

Analysis of the Effect of Investment and Level of Foreign Trade on Economic Growth of Iran

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Abstract. Under developed countries are known for low level of investment and insufficient international trade. These two factors are among other factors creating hurdle for their economic growth. This paper tries to explain the role of these two variables as the main accelerator of growth in Iran. Finding shows that FDI and DDI the two components of investment boosts economic growth of Iran both in long as well as short period. In addition the effect of FDI is much stronger than the effect of DDI.

Keywords: Gross Domestic Investment, Foreign Direct Investment, Economics Growth.

1. Introduction

Basically those countries which have adopted import substitution strategy do not enjoy comparative advantage in their capital intensive sectors and since foreign investment is mostly used in capital intensive sectors, therefore foreign investment does not have necessary. Effect on economic growth. Beside, foreign investment is a way for entrance of the foreign firms investing in the country of accepting capital and this fact is contradictive with the strategy of import substitution. but regarding strategy of export promotion, the case is different. under this strategy, keeping in mind cheap labor and raw materials in such countries, foreign investors will have more reason to invest. Moreover when the strategy of export promotion prevails, the market of domestic product will not be confined to domestic market and will it will go beyond it and in international market it may enjoy large scale economy.

Foreign investment and the method to absorb it is undoubtedly one of the main tools of export promotion. In the other word, execution of export promotion strategy, in practice multi national companies to cooperate in foreign direct investing regarding transition of technical know-how and managerial skills and marketing. Absorption of foreign capital for most of the disciple of export promotion is a success. They count foreign investment not as chain of dependent but as the chain of production and economies. Generally there are four ways for creation of necessary and suitable condition for foreign n strategy and import promotion strategy. he believes that the strategy of export promotion brings equality between the average rate of effective exchange with that of investment which are ; support against non commercial trade, possibility of free exit of capital, custom exemption for import of capital goods intermediate goods and raw materials needed for exporting factories and other financial incentive, Therefore in general, strategy of import substitution is not suitable for absorption and leading foreign investment. Whereas strategy of export promotion has got the suitable condition to absorb foreign capital.

The idea of trade strategy on growth which is due to FDI was given by Baghwati for the first time in 1978 the problem asked in this regard is the type and effects of policies and import substitution and export promotion on economic growth emerged from FDI.. in his theory which is called Baghwaty theory, he explains that the productivity which is emerged from application of FDI is different in the countries using

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export promotion import. Therefore this strategy is neutral from trade point of view .therefore this policy is biased towards the policies supporting import substitution.

In this paper it is tried to have a glance at theoretical literature concerning effect of macro variables of economics such as fixed gross domestic investment, foreign direct investment, size of the government, level of foreign trade and discussing various ideas about this topic, a suitable pattern of econometric will be designed. Then by collection and processing of required time series data for each one of explanatory and dependant variable and ensuring about their stationary models will be estimated .after estimation of the model and with regard to estimated co efficient, effects of aforesaid variables on economic growth will be analyzed. At last conclusion regarding effects of variables of the model on economic growth in a short and long time will be discussed

2. Theoretical Background

Generally any kind of investment in foreign country by private companies and real persons (excluding government help) is called foreign investment. According to a definition foreign investment contains long run relations which reflect profit and continued observation of private property of a country, which is in the economy of another country. This kind of investment includes trade between trading partners and all the trades thereafter, between these peoples and other affiliated organizations. In addition this investment includes capitals transferred from one middle investment company to foreign direct investors through accepting capital from foreign direct investors by these companies and includes three topics:

- Foreign shares: purchase of shares from a production unit from a foreign country.
- Reinvested profit: distributed or undistributed shares of investors in a foreign company (which is reinvested)
- Inter-company loans: long or short run loans between investing companies and companies related o them and vice versa. (Najarzadeh and Maleki, 2004)

Some of the outcomes of foreign direct investment are the increase in potentiality of production of goods in foreign country, change in excess balance of payment, change in exchange rate, and change in corporate taxes, transformation of technology and managerial skills, prosperity of advantages, ease of globalization, change in the size of government and finally economic growth of the country.

Borensztein ,Gregorio and Lee believe that FDI shall accelerate economic growth through availing foreign capital and via economic growth the profit of foreign investor is expanded .moreover FDI enters a country along with advance d technology , organizing and better management ,therefore FDI has been known as the engine of growth in less developed countries. To him the useful effect of FDI on economic growth can be felt due to higher productivity of such investment which is due to advanced technology, and not merely due to accumulation of capital. Rana and Doling also believe that positive effect of FDI on economic growth is due to increase in productivity which is because of transition of suitable and advanced technology, (Mahdavi, 2004).

King and Uaradi,(2002)during 1993-1993 have done an study for 25 European countries and its result shows that increase in FDI and price freedom shall increase the economic growth ,Salter and Ford.(2001)in their research regarding study of effect of FD Ion economic growth of ASEAN countries during 1970-1996 found that FDI can lead to economic growth in these countries and its effect on economic growth of these countries is much more than the effect of human capital and technological factors, Lensink and Morrissey (1999) in their research on the effects of FDI on economic growth of host countries found a direct and meaningful relation between FDI and economic growth of these countries .Weinhold and Rauch(1997)by doing a research on 39 less developed countries studied the relation between the commercial and financial freedom and economic growth . the result shows that relation between commercial and financial freedom and economic growth is positive and meaningful .

3. Designing Model and Introduction of Variables.

In order to study the relation between variables which has been presented in this research, the macro new classical production function in the form of Cob-Douglas has been used. This model can be written in general form as below:

$$LGDPRM = \beta_0 + \beta_1 \cdot LDDIGDPR + \beta_2 \cdot LFDIGDPRM + \beta_3 \cdot LGGDPRM + \beta_4 \cdot LAXMRGDPR + \beta_5 \cdot DUW$$

Definition of present variables in relation are

LGDPRM logarithm of gross real domestic product at constant prices of 1997.

LDDIGDPRM logarithm ratio of capital formation and gross domestic fixed capital in machinery sector and building on real gross domestic product at constant prices of 1997 in market prices (billion rials)

LEDIGDPRM logarithm of ratio of foreign direct investment on real gross domestic product at constant prices of 1997 and market prices (billion rials)

$LGGDPRM = \text{Log}\left(\frac{G}{GDP_{PRM}}\right)$: Logarithm of ratio of total current payment and developmental payment of government at constant prices of 1997 over real gross domestic product at constant prices at market prices (billion rials)

GDP_{PRM}: real gross domestic product at constant prices of 1997 and market prices (billion rials).

LAXMRGDPRM :logarithm of absolute value to difference of net export and net import of goods and services at constant prices of 1997 over real gross domestic product at constant prices of 1997 in market prices (billion rials)

DUW: dummy variables of imposed war during 1980-88 is zero and for the rest of the years is one in numerical terms.

The data used in this research are from various statistical years of Central Bank of Iran and statistical Center of Iran and the office of vice president of the IRI. Calculation of data is also on the bases of library and other documentation available in the time series used for estimation of model includes data from 1959 to 2007.

A model which is used on the bases of ARDL for estimation effect of explanatory variables and the level economic growth of Iran used is explained below

$$LGDPRM = \alpha_0 + \sum_{j=1}^p \alpha_j LGDPRM_{t-j} + \sum_{j=0}^{q_1} \beta_{1j} LDDIGDPRM_{t-j} + \sum_{j=0}^{q_2} \beta_{2j} LFDIGDPRM_{t-j} + \sum_{j=0}^{q_3} \beta_{3j} LGGDPR_{t-j} + \sum_{j=0}^{q_4} \beta_{4j} LAXMRGDPR_{t-j} + \beta_5 DUW$$

In this relation self explanatory variables are amount of growth of Gross Domestic Fixed Investment ,Foreign Direct Investment variable of growth which is an indicator of index of economic freedom .level of growth Government Size .and also Net Foreign Trade variables which is an index for globalization.

The dummy variable of imposed war with numerical value of one during 1980-1998 and for the remaining years value of zero will be entered in the above relation.

In this method ,the maximum number of lags is considered to be two and since the number of observation is less than 100 Schwarz model is used .This model has specified two lags for LGDPRM(level of economic growth)and LEDIGDPRM(level of foreign investment growth) and for the other variables zero-lag has been assigned . The result of best estimation for the above method of AEDL is explained at table (1).

Rand R shows that the independent shows the behavior of dependant variables in a higher level i.e. more than 99.9% of the variation in economic growth of the coefficients foreign investment variable in normal period and with lag and Domestic Investment and the variable of growth of size of Government in the high level of 95%is significant.

As it is mentioned for examining co integration of model in ARDL can be used. Thus, if the t statistic so obtained is less than critical value presented by BENARGI-MASTER and DOLADO, null hypothesis will not be rejected and lack of existence of relation in long run among the variable will be accepted.

Table (1), the result of best estimation for the method of ARDL

variables	coefficient	-Ratio t
LGDP(1)	-0.86359	-12.1509
LGDP(2)	-0.93922	-22.566
LDDIGDP	0.033200	2.7338
LFDIGDP	-0.88774	-28.4830
LFDIGDP(1)	-0.91235	-24.6681
LFDIGDP(2)	-0.92376	-25.2364
LGGDP	0.011792	3.8987
LAXMRGDP	-0.0011353	-0.38022
INT	23.0305	32.5836
DUW	-0.010179	-2.0174

In this model $F(9, 30) = 6204.5$ [0.000], $R^2 = 0.99946$ and $\bar{R}^2 = 0.99930$. In the obtained model t statistic is equal to

$$t = \frac{\sum_{i=1}^p \hat{\phi}_i - 1}{\sum_{i=1}^p S_{\hat{\phi}_i}} = \frac{\hat{\alpha}_1 - \hat{\alpha}_2 - 1}{S_{\hat{\alpha}_1} + S_{\hat{\alpha}_2}} = \frac{-0.86359 - 0.93922 - 1}{0.071073 + 0.041621} = -24.871$$

Since the quantity of critical value presented by BENARGI-MASTER.DELADO in 99% confidence is equal to -4.85. The null hypothesis will be rejected. Therefore, it can be concluded that a long run equilibrium relation exist between the variables.

For considering long run relation of variables which have been discussed in this paper, The approach with self explanatory approach with wide gaps of ARDL have been used. In this approach maximum number of lags are considered to be two and since number of observation is less than 100, the Schwarz criteria is used. This method has assigned two lags to LGDP and LFDIGDP and for the remaining variables zero lags are assigned. After the determination of the number of optimum lags related to each one of the variables under discussion, long run and short run relation of the model will be determined.

The model related to long run relation of explanatory variables with the dependant variables is explained at table (2).

Table (2), the result of long run relation of variables for the model

variables	coefficient	-Ratio t
LDDIGDP	0.011845	2.6962
LFDIGDP	-0.97182	-168.8075
LGGDP	0.0042073	3.7907
LAXMRGDP	-0.4051E-3	-0.38003
INT	8.2169	260.7663
DUW	-0.0036316	-1.9788

Reference: finding research

Keeping in mind the obtained coefficients from long run model it is cleared that in long run there is a direct meaningful relation between increase in Gross Domestic Fixed Capital in housing and machinery sector and economic growth. On the other hand, in the long run by increasing domestic investment, economic growth will also increase. Further more in the long run there is an inverse relation between economic growth and Foreign Domestic Investment, which means in the long run by FDI increase and financial freedom expands economic growth declines in Iran here is also a direct and meaningful relation between size of the government and increase of economic growth and finally imposed war has put its negative effect on the economic growth in the long run. The available t statistics for variables showed significant of variable at the high level of 95%.

As shown earlier, since the model in this article is a logarithmic model the coefficients variable explain the elasticity, therefore, in the long run, one percent increase in domestic investment will increase economic growth by 0.11%. Furthermore, increase of one percent in foreign investment shall reduce economic growth

by 0.97% and one percent increase in government size shall increase economic growth by 0.004% in the long run.

Error Correction Method or ECM indicates the relation between growths of GOVT variable with the independent variables of the model in the short run which shows the dynamics of the model. The ECM is as Table (3).

Table (3), the result of Short run relation of variables for the model

variables	coefficient	-Ratio t
$\Delta LGDPRM(1)$	0.93922	22.5660
$\Delta LDDIGDPR$	0.033200	2.7338
$\Delta LFDIGDPRM$	-0.88774	-28.4830
$\Delta LFDIGDPRM(1)$	0.92376	25.2364
$\Delta LGGDPRM$	0.011792	3.8987
$\Delta LAXMRGDPRM$	-0.0011353	-0.38022
INT	23.0305	32.5836
ΔDUW	-0.010179	-2.0174
ecm(-1)	-2.8028	-31.3695

In the short run owing to the finding from ECM, it is cleared that there is a direct and significant relation between economic growths in one term with the economic growth of the previous term. On the other hand one percent increase in economic growth of the previous term will increase the economic growth of the country by 0.939 percent in the next term.

In addition in the short run there is a direct significant relation between economic growth and increase in Gross Domestic Fixed Capital Formation. On the other hand in the short run an increase of one percent in domestic investment shall increase economic growth by 0.033%. If we compare the long run effects of variables of Gross Domestic Capital Formation on economic growth of the country with the effects of the short run, we can infer that in the short run increase in Gross Fixed Capital Formation shall increase the economic growth of the country as compare to the long run.

There is an inverse meaningful relation between economic growth in one term with Foreign Direct Investment in the same period whereas there is a direct meaningful relation between FDI in the pervious period and economic growth of the same period. On the other hand in the short run during current period, increase in FDI has reduced the economic growth, but causes an increase in economic growth in the next period.

As it can be seen from the above equation, in the period under study, one percent increase in FDI shall reduce the economic growth by 0.88% in the same period. While, it shall increase economic growth by 0.92% for the next period. A comparison between long run and short run variables of FDI on economic growth presents this fact that increase in FDI in the long run shall increase economic growth more than short run. In addition, there is a direct meaningful relation between GOVT size and economic growth. On the other hand in the short run an increase of one percent in the level of growth of GOVT size, shall increase the economic growth by 0.11 percent. In the long run effect of increase in GOVT size and increase in economic growth is less than the short run.

It is to be remembered that in the short run negative influence of globalization on economic growth of Iran is neither meaningful nor confident. Coefficient -1 for ECM is equal to -2.8028 and considering the t statistic it is meaningful with a considerable degree of confidence. Therefore there is a short run relation among the variables of the model. Coefficient ECM shows that in each year 2.80 of disequilibrium in growth of GOVT size approaches toward equilibrium of the long run. Therefore the Adjusted Coefficient shows a smooth movement of co integration towards long run equilibrium. It can be seen from above equation that the available t statistic for variable is an indication of meaningfulness of variable in a 95 percent level.

4. Conclusion

There are various factors affecting the economic growth of a country. There are various approaches for quantifying the variable which are generally used by economists. One of these approaches is called

“endogenous approach “which is used in this paper. In this model, economic growth of Iran has been introduced as an endogenous variable which is a function of foreign direct investment (FDI), formation of Gross Domestic Investment and level of foreign trade. Imposed war has also been used as structural breakage variable in this model. In order to study the long run relation of variables in this paper, self explanatory dynamic approach with distribution lags, and for short run relation between variables, vector error correction model is used.

The finding of this paper shows that, in short run, there is a direct significant relation between economic growths in one period with that of previous one. In addition there is a direct significant relation between economic growth and increase in Gross Domestic Investment in construction and machinery sectors. A comparison between long and short run effect of Gross Domestic Investment on economic growth of Iran shows that in the short run, an increase in formation of Gross Domestic Investment accelerates economic growth more than the long run.

In the short run, there is a direct significant relation between FDI in one period with FDI of the pervious period. In other word, in the short run, increase in the FDI shall accelerate the economic growth of next period. Finally, imposed war on Iran has shown its negative effect on economic growth in both long as well as short run.

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