



**Original Article**

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## Is Negligible Absorbed Foreign Investment, Effective on GRP Growth? (Case Study: Iran)

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**ABSTRACT:** The necessity of capital to maintain investment and also use of new potentials and opportunities in order to sustain growth and economic development is clear. Iran needs development's strategy and this development requires continuous investment. As we know Iran encounter with countless economic and political sanction and these sanctions were effective on absorbing foreign investment's volume during recent years. We try to study whether negligible foreign investment is effective on GRP Growth? The casual relationship between GRP Growth and foreign investment growth were studied by use of Hsiao casual test in the years of 2000-2010. Findings showed there was perceivable mutual relationship between GRP Growth and foreign investment.

**KEYWORDS:** GRP Growth, Foreign Investment Growth, Iran Provinces.

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## 1. INTRODUCTION

The signals of world economic in 21 century are some related processes, in which one can point out to globalization, internationalization and over-nationalization. This processes affect not only on global markets functions, but also could lead to fundamental changes in competitive strategies of courtiers and nations, because hard condition, perennial variation of situation and foreign pressure such as sanction compel them to use different markets for strategic planning's and achieving long term advantages(Permiakova,2008). International economic sanctions have become increasingly important as alternatives to military conflict since the end of the Cold War (Kaempfer & Lowenberg, 2007). Economic sanctions “mean the deliberate, government-inspired withdrawal, or threat of withdrawal, of customary trade or financial relations” (Hufbauer et al, 2007). The classic model of sanctions explains that they usually work by causing economic pain to the target state’s population. The population then reacts by pressuring the country’s leaders or overthrowing them outright, therefore changing the target state’s international behavior(Newnham, 2010). The complexity and growing competition of today's markets are exist along with quick mutations of international environment and passing through industrial society to informative society as well as national economy's changes to global economy, this cause to mention capital absorption as a motivation motor or as an economic development 's Catalyzer, because this could lead to GRP Growth and development of countries, increasing productivity, making employment and social welfare and also sustainable growth and development need useful financial, technical and managerial interaction switch other countries(Gordon, 2001).one could say bravely that one of the effective factors in this case is, paying attention to comparative advantages of foreign investments for developing countries as an object to obtain suitable GRP Growth. Development economists and formal authorities of international organizations also believe that among different flows of private capital, foreign investment could be applied as a reliable financial resource by developing countries (Mahdavi, 2004).

Therefore Iran to achieve the sustainable growth requires investors' attendance in different sectors of economy. Capital shortage considered as one of the most important factors of underdeveloped countries. Thus foreign investment absorption in optimum combination with human resources and technology could motivate GRP Growth. So we studied, the relationship between GRP Growth and foreign investment growth in 8 selected provinces of Iran: Tehran, Bushehr, Esfahan, Markazi, Khuzestan, East Azerbaijan, ghazvin and Hormozghan; and then findings and results were expressed.

## 2. LITERATURE REVIEW

There is a widespread view that the impact of foreign direct investment (FDI) on economic growth is ambiguous (Gorg and Greenaway, 2004). Hsiao &Hsiao (2006), in a study by the subject of FDI, exports, and GDP in East and Southeast Asia—Panel data versus time-series causality analyses, declared that FDI had unidirectional effects on GDP directly and also indirectly through exports, and there also existed bidirectional causality between exports and GDP for the group of study. Ledyeva & Linden(2006), in their study by name of testing for foreign direct investment gravity model for Russian regions implied that only the factors of the crude form of gravity model, namely, gross products of host regions and source countries and distance between them, and agglomeration effect were important for FDI entrant probability in different regions. Lee & Chang (2009), announced in their study that Previous studies had recognized that the benefits from foreign direct investment (FDI) to recipient countries could only be realized when those countries had reached a certain level of financial development. However, the dynamic interrelationships among FDI, financial development, and real output, including the long-run equilibrium as well as causality, had not been analyzed. This paper



overcome this major shortcoming by applying recent advances in panel co integration and panel error correction models for a set of 37 countries using annual data for the period 1970-2002. For the first time, they explore the directions of causality among FDI, financial development, and economic growth and obtain solid, convincing evidence of a fairly strong long-run relationship. Furthermore, the financial development indicators had a larger effect on economic growth than did FDI. From the panel causality tests, while the evidence of a short-run relationship was weak, that of a long-run relationship among the variables was unequivocal. Overall, the findings underscore the potential gains associated with FDI when coupled with financial development in an increasingly global economy. Gross regional product (GRP) is conceptually equivalent to gross domestic product (GDP); the latter measures newly created value through production by resident production units (or residents in short) in the domestic economy, while the former measures newly created value through production by regional production units (or regional residents in short) in the regional economy, be it a state, province or a district (Viet, 2010). Chao (2010) researched that FDI and agglomeration economies had positive impacts on GRP (Gross Regional Production) growth. The factors what affected FDI dispersion and regional production was explored. By introducing kinds of variables (such as R&D stock and domestic investment), the simultaneous determination model for FDI dispersion and urban productivity growth was constructed. Finding showed that Firstly, FDI took an important role in urban growth, with the access of foreign capital. Secondly, the determining factors of FDI location had discussed in details. The regional economic development had positive effects on FDI inflow directly. FDI into a region was depended on this region's market scale and investment environment. A higher per capita income and a higher urban growth attracted FDI inflow into the cities. Lastly it was stated that the domestic investment effect should be noticed specially, it had negative impact on FDI location and regional production. AzmanSaini et al(2010), in their study by subject of FDI and economic growth: New evidence on the role of financial markets declared that This study uses a threshold regression model and finds new evidence that the positive impact of FDI on growth “kicks in” only after financial market development exceeds a threshold level. Until then, the benefit of FDI is non-existent. Pao &Tsai (2011), in their study were seek to examine Multivariate Granger causality between CO2 emissions, energy consumption, FDI (foreign direct investment) and GDP (gross domestic product): Evidence from a panel of BRIC (Brazil, Russian Federation, India, and China) countries, and concluded that that there existed strong bidirectional causality between emissions and FDI and unidirectional strong causality running from output to FDI. Additionally, there existed strong output-emissions and output-energy consumption bidirectional causality, while there was unidirectional strong causality running from energy consumption to emissions in BRIC countries.

Musa Ahmed (2012), in a study by subject of Are the FDI inflow spillover effects on Malaysia's economic growth input driven? Implied that FDI effects on human capital, labor force, absorptive capacity and physical capital was significant and FDI played a significant role in achieving economic growth through input driven. Significant positive relationship between human capital, labor and absorptive capacity was found. Ahmed (2012), in a research by aim of answers this question: Are the FDI inflow spillover effects on Malaysia's economic growth input driven? Announced that a significant positive relationship between human capital, labor force and absorptive capacity which determines the spillover effect on Malaysian economic growth (GDP). Kayam et al (2012) analyzed the determinants of the regional disparity in attracting FDI in Russia using additions to fixed capital investment by foreign firms as the measure of FDI. The spatial distribution of FDI was attributed to regional and/or trans-regional factors. Region specific characteristics such as wage, education level, transportation as well as gross regional product, which accounts for market size, in host and alternative regions were considered to analyze the spatial interaction between regions employing spatial econometrics. Finally researchers found that shocks to FDI levels in proximate regions had no effect on FDI

inflows to hosts. However, FDI in a region was depended on spatial market size and endowment of natural resources.

### 3. CONCEPTUAL MODEL

Each conceptual model is beginning point and basis for doing study and researches, as it describes research variables and relationship between them (Edwards et al, 2000). In another words, in an ideal situation, one could say, conceptual model is a mental map(Maastricht school of management, 2001, 3)and an analytical instrument (Mirzaie, 1996), a strategy to start and do research, since it is expected that during doing research, variables, relationships and interaction between them are tested and examined(Sutter & Leisen, 1999).

Therefore in this research two variable are considered. One GRP Growth that is regarded as a growth amount of gross domestic production, and the other one is foreign investment growth, so the used pattern for study the casual relationship between GRP Growth and foreign investment growth and vice versa in selected provinces of Iran is in the form of below, which in it lags number would be chosen by Hsiao causality test:

$$\begin{cases} IG^p_t = \beta_\lambda + \sum_{i=1}^r \lambda_i IG^p_{t-i} + \sum_{j=1}^r \phi_j EG^p_{t-j} & (1) \\ EG^p_t = \beta_\gamma + \sum_{i=1}^r \iota_i EG^p_{t-i} + \sum_{j=1}^r \theta_j IG^p_{t-j} & (2) \end{cases}$$

Which,  $IG^p$  and  $EG^p$  are investment growth (provinces) and GRP Growth (provinces) respectively.

### 4. DATA

Data were extracted through Iran central statistics, investment organization and time series of central bank of Iran in the years of 2000-2010. The ratios of foreign investment volume to gross domestic product in each province were in table 2. As we see, mentioned ratios are negligible in comparison with global data in the same period. Here, maximum rate is %0.45 which in comparison with international statistics that averagely were %1 in south East Asian countries is negligible and also is lower than 1/5 of Middle East and North of Africa countries that Iran is among them.

Table 1. provinces FDI Growth and GRP Growth

	Hormozghan		Markazi		Ghazvin		Khozestan		Tehran		Boshehr		East Azerbaijan		Esfahan	
	GRP Growth	FDI growth	GRP Growth	FDI growth	GRP Growth	FDI growth	GRP Growth	FDI growth	GRP Growth	FDI growth	GRP Growth	FDI growth	GRP Growth	FDI growth	GRP Growth	FDI growth
2000	23.00%	310.60%	27.50%	749.50%	19.80%	234.20%	7.50%	156.00%	25.00%	39.00%	39.20%	728.50%	16.50%	40.10%	13.00%	2752.00%
2001	17.20%	31.10%	25.00%	-	14.50%	-	45.50%	126.60%	27.40%	134.20%	42.00%	479.60%	29.20%	57.80%	26.20%	20.10%
2002	29.60%	-	17.00%	3049.00%	20.50%	108.20%	14.20%	155.00%	27.20%	-	188.80%	-	19.00%	75.70%	33.20%	413.00%
2003	41.60%	131.10%	27.00%	-	23.50%	-	40.20%	16.00%	26.20%	417.20%	28.80%	27.00%	30.00%	99.90%	36.20%	-
2004	12.00%	-	16.20%	573.40%	26.20%	310.50%	34.10%	33.80%	20.20%	-	-	4.00%	17.40%	-	17.20%	-
2005	24.20%	-	20.00%	-	20.20%	50.50%	10.10%	80.80%	26.60%	26.10%	14.10%	12.10%	20.20%	66.40%	70.20%	12.00%

2005	16.8%	-8.0%	29.6%	74.5%	26.0%	34.4%	20.4%	-4.4%	24.0%	45.0%	14.4%	-3.0%	21.7%	-22.8%	19.7%	-52.5%
2006	23.5%	9.8%	21.4%	25.2%	20.7%	-2.8%	34.2%	20.7%	31.1%	-1.0%	45.2%	-1.2%	23.2%	-28.7%	32.5%	-65.4%
2007	30.5%	-5.7%	15.6%	-78.8%	33.0%	52.2%	7.4%	93.2%	27.0%	3.1%	12.4%	46.4%	18.1%	405.6%	20.0%	99.2%
2008	-0.1%	111.1%	10.7%	11.7%	12.2%	-7.0%	-1.1%	62.6%	15.0%	-14.2%	47.2%	11.2%	792.2%	5.0%	114.4%	
2009	-34.1%	-0.2%	-0.7%	-0.7%	-139.8%	-266.0%	-67.6%	-41.2%	-20.7%	-	-	-	-	-	-	

Table 2. provinces Ratios of foreign investment volume to gross domestic (2000-09)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Azərbayjan	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.02%
Esfahan	0.00%	0.12%	0.12%	0.45%	0.18%	0.14%	0.05%	0.01%	0.02%	0.04%
Bushehr	0.13%	0.13%	0.21%	0.07%	0.28%	0.24%	0.30%	0.17%	0.16%	0.03%
Tehran	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Khuzestan	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ghazvin	0.00%	0.00%	0.00%	0.00%	0.02%	0.04%	0.01%	0.00%	0.00%	0.00%
Markazi	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%
Hormozghan	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

(Note: 0.00% implies that the ratio was smaller than 0.001%)

Table 3. Global Average of Ratios of foreign investment volume to gross domestic due 2000-2010

Groups & regions	Mean
Arab World	2.0%
High income: non OECD	5.6%
Middle East & North Africa (all income levels)	2.2%
South Asia	1.0%
World	2.6%

Source: World Bank Data (2012)

## 5. METHODOLOGY

The aim of this issue was to examine the casual relationship between GRP Growth and foreign investment growth in 8 provinces. To do so, we used central statistic institution and central bank of Iran. The foreign investment data obtain from statistics of investment organization.

The used data for each province were during the year of 2000-2010. For estimating the causal relationship of GRP Growth to foreign investment growth in Iran provinces, Granger Hsiao causality test were applied. At first step, a collection of autoregressive regression on dependent variable is estimated. In first regression equation, dependent variable would have one lag, and in the next regressions, one lag would be added. For this, below formula was used:

$$FPE(m) = \frac{T + m + 1}{T - m - 1} * SSE(m) / T \quad (3)$$

In this function T is sample size, m and SSE are lag length and summed squared Error. Then for each equation, FPE: Final Prediction Error; would be calculated in the form of below and each equation has the minimum value of FPE, also lag length is optimized and shows better pattern.

In second step, for determination of next variables optimized lag's number, by considering the number of optimized lag in first step, the regression relationship in below was estimated.  $m^*$  Shows the number of optimized lags:

$$G_t = \theta + \sum_{i=1}^{m^*} \alpha_i G_{t-i} + \sum_{j=1}^n \lambda_j E_{t-j} + \varepsilon_{vt} \quad (4)$$

Table 4. SSE of estimation with different lag

Lag of IG \ Lag of EG	5	4	3
0	456.6759	25845.17	35616.02
1	465.6607		
2	211.7249		
3	108.9391		
4	109.2957		
5	110.7968		

Then FPI criteria for each regression were calculated in the form of below:

$$FPE(m^*, n) = \frac{T + m^* + n + 1}{T - m^* - n - 1} * SSE \quad (5) / T$$

Table 5. FPE of estimation with different lag

Lag of IG \ Lag of EG	5	4	3
0	62.792936	3083.7987	3710.0021
1	74.376362		
2	39.698419		
3	24.316763		
4	29.600919		
5	37.39392		

The variable's optimized lag length, E, is a lag length that make minimum Final Prediction Error, therefore the value of optimized lag for estimating the causal relationship of foreign investment growth to economy growth in Iran's 8 province was become 5. lag length is optimized and shows the better pattern. In this situation, in order to use Granger causality test, this Comparison was done:



If  $\frac{FPE(m^*)}{FPE(m^*, n^*)} < 1$ , then E is not the cause of G. And if the relationship was vice versa, then E is the cause of G.

The necessary condition for doing this test is that, all of the variables should be static. If they weren't then they should be differentiated to become static. Then this static differentiation is used in test.

## 6. RESULTS AND FINDINGS

By time passing and improvement of different theories and patterns related to GRP Growth, new variables are introduced as a growth motivator, and so attract economist's view. In this relevance, the role and place of capital and investment that allocates to themselves in growth and development patterns, is being revised and investigated continuously, because investment and its flows are become more and more complicated and diversified.

In this study, we try to examine the foreign investment impacts on GRP Growth and vice versa in Iran's provinces on the base of theoretical and empirical analysis. The most important of the study's results indicate that the impact of foreign investment entering on GRP Growth is being reinforced. And also the effect of GRP Growth on foreign investment is very tangible. In other word, these two factors have causal mutual relationship in total country and its provinces. So to reach to the continuous and high GRP Growth, foreign investment absorption should be considered more important than before as a way of financing, technology transmission, increasing employment, decreasing foreign pressures such as sanction and ,... . The economic impacts of sanctions on the target country are reflected in their terms-of-economic effects, which are larger in the case of multilateral sanctions than unilateral. Investment sanctions initially raise the rate of return to capital in the target country, but eventually the decrease in the inflow of new capital from abroad constrains the GRP's growth. So necessary policies should be applied to absorb investment to whatever is possible. In addition by considering the mutual relationship between GRP Growth and foreign investment growth in provinces, it is suggested that: authorities of provinces should recognize the investment opportunities in their province skillfully and provide necessary condition to absorbed more foreign investment as soon as possible, that would be lead to continuity and increase in GRP Growth of provinces and in country's economy growth as a consequence of that.

Findings showed that spite of negligible absorbed foreign investment in studied provinces, bilateral relationship between GRP Growth and foreign investment were perceivable.

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## ETHICAL CONSIDERATION

Authenticity of the texts, honesty and fidelity has been observed.

## AUTHOR CONTRIBUTIONS

Planning and writing of the manuscript was done by the authors.

## CONFLICT OF INTEREST

Author/s confirmed no conflict of interest.





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