

Foreign Direct Investment Environment and Economic Growth

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Abstract: This paper examines the models of economic growth and the dynamic interaction between models from the Solow Model to New Endogenous Models. Long-term relationship of these models is noticed to have been related in terms of causality. Model comparisons were made to examine their dynamics which is not as complex as reflected. Results that growth is led by endogenous or exogenous factors are not verified to be absolute but relative. Results indicate that FDI affect the economic growth in many developing countries, but there are also many cases (developed countries) that show that economic growth has led to a long term increase of FDI flow. It is also verified that the impact of FDI on the environment is relative, based on the fact that there are exogenous factors that may affect the reduction of externalities. Causal link among FDI, economic growth and their impact on the environment makes the endogenous models be analysed with the dynamics, through which is shown best which is the “cause-consequence” factor, that causes gaps of concepts and practices in economic growth and environmental concerns.

Keywords: economic growth theory; classic; neoclassic; endogenous models; Foreign Direct Investments

1. Introduction

Last decade entries of Foreign Direct Investment (FDI²) in developing countries are considered major regarding the last crisis, creating unimaginable effects, especially in Asian countries, even calling into question the ability of organization and financing way in developed countries. The 1980s marked the triumph of neoclassical theory, free movement of capital associated with finance and innovation in communication technology, reduced distances between countries enabling better recognition of people and capital. This made the capital flow go “upwards” in developing countries. Theoretically, neoclassical growth models as endogenous models offer the basis with their empirical work on the positive relationship FDI / GDP, although in different perspectives. In the

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² I - Investment is everything that remains from total costs (C, G, NX), i.e. $I=Y-C-G-NX$. Investment (I) is investment plus foreign investments. Foreign Direct Investment (FDI) is defined as net inflows of investment (input minus output) to acquire a lasting managing interest (at least 10 percent of voting stock) in an enterprise operating in an economy other than that of the investor.

neoclassical framework, the growth rate of production is exogenous. According to the neoclassical model the impact of FDI on growth is identical to domestic investments and that FDI in the short term impact on economic growth. Solow Framework (1956) proposes that the production is a function of the capital stock and labor. While the model of endogenous growth (Lucas & Romer, 1990; Grossman & Helpman, 1991; Rebelo, 1991; Barro, 1985; Prescott, 1987), in general assumes that FDI in GDP growth are more productive than internal investments as they encourage incorporation of new technologies in the production function of the host country. Therefore, some countries can develop technology, but others may benefit from the spread of technology that is produced elsewhere. FDI is the channel of this process, emphasizes Borensztein et al., (1998). Endogenous growth models are pro long-term growth of the economy. According to them, FDI contributes to economic growth not only through capital formation and technology transfer (Blomstrom et al., 1996; Borensztein et al., 1995) but also through increase of the knowledge level, training of workers and know-how purchasing (DeMello, 1997, 1999). There are many debates about the benefits and costs by FDI. Moreover, empirical evidence shows that an increase in foreign direct investments is a contributor of externalities as in positive and the negative ones. Where the developing countries are positioned regarding the emphasized issues, and what model (Cobb Douglas) is used, are drawn too vigorous conclusions,¹ FDI has a positive relation with to economic growth. Such a model for the SEE countries, all beneficiaries of FDI but with a different macroeconomic history, political regimes and patterns of growth would be quite significant.

2. Theories of Economic Growth

Today, great attention is paid to determining factors that promote economic growth as well as to the great contribution that FDI flows have. There are many theories that dealt with this issue, but two theories are basic: (i) The neoclassical theory and (ii) the new theory of endogenous growth.

2.1. The Neoclassical Theory

“The theory of growth certainly did not start with my scientific articles of 1956” says Solow, “it probably started with “the Wealth of Nations” by Adam Smith probably even by his predecessors” (Pano & Angjeli, 2004, pp. 404-405). Solow followed the path outlined by Harrod and Domar who arrived at a classical response to the growing problem by saying that “savings make the economic

¹ See, FDI Growth: Ozturk, I. FDI-Growth Nexus, Literature survey of empirical studies, pp. 86-91.

growth.” But this does not forever provide higher growth rates. The introduction of a kind of technological flexibility by Solow gave new ways to the growth theory. Solow is considered the pioneer of the neoclassical theory of growth. It is “neo” in the sense that it significantly starts off the classical view of its analytical approach that places great emphasis on mathematical techniques. It should not be confused with the new classical economics. The rate of growth is exogenous and that in its creation do not participate work (L) and capital (K) only, but the level of technology too. But, from the 1950s until the 1990s, none of the initial growth patterns did not consider FDI as determinants of economic growth even though it was very clear that they are an important factor. After 1990s, researchers strongly accepted the growth pattern and each to their manner during their research found the models to fit the specifications of their countries. The Solow model generated other models, but their share is that everyone aims to find different factors that determine growth. Solow hosted an aggregate-function of production from Cobb - Douglas which I will also use extensively in my studies.

2.2. New Theory of Endogenous Growth

Since 1990s, many researches have taken place using new econometric techniques to make panel data analysis and there is a common consensus that FDI has positive correlation with economic growth. New Classics, the right side of economy, with the representatives, Robert Lucas, Edward Prescott, Robert Barro, Rebelo, Grossman, Helpman etc., have been the most influential economists since 1970. Lukas challenged the foundations of macroeconomic theory (previously dominated by Keynesian approach), arguing that a macroeconomic model should be constructed as an aggregated version of microeconomic models). Numerous studies have provided rational theories on direct impact of FDI on economic growth (Lucas, 1998; Rebelo, 1991; Romer, 1986 and 1993). Romer emphasized that FDI can be an important source of technology transfer and know-how in host countries. There are two main branches of the new theory of endogenous growth:

- the endogenous model - technological progress that generates external effects, the merits are attributed to the authors as Romer (1986) and Lucas, (1991) dissemination of knowledge. The authors stated dealt with externalities, emphasizing that it is the government arena how they provide priorities;
- CA model (Capital Accumulation) - production of technology by accumulating all kinds of capital, physical, human and knowledge, is known as Barro model, which gives special emphasis to the government, but there are also taken Grossman and Helpman (1990 and 1991) with particular emphasis on trade.

There is also a model in the context of the CA model, Rebelo's one, arguing that all types of capital are source of economic growth. Rebelo refers exactly to the Cobb - Dauglas function, which in this research essay is seen a methodology and model with priority to notice the FDI / GDP relation, and which is among the models applied the most due to the improvement (introduction of dynamism) by the new classics.

2.2.1. Endogenous Determination of FDI Growth and Economic Growth

Many studies have been made on economic growth based on the new model of endogenous growth, including developed countries and developing countries. Arguments pro growth have been found in most studies of the developing countries. In comparison with the neoclassical theory, the endogenous growth theory emphasizes the role of technological and capital transfer (Blomstrom et al.), training of workers and benefits of managerial skills (De Mello, 1997, 1999) and increases competition in the host countries.

But there are also studies that have found no positive effects on economic growth (Carkovic & Levine, 2003) refer to evidence found by Hans (2001). According to studies by Wang & Swain (1995), Moore (1993), Schneider & Frey (1985), the size of market, size of population, fast economic growth, per capita income, create conditions for multinational firms to generate growth. According to Lucas, countries which borrow more from abroad should be able to invest more (because they are less constrained by domestic saving), therefore, they should grow faster. There are financial obstacles and other structural ones that limit the ability of a poor country to absorb foreign capital. As regards the SEE countries, they are characterized as too promising for FDI.

FDI is an important factor in the economic aspect that unites states, regions and businesses. FDI is different from other types of capital flows, it includes not only the capital itself, but the transfer of technology and skills, managerial expertise and know – how, as well as the introduction of the new processing methods (Rodrik and Subramanian, 2008), Alfaro et al. (2004), Hermes & Lensink (2003), and Borensztein et al. (1998), who argue that the effect on FDI growth is conditioned on a number of factors that have different countries, but this is denied by Williams, Kevin (2010), who states that they are not conditioned, as an unstable policy of two countries, made one of these countries attract investments more than the other, because the political instability has not been the same in both countries, which is the same for other factors in most of the cases.

Studies of Borensztein and Alafaros, Hermes and Lesnik, have best expressed that to attract the FDI and better managerial practices, the host country should have at

least the minimum threshold of the necessary infrastructure, capital, education, stable banking system, and political stability. There are also other authors, as (Bezuidenhout, 2009) who states that FDI should be seen as a vital factor in growth, only if its revenues are properly managed. There are proposals that if a developing country seeks economic growth and welfare of its people, must use the mechanism of FDI. There should be attempted that the economic policies, regulatory framework on promotion and protection of investors and many other priorities are transparent and favorable. On the other hand, there are counter-arguments by the pragmatic nationalist theory the opening to FDI is seen as the loss of national sovereignty. Supporters of this idea point out that there is no link between FDI and growth and vice versa. According to them, FDI is wrongly seen as a solution to developing countries (Seatini, 2002). They see FDI as a package of entrepreneurs in search of continuous profitability and market of cheap labor in the host country. Such investments do not come as a charity issue, but rather they are against local enterprises. Therefore, “the open doors” to the policy towards FDI should not exist. They must be allowed through the national consensus and in accordance with certain performance requirements (Yash Tandon, 2002).

Table 1. FDI and growth: Review of literature by Ilhan Ozturk and 52 case studies, of three cases for transition countries see table¹

Author/year	Countries in Transition	Period	Effects of growth in FDI
Mencinger (2003)	8 countries in transition	1994-2001	Negative
Nath (2004)	10 transition economies in Eastern Europe	1990-2000	Positive
Bacic et al. (2005)	11 economies in transition	1994-2002	Mixed result

From table 1, we conclude that in case the study involves countries with the same level of development but heterogeneous in macroeconomic indicators, institutional, tax reform, geographical position, size of population, market, education, technology absorption and managerial skills, results in most cases are as those in the table.

¹Paul Douglas explained that his first formulation of the function of production “Cobb – Douglas” took place in 1927, so he spoke with mathematician Charles Cobb who suggested to use the form of the function that had previously been used by Knut Wicksell.

So bringing closer the sample countries is necessary to achieve the correct argument. Per capita income is very important to the countries in transition, whereas to developing countries important is the size of market.

Ozturk has made a survey to the literature on economic growth caused by the induction of FDI, and according to statistics, there is a positive relationship in 90 percent of studies, which were mostly developing countries, whereas the samples of developed countries emphasized unimportant or neutral connection.

3. Impact of FDI in GDP, according to Cobb - Douglas Model

The economic growth¹ of the country can be explained using the Cobb-Douglas function.²

Production function in the following form:

$$Y = F(K, L, F, X) \quad (1)$$

- where, Y is GDP³ (monetary value of all goods produced within a year),
- K, capital - capital inputs - to the monetary value of all equipment, buildings inventory),
- L, human capital (total number of people - hours worked in a year),
- A, technological level,
- both L and A are supposed to grow at the rhythm (n) and (g) exogenous to the time (t),
- F is FDI; X represents other explanatory variables (variable which can affect on economic growth and FDI).

Thus we reach the fundamental and important function of the product. Vehorn & Vasarevic, p. 25)

$$Y(t) = K(t)^{\alpha} (A(t) L(t))^{1-\alpha} \quad 0 < \alpha < 1 \quad (1)$$

Where A(t) is productivity and the parameter is α , $0 < \alpha < 1$.

¹ Economic growth is measured as percentage change in the Gross Domestic Product. Economic growth is attributed to the accumulation of human and physical capital and productivity growth arising from technological innovations. Economic growth is also the result of the development of new products and services.

² Paul Douglas explained that his first formulation of the function of production “Cobb – Douglas” took place in 1927, so he spoke with mathematician Charles Cobb who suggested sing the form of function that had previously been used by Knut Wicksell.

³ It is known that the GDP equation is $Y = C + I + G + NX$, where C–consumption, I–investments, G–governmental spending and NX- net exports given by the difference between exports and imports (X-M).

Saving rate can be defined thus: sYt .

Production function per capita: $yt = kta At^{1-a}$ (2)

Total symbol (approximate) for the growth rate is:

$gt^y = agt^k + (1-a)gt^A$ (3) (Durnel, 2012, p. 20)

Equation 3 reveals the essence of Solow's proposal, which says that any increase in production growth (gY), can be done in two ways: capital accumulation and "technological process (Sorensen et al., 2010, pp. 57-211)." The regression model is used especially for imports and exports or for other aggregates that are important depending on the study case. Many explanatory variables are forgotten, for example, human capital and these were treated by other authors as Mankiw, Romer and Weil (1992). To complete the growth model some specifications of the countries must not be forgotten (OLI paradigm, Duning,¹), therefore Islam (1995) reestablished the growth equation with a more dynamic model that allows involving of other explanatory variables in the panel data.

4. Negative Externalities from Consumption of FDI and GDP

Economic growth through fast industrialization and environmental consequences has sparked a fierce debate. Studies (Grossman and Grueger 1991, Selden and Song 1994 Rothman 1998) support a U-shaped curve, the Environmental Kuznets Curve (EKC), which express the relationship between environmental degradation and economic growth, in most cases emphasizes that economic success of the countries has been reached at the expense of degradation of their environment. According to this curve relationship between economic growth and CO₂ emissions, means that economic growth worsens the environment while per capita income (PC)² are low. With the improvement of this indicator, the environment is improved. This is supported by Stern (2004) too. However, this is best expressed by Muhammad Shahbaz, Nasreen Samia and Afza Talat in their paper, using panel data of 110 developed and developing economies. Results showed that the environmental Kuznets curve exists and foreign direct investment increase the environmental degradation. Kuznets Simon in his first report in the U.S. Congress in 1934 said:

¹ A very important theory that explains the activity of multinational companies and FDI is "the eclectic theory" of Dunning (1981). OLI paradigm provides a full explanation of the best ways to enter foreign markets. It is a very useful structure to summarize the different characteristics of enterprise opportunities to return to multinational ones, which helped the empirical assessment of this phenomenon. This paradigm is a mixture of three different theories and it takes into account three factors: (i) ownership advantages, (ii) location advantage, (iii) internalization advantages.

² Abbreviation (PC) in Table 1, expresses per capita income (living) in developing countries from 1986 to 2005, their growth and the effect of this increase in CO₂ reduction, caused by economic activity of enterprises.

welfare of a nation can scarcely be achieved by a measure of national income. In 1962, Kuznets states: differences should be remembered amongst the quantity and quality of growth, between costs and benefits, between short term and long term growth.

Table 2. This table should be edited as the three- lines table, the trend of FDIPC, GDPPC and CO₂PC in 110 countries

YEARS	FDIPC (US\$)	GDPPC (US\$)	CO ₂ PC(metric; tons)
1986-1990	75,58	4460,56	3,38
1991-1995	119,09	6025,87	3,53
1996-2000	259,64	6825,13	3,67
2000-2005	400,19	8307,06	3,82

According to table 2, the FDI annual average per capita amounted to US\$ 400.19 between 2000 and 2005, more than triple amount for the period 1991-1995. As a result, the annual GDP average per capita increased from US\$ 4,460.56 to US\$ 8,307.06 during the same period. Economic growth has been associated with the problem of environmental pollution, but the higher the economic growth per capita is, the lower the pollution will be. For example, the average annual CO₂ emissions per capita increased by 3.38 metric tons from 1986 to 1990 and 3.82 metric tons during the years 2000-2005. For a better environmental performance, environmental regulations are essential means that from the economic activity of firms reduce the external cost they cause. Two thoughts are expressed in terms of this issue:

- a. companies relocate their activities in developing countries to benefit from the low cost of production;
- b. the benefit of investors from non-stringent regulations. But it is believed that foreign companies use best management practices and advanced technology that results in a clean environment in the host country (Zarsky, 1999).

Public reactions to the externalities in cases where companies operate according to their mentality do not achieve an efficient choice; there are various ways through which the government can intervene. Pigou suggested setting a tax on pollutants for each unit produced equal to the marginal damage that it causes an efficient level of output. (Rosen, 2003)

This should happen exactly in developing countries as they are the largest participants of global environmental pollution. When we consider that in developing countries the right to property in most cases is contestable then the

Cose's theorem (1960)¹, applies not satisfactory. This explains the effectiveness of policies in all countries with the aim of improving environmental performance on planet Earth (Pao & Tsai, 2011).

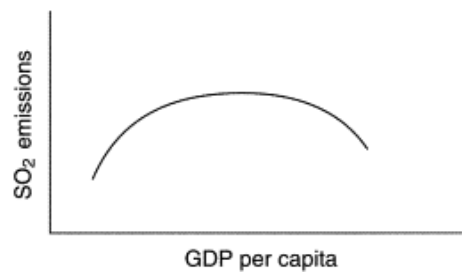


Figure 1. An empirical evaluation report of GDP environmental quality²

If we take only Kosovo as an example from SEE countries to argue this concern, Kosovo is the fifth in Europe in coal reserves, but its use has caused environmental pollution three times higher than the permitted standards. There is no doubt that FDI promote economic growth, but also negatively affect the environment (Xing & Kolstad, 2002). But if these plants are equipped with the perfect technology (technological transfers and know-how), then negative effects will be reduced to the extent of no inconvenience (Chay & Greenstone, 1998).

5. Conclusions

All empirical results analysed so far show that FDI is not given an unified theoretical explanation. This research essay analyses the impact of FDI on economic growth based on the framework of the new theory of endogenous growth. The neo-classics accept some of the classical values but they do not fully accept the theory of market economy. According to the neoclassical views, the role of technological change became crucial and more important than the accumulation of capital. Neoclassical theory has explained the return rates on portfolio investments between two countries but failed to explain the existence of FDI. New Theory of Endogenous Growth as advanced theory (Romer, Lucas) made a mathematical explanation of technological progress. This theory has also incorporated a new concept of human capital, the skills and knowledge that make

¹ Suggesting that the government intervention is not necessary where the right of property is determined.

² Figure 1 in the best way presents the effect of these regulations on turning the level of SO₂ in 2008 to its starting point in 1988, when FDI gave their first effects of pollution.

workers more productive. Human capital is increased the return rate? Models that deserve attention within the framework of the neoclassical theory is the Sollow model and the application of the Cobb - Douglas function, while models within the new theory of endogenous growth are the Romer - Lukas model, - Rebelo's model and the Barro, Grossman and Helpman model. In the Endogenous Growth models the effects of economic integration are too essential. Countries which remove themselves from the free flow of ideas and knowledge and the new technology will suffer from stagnation. Successful economies are those with the highest rates of accumulation of human and physical capital based on technological progress. Economic growth is almost always accompanied by considerable fluctuations of relative sizes in individual sectors. In conclusion, authors and relevant institutions as Chenery & Strout (1996), Duning (1970), Todaro (1982), Krueger (1987) and the World Bank (1993), prove that FDI continuously promote the GDP growth. Among the arenas of governmental intervention are also externalities. A lesson to be learned from numerous studies that have been done is that prudent macroeconomic policies create more effective environment and promote the economic growth.

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