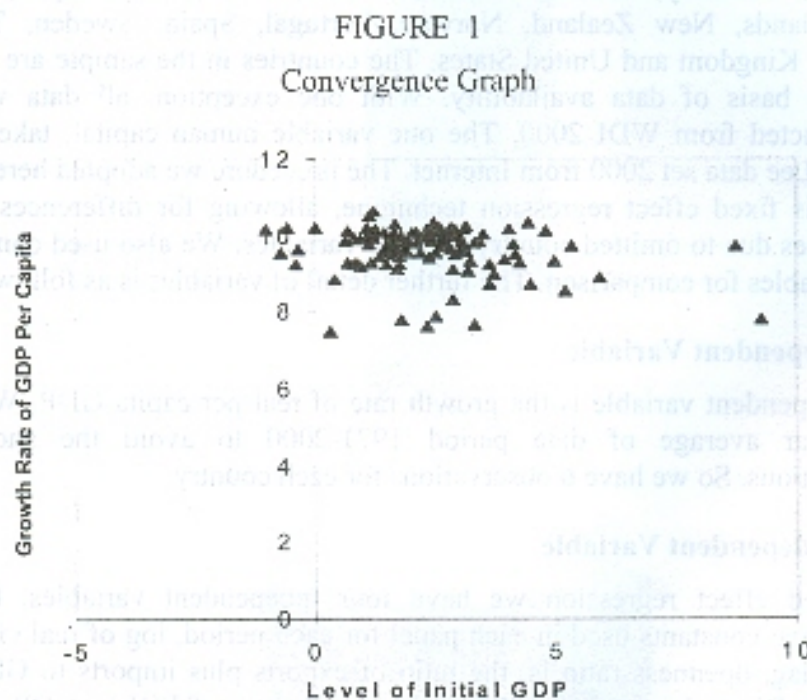


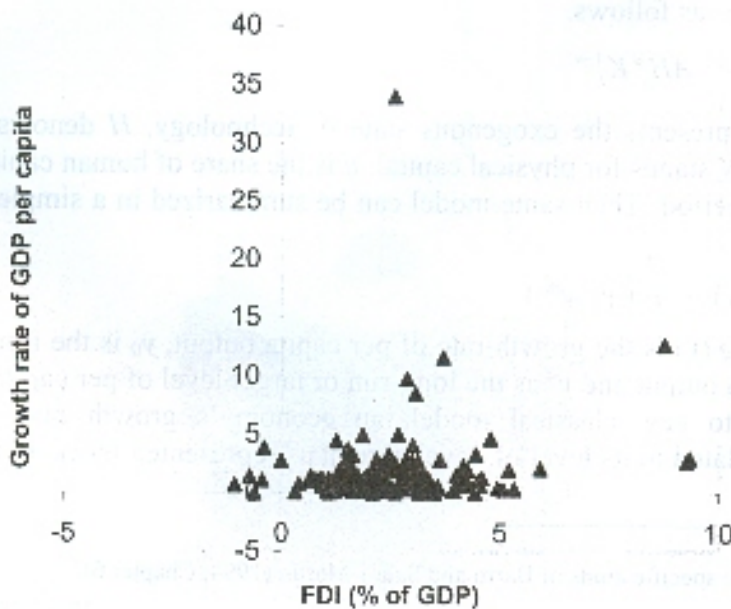
Figure 1 shows the relationship between growth rate and level of initial GDP. But there is no strong evidence about convergence. OECD countries are already developed so, actually we are not expecting it here. And Figure 1 gives the same idea.

FIGURE 2
Openness and Growth



FIGURE 3

FDI and Growth



The other relationship we draw here is between growth rate of GDP and openness. It should be positive because trade openness accelerates the growth. Figure 2 shows the relationship between growth and trade openness. There is a possibility of positive relationship between openness and growth. We draw actual data in the graph and if we control our data set then there is clear picture of positive association between these two variables.

Another important relationship according to this paper is between FDI and growth. FDI also accelerates growth like trade openness. So actual relationship based on data is drawn in Figure 3 between FDI and GDP per capita growth.

According to Figure 3 there is no significant relationship between FDI and Growth. It should be positive but in the data set of OECD this relationship does not hold. It means there are so many other factors, which are explaining growth, or we can say FDI is not important determinant of growth in OECD countries. But in our data set openness seems to have reasonably positive affect on growth.

IV. THE MODEL

We consider an economy where technical progress is the result of "capital deepening" in the form of an increase in the number of varieties of capital goods available, as in Romer (1990), Grossman and Helpman (1991), and Barro and Sala-i-Martin (1994).² The main production function for a single commodity is as follows.

$$Y_t = AH_t^a K_t^{1-a} \quad (1)$$

Where A represents the exogenous state of technology, H denotes human capital and K stands for physical capital. a is the share of human capital and t is for time period. Then same model can be summarized in a simple growth equation.

$$g(y) = F(y_0, y^*) \quad (2)$$

Where $g(y)$ is the growth rate of per capita output, y_0 is the initial level of per capita output and y^* is the long-run or target level of per capita output. According to new classical model, an economy's growth rate $g(y)$, is inversely related to its level of development as represented by y_0 . In equation

²We follow the specifications of Barro and Sala-i-Martin (1994, Chapter 6).

(2), this property applies in a conditional sense, that is, for a given value of y^* . In our main growth analysis we used two types of estimation. One with fixed effect by using dummies for different countries and for different time period and second we used a number of variables for a control set. The model can be written as follows:³

$$g(y_{i,t}^r) = a_{i,t} + b_n x_{n,i,t}^r + cz_{i,t}^r + \beta y_{i,t-1} + u_{i,t} \quad (3)$$

Where,

i , index for countries,

t, T , t is index for time, T is interval length 3 to 10 years,

$g(y_{i,t}^r)$ real growth rate

$a_{i,t}$ constant, divided into fixed effects for countries and time

$b_n x_{n,i,t}^r$ row vector of n coefficients and column vector of controls

$cz_{i,t}^r$ effect analyzed to the variable of interest

$\beta y_{i,t-1}$ initial GDP level

$u_{i,t}$ noise term

As already we have discussed the dependent and independent variables in previous section of this paper, our main variables of interests are foreign direct investment (FDI) and trade openness. In fixed effect method we have used dummy variables for countries and times, while in other method we used a number of variables in control set, that are life expectancy at birth, fertility rate, government expenditure, inflation and human capital.

IV. BASIC RESULTS

The basic regression results are reported in this section based on the model described above. The basic purpose of our empirical investigation is to estimate the effect of trade openness and FDI on economic growth. Basically we estimated two types of model, one with fixed effect by using dummies and other with control sets. And the equation is same as used by Barro (1993). In the first equation (fixed effect), three possible determinants of

³Growth equation set up is a copy of slides used in the class "Growth theory and empirics" by Martin Paldam.

growth are: The first is log of initial GDP per capita for convergence and its coefficient is expected to be negative. Second FDI, which is expected to be positive, and third is trade openness, that is trade share in GDP and should be positive. The main regression results of fixed effect are reported in Table 1.

TABLE 1

Growth Equation (*Fixed Effect*) by Using Time and Individual Dummies

Variables	Dependent Variable is Growth Rate of GDP per Capita				
$\ln GDP-1$	-7.0226 (1.480)	-7.1728 (1.355)	-7.2093 (1.365)	-7.5378 (1.449)	-7.6175 (1.444)
<i>FDI</i>	0.0598 (0.0398)	—	0.0154 (0.0383)	0.0170 (0.0385)	-0.1388 (0.1220)
<i>OPEN</i>	—	0.0593 (0.0136)	0.0577 (0.0143)	0.0578 (0.0143)	0.0533 (0.0147)
<i>HCS</i>	—	—	—	0.0140 (0.0203)	0.00322 (0.0217)
<i>HCS*FDI</i>	—	—	—	—	0.0052 (0.0038)
R^2	0.60	0.67	0.67	0.67	0.68

Note: Each equation is estimated by GLS (using OLS residuals). In parentheses standard errors are reported. Where GDP, FDI, OPEN, HCS stands for per capita growth rate, foreign direct investment, trade openness % to GDP, human capital as using number of people in secondary school, respectively, and $\ln GDP-1$ is initial GDP level for convergence.

Table 1 reports all the coefficients but not constant and dummies. These results indicate that in every regression the coefficient of initial GDP per capita is negative, and it is interpreted as a test of the convergence hypothesis. In all the regression of fixed effect it is significant. Barro (1991), Edwards (1992), Levine and Renelt (1992), Mankiw *et al.* (1992), and others generally include initial GDP per capita in their cross-country growth regression. In Table 1 there are four different regressions are reported. In first regression equation, we just include FDI with initial GDP per capita. The sign of FDI is positive but insignificant. It means there is not significant effect on growth of GDP per capita. In second equation, we include the other important determinant of growth trade openness along with initial GDP per capita. It is significant and has positive effect on GDP per capita growth.

In third equation, we include both FDI and openness with initial level of GDP to check the combined effect of FDI and openness on growth. But still FDI is insignificant and openness is significantly affecting the growth of

GDP per capita. It is argued that FDI has positive significant affect on growth, but this effect depends on the stock of human capital available in the host economy.⁴ So in fourth equation we used human capital variable with FDI and openness. But still there is no importance of FDI revealed in this regression. Openness variable is appearing again significant with positive coefficient. And in next equation we used FDI with human capital as an interaction variable as used by Borensztein *et al.* (1995), Romer (1993), and Hammed (2000). Again FDI does not affect the growth of GDP per capita. But openness variable is appeared significant and positive in all the regression equation of fixed affect.

Study by Borensztein (1995) improved the results of regression by inclusion of the interaction between FDI and human capital. Our results related to FDI are contradicts previous studies, which showed a strong and positive correlation between growth and foreign direct investment (see DE Gregorio, 1992; Borensztein *et al.*, 1995). The main findings of fixed effects have important features. FDI does not appear to be a significant variable which affect the growth of GDP. It indicates that in developed countries the foreign direct investment does not contributing in growth. It means there are some other factors, which are affecting the growth. The trade openness is appeared to be positive and significantly affecting the growth. It means openness plays an important role in growth.

In the second place we estimate another type of regression that is without dummies but with set of control variables. The results of this regression with set of control variables are reported in Table 2.

According to results reported in Table 2, the initial GDP having negative sign but insignificant in all the regression. The sign of this coefficient is consistent, according to convergence hypothesis but insignificant, where as in fixed effect it was significant. Our main other variables are FDI and openness with set of control variables. Table 2 reports the results of seven regressions but actually we run so many regressions, out of which the only seven regression's results are reported. In the first regression we include all variables. In this regression the sign of FDI is negative but insignificant, means does not affecting the growth of GDP per capita. The next important

⁴FDI and human capital used by Borensztein *et al.* (1995), and Romer (1993) finds a positive interaction between secondary school enrollment and imports of machinery. Cohen (1993) also finds a positive interaction between human capital and foreign financing.

variable is openness. It is positive and appeared to be significant, having affected on growth. In this regression the control set variables are not significant except government expenditure (GEXP). Government expenditure variable having negative sign is significant. It is consistent with theory.⁵ It is negatively related with GDP per capita growth.

TABLE 2
Growth Equation by Using Set of Control Variables:
Variables of Interests are FDI and Openness

Variables	Dependent Variable is Growth Rate of GDP Per Capita						
<i>ln GDP-I</i>	-0.7182 (0.4972)	-0.8286 (0.4930)	0.5849 (0.3754)	-0.8801 (0.3916)	-0.8476 (0.3047)	-0.8378 (0.4000)	-0.8181 (0.3466)
<i>FDI</i>	-0.1808 (0.1330)	0.0141 (0.0396)	0.0085 (0.0387)	0.0301 (0.0410)	0.0310 (0.0405)	0.0369 (0.0409)	-0.1611 (0.1399)
<i>OPEN</i>	0.0240 (0.0054)	0.0239 (0.0053)	0.025 (0.0052)	0.0134 (0.0045)	0.0136 (0.0045)	0.0135 (0.0046)	0.0126 (0.0043)
<i>HCS</i>	0.00009 (0.0168)	0.01165 (0.0151)	-	-	-	-	0.0036 (0.0166)
<i>HCS*FDI</i>	0.0060 (0.0039)	-	-	-	-	-	0.0060 (0.0041)
<i>INFL</i>	0.0025 (0.007)	0.0024 (0.007)	0.0024 (0.007)	-0.0094 (0.0068)	-0.00935 (0.0068)	-	-0.0123 (0.0063)
<i>LEXPAB</i>	0.0254 (0.0813)	0.0470 (0.0803)	0.0298 (0.0775)	0.0128 (0.0825)	-	0.0084 (0.0842)	-
<i>GEXP</i>	-0.0648 (0.0166)	-0.0652 (0.0167)	-0.0669 (0.0166)	-	-	-	-
<i>FERPW</i>	-0.5127 (0.3561)	-0.4382 (0.3545)	-0.4473 (0.3552)	-0.3983 (0.3784)	-0.420 (0.0068)	-0.6035 (0.3632)	-
<i>R²</i>	0.33	0.32	0.31	0.21	0.21	0.19	0.23

Note: Each equation is estimated by GLS (using OLS residuals). In parenthesis standard errors are reported. Where GDP, FDI, OPEN, HCS, LEXPAB, GEXP, FERPW, INFL, stands for per capita growth rate, foreign direct investment, trade openness % to GDP, human capital as using number of people in secondary school, life expectancy at birth, government expenditure, fertility rate per women, inflation rate, respectively, and *ln GDP-I* is initial GDP level for convergence.

In the further regression equations reported in Table 2, we dropped some variables and run the regressions. In all the equations the FDI is insignificant

⁵Borensztein *et al.* (1995) find same results for government expenditure in same type of equation.

but openness is significant and positively related with growth of GDP per capita. In the set of control variables the inflation (INFL) variable is appeared to be negative in most of the regressions and significant in last regression reported in Table 2. Fertility rate (FERPW) and life expectancy (LEXPAB) coefficient are insignificant but fertility rate is appear to be negative, which is consistent with theory. The human capital variable (HCS) is positive and insignificant, while the interaction variable (FDI*HCS) is also positive and insignificant.

So the main findings of the regression with set of control variables exhibiting the same findings as fixed affect. The FDI does not appear to be significantly affecting growth. But openness is significantly affecting the growth. In these selected countries in our samples, FDI do not playing important role in the growth. But openness is proved to be significant variable for growth.

The results are similar in both cases; just one variable is significant that is openness. It is important determinant of growth. Convergence variable initial GDP also have consistent sign, it is significant in fixed effect method but insignificant in second case with set of other control variables. FDI in both cases appeared to be insignificant determinant of growth. We can also conclude that our results are robust since estimation with control set and fixed effect estimation have provided the same results.

V. GRANGER CAUSALITY

In order to see the direction of causality, we have applied Granger causality test. We start by defining Granger's (1969) concept of causality. X is said to Granger-cause Y if Y can be predicted with greater accuracy by past values of X rather than not using such past values, all other relevant information in the model remaining the same. Consider the equation:

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \alpha_2 Y_{t-2} + \beta_1 X_{t-1} + \beta_2 X_{t-2} + u_t \quad (a)$$

$$X_t = \delta_0 + \delta_1 Y_{t-1} + \delta_2 Y_{t-2} + \eta_1 X_{t-1} + \eta_2 X_{t-2} + v_t \quad (b)$$

If $\beta_1 = \beta_2 = 0$, in equation (a), X does not Granger cause Y . If, on the other hand, any of the β coefficients are non-zero, then X does Granger cause Y . And same test can apply on the equation (b) where Y does not Granger cause X can be tested. As a practical guide one can include as many lags as are necessary to ensure non-autocorrelated residuals.

The results of granger causality are reported in Table 3 and Table 4 respectively. In the first Table 3, the test results of granger causality between GDP per capita growth and FDI are reported. In the first row of the table the

null hypothesis is that FDI does not granger cause to GDP growth rate, and this hypothesis is accepted. It means FDI does not cause the growth. And it confirms our findings in the previous sections, where FDI was insignificant in all the regressions of both types of estimation methods. The test is also applied in opposite direction, in which null hypothesis is growth does not granger cause to FDI and it is also accepted which is also reported in Table 3.

TABLE 3

Granger Causality Test

FDI does not granger cause GDP growth

GDP growth does not granger cause FDI

Dependent variable	Independent variable	Wald test for exclusion restriction $\chi^2(2)$	Prob	Decision
GDP-pc-Gr	FDI	1.89491	0.3877	Accept
FDI	GDP-pc-Gr	3.53557	0.1707	Accept

TABLE 4

Granger Causality Test

Trade Openness does not granger cause GDP growth

GDP growth does not granger cause Trade Openness

Dependent variable	Independent variable	Wald test for exclusion restriction $\chi^2(2)$	Prob	Decision
GDP-pc-Gr	OPEN	9.97063	[0.0068]**	Reject
OPEN	GDP-pc-Gr	5.61245	0.1321	Accept

In Table 4 the causality test is applied between openness and growth of GDP per capita. In the first row of Table 4, it is tested that openness does not granger cause to GDP per capita growth rate. But this hypothesis is rejected. It means trade openness does cause growth rate. And this result is also consistent with our findings in previous section. Openness appeared to be important determinant of growth. In the second row of Table 4, it is tested that GDP per capita growth does not granger cause trade openness. This hypothesis is accepted. There is one way causation between GDP per capita growth and openness, not two ways. But in case of FDI and GDP per capita

growth the causation does not hold in both directions. In result we can say that just trade openness is affecting to growth but not FDI. Where as the GDP per capita growth does not affecting to both FDI and openness.

VI. CONCLUDING REMARKS

This paper examined the effect of FDI and trade openness on economic growth. The review of the literature suggests that foreign direct investment and trade openness leads to economic growth. The effect, however, varies across regions, time and use of different techniques with different data sources. In this paper, we used data set from 1971 to 2000 for 23 developed countries. The countries and time period are selected on the basis of data availability.

We apply two techniques by using Barro type of equation. In the first place, we apply fixed affect method with time and individual dummies. And in the second place we used set of control variables with our variables of interest, which are FDI and trade openness. And at the end we did granger causality test for the robustness of our findings in fixed affect and control set variable method.

In the fixed effect method the convergence variable, initial GDP has consistent sign with convergence theory. FDI does not appear to be significant variable. It indicates that the growth rate of GDP per capita in these selected developed countries is not influenced by FDI. There are so many other factors which are affecting the GDP per capita growth. So there is no important role of FDI in growth. But trade openness is appeared to be significant variable and becomes an important determinant of economic growth. In the next method of control set of variables the results are similar to fixed affect method, meaning that our results are robust.

In the last section of the empirical results, we applied granger causality test, which also confirms our findings discussed in previous section. Only openness is causing to growth of GDP per capita. FDI does not cause GDP per capita growth, where as GDP per capita growth does cause both FDI and trade openness. The result indicates that only trade openness is significantly causing to GDP per capita growth, and causality runs through one direction. So in this paper main finding is that trade openness is a key to improve the growth, and FDI does not play important role in the growth as concerned to developed countries.

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