Analyzing Impacts of Foreign Direct Investment on Private Sector in Economic Growth of Iran

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Abstract

The objective of this paper is to investigate and analyze the relationship between foreign direct investment (FDI) and economic growth, and the influence of FDI on private sector in stimulating economic and industrial growth in Iran. The general assertion in financial literature supports the construct that FDI is the prime modality for stimulating economic and industrial development in developing nations.

As an empirical work, we have studied the direct and indirect effects of FDI on economic growth of Iran during the period 1970-2012. Results of regression model estimation have showed that coefficient of FDI (foreign direct investment, net inflows (% of GDP)) wasn't significant, but interaction between FDI and private sector has a significant impact on economic growth of Iran at 5% significant level in the period 1970-2012. This finding show that impacts of FDI on economic growth depends on the extent of the development of the private sector. Private sector acts as a channel for the linkage effect to be realized and create positive spillovers. Also, our findings indicate that trade openness is positively and significantly correlated with economic growth of Iran in the selected period.

Keywords: Foreign Direct Investment (FDI), Economic Growth, Private Sector, Trade Openness, Spillovers.

JEL Classification: F14, F21, F10, C22

1. Introduction

Foreign direct investment is noted in most financial literature as a very essential factor in the economic development and the integration of developing economies into the global market

(Borenstein, Gregorio, & Lee, 1995; Chudnovsky & Lopez, 1999; Firebaugh, 1992). Common examples of the positive roles of FDI on economic development are the industrialization successes of the newly industrialized economies (NIE) in Asia such as Malaysia, Thailand, Taiwan, and China (Obuoma, 2001). The common parameter in the success or failure of FDI in stimulating economic growth is the presence or absence of viable linkages among the foreign, private, and public sectors in an economy.

Bjorvatn et al (2002) have studied the role of FDI in economic development. FDI involves a combined flow of capital and technology. From growth and trade theory we know that capital inflows may increase GDP per capita in the capital importing country. Moreover, access to better technology, broadly defined, is the only source of sustained growth. Hence, the way in which more advanced technology spills over to the local economy, and the empirical importance of these spillovers, have been areas of intense research in recent years.

FDI is obviously not the only source of capital and technology. Countries may rely on their own savings or borrow money in international markets to add to the capital stock. And countries may rely on domestic research and development (R&D) in order to upgrade technological sophistication. However, developing countries may face constraints on international credit markets, and may not have the resources necessary to undertake domestic R&D. Moreover, FDI implies an element of risk sharing between the capital owners and the capital importing countries that may make this type of capital flow more desirable than loans. And FDI may be, if not the only, then perhaps the most cost efficient way for poor countries to gain access to new technology.

Clearly, the positive impact on the local economy is likely to be greater if the economy suffers from high unemployment. First of all, there is a direct effect: everything else equal, establishment of foreign firms increases labor demand in the host economy. Second, there is an indirect effect, as the foreign firm links up with the local economy by demanding intermediate goods and producer services from local suppliers. This indirect effect also adds to labor demand, and should lead to reduced unemployment or increased wages or a combination of the two.

The purpose of this study is to investigate and analyze the relationship between FDI and economic growth, and the influence of FDI on private sector in stimulating economic and industrial growth in Iran. The general assertion in financial literature supports the construct that FDI is the prime modality for stimulating economic and industrial development in developing nations.

This paper is structured as follows: Section 2 illustrates about relation between foreign direct investment and economic growth and the role of the private sector in influencing FDI in the economic growth. Section 3 explains literature background of subject. In section 4, we will describe theoretical model of FDI and economic growth. Section 5 will study some rules and statistical aspect of foreign direct investment in Iran. Section 6 will discuss on empirical model and estimation, and finally Section 7 will focus on concluding remarks which meet the main objective of this paper.

2. Theoretical Review

In this section, we explain about relation between FDI and economic growth and the role of the private sector in influencing FDI in the economic growth in two subsections:

2.1. Foreign Direct Investment and Economic Growth

Two key elements need to be emphasized in the definition of foreign direct investment (FDI) and in distinguishing it from foreign portfolio investment (FPI). FDI can be defined as an investment made by a resident of one economy in another economy, and it is of a long-term nature or of "lasting interest." It should be noted in this context that country of residence is different from nationality or citizenship. The second element is that the investor has a "significant degree of influence" on the management of the enterprise (UNCTAD, 2009).

Foreign direct investment is an important vehicle of technology transfer from developed countries to developing countries. FDI also stimulates domestic investment and facilitates improvements in human capital and institutions in the host countries(Frankel and Romer, 1999). Foreign Direct Investments have been lauded as the primary modality for stimulating growth and consequently for effecting positive social changes in developing economies (Dunning, 2002; Hout, 1996; Chudnovsky & Lopez, 1999).

FDI may directly impact economic growth with the direct transfer of multinational corporations (MNC)'s technology and organizational know-how to its affiliate in host economies, upgrading of intangible assets such as management and marketing know-how of the local affiliates. Such geographical diffusion of technology and intangible assets as a result of the presence FDI may directly enhance exports, employment and integration of the host economy into the global market and force domestic firms to upgrade their technological, marketing, management and production capabilities (Bell & Marin, 2004). Another way by which developing economies, which normally attract primary sector FDI, may benefit from the presence FDI is through forward and backward linkages with foreign investors (Kosack and Tobin, 2006). Backward linkages result when collaborations between foreign firms and local suppliers enhance the level of development of local (domestic) supply chains and human development. On the other hand forward linkages occur when foreign firms sell to domestic firms, with the expectation that these linkages results in production externalities (OECD Report, 2002).

Historical experience demonstrates that the creation and transmission of ideas has undoubtedly been an important determinant of current living standards (Rosenberg, 1994; Mokyr, 2005). If Romer is correct and the poor countries do suffer from idea gaps rather than object gaps, then a significant part of worldwide poverty can be eliminated 'at relatively low cost' via technological 'catch-up'. A clear implication of this analysis is that nations which isolate themselves from the free flow of ideas, or erect barriers to the adoption of new technologies, will suffer relative stagnation since trade policies and openness affect innovation and growth. Foreign direct investment can act as a significant channel for the diffusion of new innovations and ideas, thereby enhancing the growth process (Grossman and Helpman, 1990; Romer, 1994b; Sachs and Warner, 1995; Proudman and Redding, 1997; Edwards, 1998; Parente and Prescott, 2000). Therefore, at least potentially, poor economies have the most to gain from reducing restrictions to international trade, encouraging inward FDI flows and investing in human capital because by doing so they can gain access to the stock of world knowledge (World Bank, 1998/9).

2.2. The Role of the Private Sector in Influencing FDI in the Economic Growth

The United Nations Conference on Trade and Development has specified several kinds of FDI: (1) natural-resource-seeking investment, (2) market-seeking investment, (3) efficiency-seeking investment, and (4) strategic-asset-seeking investment. Natural-resource-seeking investment involves FDI in the extractive sector (UNCTAD, 1999). Market-seeking FDI is any type of investment that seeks to serve the host market. Efficiency-seeking FDI occurs when companies move some of their business to another country to keep costs down. Strategic-asset-seeking FDI occurs when companies invest abroad to pick up new techniques and experience.

The local impact is likely to be different for each kind. Market-seeking FDI might lead to higher employment, but less trade, whereas, efficiency-seeking FDI might lead to both more employment and more trade. In general, economists seem to agree that manufacturing industries are more wealth creating than commodities or services industries. Therefore, it is argued that FDI related to manufacturing will have a bigger impact on economic growth than extractive-sector FDI (Akinlo, 2004). Research done on economic growth in China seems to underscore this point (Buckley et al, 2002).

The presence of FDI may also lead to the enhancement of human capital and hence economic growth. A normal avenue through which FDI enhances human capital is through the transfer of ownership advantages such as technological know-how, management know-how and marketing techniques to local affiliates. The absorption of external spillovers from FDI enhances the organizational and productions processes and capability of local firms. Such diffusion may occur through (1) spin-offs, where formers employees use the knowledge acquired from MNCs or its affiliates to start their own firms and (2) through the direct training of local hires. However the diffusion of these benefits into the local economy is contingent on the capability of host nation's private sector to absorb the external spillovers (Dunning, 1997; Kosack & Tobin, 2006; Roemer, 1996).The degree of benefits is also primarily driven by the type of FDI inflows into a local economy. Competition from foreign investors can also impel domestic firms to increase efficiency and their use of technology in order to keep pace (Kosack & Tobin, 2006, p. 8).

It is generally acknowledged that economic growth increases per capita income and thus savings. Increases in the national saving rates accelerate the rate of capital formation (Dunning, 2002). Therefore if developing economies are to increase and sustain capital inflow, economic growth must result in a broad development of human capital (Kosack & Tobin, 2006). Human development will lead to increased savings, which will set in motion series of cycles of benefits to the private, foreign, and public sectors (Nayyar; Dunning; Kosack & Tobin). Furthermore the development of human capital and the private sector will enable an economy to absorb and optimize the potential benefits from FDI. The initial round of economic growth will create a virtuous cycle among economic growth, the private sector and the capital market. Economic growth may increase productivity, savings, and spending, which may stimulate domestic and foreign investments and thus sustained growth. Increased savings stimulate consumption and domestic investments (Kosack & Tobin, 2006). Such an investment environment will attract further FDI inflows and capital into the local economy. The increased savings and spending may also set the groundwork to the development of the equity and capital markets, which sets in motion cyclical rounds of consumptions and reinvestments. According to OECD Report (2002), these cycles of benefit strengthen the mechanisms for sustainable economic development and macroeconomic

stability. On the other hand sustained growth of an economy's capital market may be driven primarily by the scope of development of the private sector and the capability and capacity of the private sector to stimulate growth is primarily contingent on the level of development of its human capital (Kosack & Tobin, 2006). Human development in embryonic private sectors, generally leads to transformations of institutional structures and traditional cultures meant to align with the long term economic and industrial goals of the economy. It also motivates domestic firms to engage in partnership deals with technologically endowed multinational firms. Such deals further reinforce skill levels within the local economy.

The idea that the sectoral composition of FDI is important for economic growth of developing countries can be traced back to the structuralist school of thought on economic development. Singer(1950) argued that foreign investment in primary sectors like mining, food and raw materials offer less scope of technical progress in developing countries. In this view, FDI into manufacturing sector and particularly into technology-intensive industries constitute high quality FDI than FDI into extractive or natural resource-based sector. Since developing countries have weak base in high technology-intensive sectors, entry of FDI has the greater potential of vertical inter-firm linkages, diffusion of new knowledge and other spillovers within the host economy (Kumar, 2002).

In labor intensive industries, developing countries already have a well-developed production base and FDI tends to crowd out domestic enterprises due to their technological and other intangible assets superiority. As a result, the potential for FDI led spillovers to domestic firms is higher in the technology-intensive sector and lower in the case of matured industries. Dutta(1997), however, could not find support to the hypothesis that sectoral pattern of FDI does matter for economic growth. On the contrary, UNCTAD (2005) found that the growth enhancing role of FDI in Africa is quite limited due to poor quality of FDI that it attracts. The region has attracted FDI into enclaves of export oriented primary sectors such as oil and mining and they have limited links to other economic sectors with little knowledge spillovers.

3. Research Background

Kosack and Tobin (2006), dispute the claim that FDI generally results in economic growth by positing that empirical evidence pertaining to developing countries, especially those of SSA, shows that FDI does not create economic growth.

Thompson (2008) has studied foreign direct investments and their effect on an embryonic private sector in the economic development of Ghana. The primary findings were negative and positive correlations between GDP and FDI and MVA[1] respectively. The former finding, in addition to the underdeveloped nature of the private sector, may have negative repercussions on human development and social changes such as the deceleration in the development of social welfare and increases in the poverty level. It is thus imperative that developing nations such as Ghana prioritize policies that emphasize the development of the private sector and linkages between the foreign and private sectors as avenue for stimulating economic growth and social changes. Several econometric studies have demonstrated this relationship. For example, a study of the determinants of US economic growth from 1960 to 2000 found that "The major determinants of economic growth in the United States are total factor productivity growth,

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1 -Manufacturing Value Added

domestic investment growth, and foreign direct investment growth" by Asheghian (2004). Moreover, because of the econometric techniques used, the author was able to conclude that "Causal relationship between foreign direct investment growth and economic growth is unidirectional, running from foreign direct investment to economic growth." A study by Zhu and Lu (1998), for example, suggests that higher FDI intensity leads to higher productivity of domestic industries.

De Mello (1999) looking at both developing and OECD countries (including New Zealand) found that increased FDI led to increased GDP growth in the OECD countries considered. In fact, this effect seemed even stronger for OECD countries than for developing countries. Qi and Li(2008) have studied the impact of spillovers channels of foreign direct investment on knowledge creation in large and medium internal industrial companies in China in their research entitled "FDI spillovers impacts on knowledge creation in China". They used panel data for 28 industries during the period 2001-2005 in this research. Estimation results of their econometric models reveal that FDI plays a positive and significant role in knowledge creation in China during the intended period in all estimation models. Exhibitive effects and work force mobility are spillovers channels in the same period that create favorable results but competitive effect has an unfavorable impact on knowledge creation. However, impact of these three spillovers channels on knowledge creation is weak in China; hence knowledge creation of internal companies depends largely on inputs of the work force and the applied capital in R&D units. Results of their study indicate that China government must improve human capital and technology level in order to establish conditions to help internal companies that could attract and gain knowledge from FDI.

Li (2006) created a set of panel data for 16 OECD countries from the year 1981 to 2000 to study importance of FDI spillovers on innovative activities. Using estimation models that reflect recent development in econometrics of dynamic data panel, he argued that international spillovers were strong and significant by FDI inflows. The earlier studies like Caves (1974) on Australian manufacturing industries, Globerman (1979) on Canadian industries, and Blomstrom and Perssion(1983) on Mexican industries found significant presence of knowledge spillovers from foreign enterprises, evidence from more recent studies [e.g., Haddad and Harrison (1993) on Morocco, Aitken and Harrison (1999) on Venezeula, Xu (2000) on a group of selected developing countries, Kathuria (2000), and Pradhan (2002) on India] shows that such spillovers are insignificant or even negative.

Karimi and Yusop (2009) have explained foreign direct investment and economic growth in Malaysia. There study examined the causal relationship between foreign direct investment and economic growth. Methodology was based on the Toda-Yamamoto test for causality relationship and the bounds testing (ARDL). Time-series data covering the period 1970-2005 for Malaysia, the study found, in the case of Malaysia there is no strong evidence of a bi-directional causality and long-run relationship between FDI and economic growth. This suggests that FDI has indirect effect on economic growth in Malaysia.

4. Theoretical Model of FDI and Economic Growth

The Eclectic Theory and the Product Cycle Model are two models in economic literature about foreign direct investment and economic growth that we explain these models based on Thompson (2008) in subsections A and B:

A. The Eclectic Theory:

Dunning's (2002) eclectic theory highlighted factors that impel MNC to choose among competing firms for their foreign capital. His hypotheses have become the core construct in explaining the dynamics of global trade, foreign investment, and the role of foreign investments in economic growth, especially in developing economies. According to Dunning, the core factors that compel MNC to invest in foreign locations are ownership advantages (O), the locational advantages (L), and the internalization of the ownership advantages (I). The combination of these factors (ILO) forms the theoretical basis of the eclectic theory.

A MNC may also opt to internalize its ownership advantage (technological and management know-how), by setting up production in the domestic market. Typical avenues of disseminating foreign capital are green-field investments, licensing agreements with local firms, joint ventures, or managerial contracts. The underlying drivers of the eclectic theory support the underlying study, which states that private sector development (L) is a prime modality in both attracting FDI and for laying the foundation for stimulating economic and industrial development in developing nations such as Iran.

B. The Product Cycle Model

A critical evaluation of the product cycle model (PCM) may provide an insight as to the conceptual underpinnings behind decisions by MNC to locate production in either domestic or foreign markets such as the developing nations. PCM may also unravel the implicit reasons behind the use of incentives by developing nations such as Iran to lure MNC to invest in their local economies. PCM (Vernon, 1966) conceptualizes the role of the diverse stages of the product cycle in boosting the level of economic and welfare development among regional trading partners. PCM accentuates the use of innovation as a tool to transition the firm from one stage of the production cycle to the next. The model also underscores the core drivers behind decisions by MNC to locate production in foreign markets and decisions to share technological and/or management know-how with host firms. The three stages of a production cycle are the infant, growth, and matured stages.

The PCM conceptualizes that protective policies are generally used during the infant stages of the product cycle as means to recoup investments in research and development (R&D) and as an industrialization strategy. During the infant (new product) stage, the firm will also be driven to sell the innovated product in the domestic market primarily as an import substitution strategy. The principal avenues used by firms to protect and leverage their innovative and original ideas are the use of non standardization of production processes and non dissemination of ideas. To protect innovative ideas, firms normally locate production in the domestic markets and export the end product to their foreign consumers (Vernon, 1966). The significance of R&D in the industrialization efforts of developed economies can be deduced by the strict adherences and enforcements of trade secrets, patent, and copyright laws in global trade and investments. Developing economies, on the other hand, use closed-door policies as a tool to nurture their

infant industries to maturity. The presence of MNC at the infant stages of development and industrialization can be deleterious to the long-term growth of a developing economy (OECD Secretariat, 2002), which supports a general hypothesis of the study that the presence FDI in developing countries, may stifle private sector development. For example, a MNC presence can create a crowding out effect of capital and stifle local innovation, especially in situations where it does not internalize its ownership advantages in domestic markets. Premature exposure of infant industries may also cripple their capacity to adequately compete with multinational corporations.

5. Foreign Direct Investment in Iran

Foreign Investment Promotion and Protection Act (FIPPA) of Iran were ratified by the Parliament in 2002. Some specific enhancements introduced by FIPPA for foreign investments in Iran can be outlined as follows[2]:

• Broader fields for involvement by foreign investors including in major infrastructure;

• Broader definition given to foreign investment, covering all types of investments from "Foreign Direct Investment" (FDI) to different types of project financing methods including "Civil Participation", "Buy-Back" arrangements, "Counter trade", and various "Build-Operate- Transfer" (BOT) schemes;

• Streamlined and fast-track investment licensing application and approval process;

• Creation of a one-stop shop called the "Center for Foreign Investment Services" at the Organization for Investment, Economic and Technical Assistance of Iran (OIETAI) for focused and efficient support for foreign investment undertakings in Iran;

• More flexibility and facilitated regulatory practices for the access of foreign investors to foreign exchange for capital transfer purposes;

• Introduction of new legal options governing the government investor(s) relations.

It should be stressed that FIPPA is a significant complement to a whole host of reforms taking place in Iran's general macroeconomic framework and structural mechanisms. These economy-wide reforms are intended to stimulate and benefit both foreign and local investments.

According to Iran Daily (2010), firms from over 50 countries have invested in Iran in the past 16 years (1992–2008), with Asia and Europe receiving the largest share, as follows:

Table 1: Statistics of Foreign Direct Investment inflow in Iran based on Continent of Origin

Continent of origin	Leading countries investing in Iran	Number of projects	Total amount invested
Asia	United Arab Emirates (UAE), Singapore, Indonesia and Oman	190	$11.6
Europe	Germany, the Netherlands, Spain, UK, Turkey, Italy and France (20 countries in total)	253	$10.9
Americas	Canada, Panama, the USA and Jamaica	7	$1.4

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[2]- Organization for Investment, Economic and Technical Assistance of Iran (OIETAI) (2002)

| Africa | Mauritius, Liberia and South Africa | - | $8 |
| Australia | Australia | 1 | $0.682 |

Source: Iran Daily (2010)

As Money Magazine and Iran Daily (2007) have reported, as of 2007, Asian entrepreneurs made the largest investments in the Islamic state by investing in 40 out of 80 projects funded by foreigners. The largest amount of foreign investment was in the industrial sector, including food and beverage, tobacco, textiles, clothing, leather, chemical, steel and oil derivates. The figure exceeded US$8.76 billion. Water, electricity and gas sector ranked second, attracting $874.83 million. In the third place, the real estate sector absorbed more than $406 million. Investments in service, telecommunication, transportation and mines reached $193 million, $14.3 million and $14.2 million respectively. Asian countries invested $7.666 billion in various projects followed by several multinational consortia. Investments by these multinational companies exceeded $1.39 billion (in four projects). Although European entrepreneurs were involved in 34 projects, they invested only in the range of $1.2 billion in the Islamic Republic. American countries also committed $12.329 million in the country; while investments by African states registered close to $4 million.

6. Empirical Model and Estimation

The investigation for the study follows the general framework of the growth regression model used by Kosack and Tobin (2006), Hermes and Lensink (2003) and Thompson (2008) in their studies to investigate the relationship among FDI, financial development and economic growth. The method of research design called for the application of empirical data as a basis for the investigation of the relationship between the primary and the secondary variables and economic growth. The study collected data spanning from 1970 to 2012 from the WDI (World Development Indicator database of the World Bank.

Theories on growth have identified a range of determinants of growth, including but not limited to capital accumulation, human development , Aid, infrastructure, governance, management and organization, Research and Development (Kosack & Tobin, 2006; Hermes & Lensink, 2003). However, Kosack and Tobin (2006) insights on economic growth, which they credit to Barro's(1997) empirical analysis on neoclassical growth model, primarily influenced the researcher in identifying the variables for the model.

According to theoretical model, our time series econometrics model can be defined as follow:

$$\text{GDPG}_t = \beta_0 + \beta_1 \text{FDI}_t + \beta_2 \text{MVG}_t + \beta_3\,(\text{FDI} * \text{MVG})_t + \text{OPEN}_t + U_t \qquad (1)$$

In this model, dependent variable is GDPG_t (gross domestic production growth at time t) which is used as a proxy for economic growth of Iran. Independent variables are FDI_t (share of foreign direct investment, net inflows to GDP at time t), MVG_t (Growth of manufacturing value added at time t), FDI*MVG_t (interaction between FDI and MVG at time t) and OPEN_t (share of total trade volume to GDP at time t) for Iran's economy in the period 1970-2012. MVG_t is used as private or

domestic sector and OPEN$_t$ shows openness degree for Iran's economy. Also, U$_{t,}$ is disturbance term at time t.

Before estimating the model (1), we first establish the stationary test for the variables by carrying out an Augmented Dickey- Fuller (ADF) unit root tests on the (GDPG), (FDI), (MVG), (FDI*MVG) and (OPEN) series. The results, reported in Table 2, indicate that GDPG, MVG and (FDI*MVG) are stationary, FDI and OPEN are non-stationary at 95% significant level.

Table 2: The Augmented Dickey-Fuller Unit Root Test for Model Variables

Variables	Optimum Lag	Test Statistics	Critical Value	Stationary
GDPG	0	-4.7727	-3.5514	Yes
FDI	0	-3.0884	-3.5468	No
MVG	2	-5.5018	-3.5514	Yes
FDI*MVG	0	-5.7713	-3.5514	Yes
OPEN	5	-3.1630	-3.5731	No

Source: Authors

For evaluating that variables in model have a cointegration relationship, Engel-Granger Two-Steps Test and Cointegration Regression Durbin-Watson (CRDW) Test have been used. In the two-step estimation procedure, Engle-Granger (1978) considered the problem of testing the null hypothesis of no cointegration between a set of variables by estimating the coefficient of a statistic relationship between economic variables using the OLS and applying well-known unit root tests to the residuals to test for stationarity. Rejecting the null hypothesis of a unit root is evidence in favor of cointegration.

Table 3 show the results of unit root test for residuals of OLS regression of model. The results of the test indicate that, on the basis of Akaike (AIC), Schwarz Bayesian (SBC) and Hannan-Quinn Criteria, the white noise of the error term occurs in the zero lag. In other words, the error term has the highest value at the zero lag. The absolute value of Dickey-Fuller statistic at the zero lag is 6.2924 and greater than the critical value (4.8380) at 95% confidence level. It means that the null hypothesis of unit root for residuals is rejected. So, according to Engel-Granger Two- Steps Test, there is a cointegration relationship among variables of model.

Table 3: Unit Root Test for Residuals, Based on OLS Regression of Model

	Test Statistics	**AIC**	**SBC**	**HQC**
DF	-6.2924	-126.0524	-126.8156	-126.3127
ADF(1)	-5.1671	-126.2355	-127.7618	-126.7560
ADF(2)	-3.1158	-126.5656	-128.8552	-127.3464
ADF(3)	-2.6537	-127.5324	-130.5852	-128.5735
ADF(4)	-2.3498	-128.5155	-132.3314	-129.8168
DW-Statistic: 2.2618		95% critical value for the Dickey-Fuller statistic: -4.8380		

Source: Authors

Cointegration Regression Durbin-Watson (CRDW) Test is another cointegration test that has been used. Under the null hypothesis of no cointegration, the DW value will not be significantly different from zero. Therefore, a Cointegrating Regression Durbin-Watson (CRDW) test statistic different from zero implies cointegration. The critical values for the CRDW test must be simulated for different sample sizes and number of regressor in the model, under the null that the residuals are independent random walks. These critical values for the test that have been calculated by Sargan and Bhargava (1983) are given in Table 4.

As it can be seen in Table 3, DW- Statistic (2.2618) is greater than the critical values at all 1%, 5% and 10% significance level that are reported in Table 4. It means that there is a cointegration relationship among variables of model.

Table 4: Critical Values for CRDW Test

Significance Level	Critical Value
1%	0.511
5%	0.386
10%	0.323

Source: Sargan and Bhargava (1983)

After testing cointegration relationship, variables coefficients of model have been estimated by means of Fully Modified Ordinary Least Square (FM-OLS). Park & Philips (1988) and Philips & Hansen (1990) have shown in their papers that FM-OLS method has two main advantages rather than OLS method: a bias correction and an endogeneity correction. Table 5 shows the estimation results of model with FM-OLS method:

Table 5: Fully Modified Ordinary Least Square Estimation of Regression Model

Regressor	Coefficient	Standard Error	T-Ratio	Probability
Intercept	-9.1061	4.8235	-1.8878	0.068
FDI	212.3529	225.3279	0.94242	0.353
MVG	0.75241	0.083910	8.9668	0.000
FDI*MVG	18.3322	8.1282	2.2554	0.031
OPEN	0.20732	0.12200	1.6994	0.099

Source: Authors

Results of regression model estimation (see Table 5) have showed that coefficient of FDI (foreign direct investment, net inflows (% of GDP)) wasn't significant but FDI*MVG (interaction between FDI and MVG) has a significant impact on economic growth of Iran at 5% significant level in the period 1970-2007. It shows the influence of FDI on private sector in stimulating economic and industrial growth in Iran. Also the general assertion in financial literature supports the construct that FDI is the prime modality for stimulating economic and industrial development in developing nations. MVG (Growth of manufacturing value added) as a proxy for private or domestic sector has a significant impact on economic growth of Iran at 1% significant level in the selected period. OPEN (share of total trade volume to GDP) as trade openness degree has a significant impact on economic growth at 10% significant level. It has confirmed that trade openness has an important role innovation transfer and economic growth.

7. Conclusions

In this paper, we have studied the relationship between foreign direct investment (FDI) and economic growth, and the influence of FDI on private sector in stimulating economic and industrial growth in Iran. Some developing economies, especially Iran had given high priority to the inflow of foreign direct investment as a pivotal factor in their economic and industrialization strategies. Such policies should take into consideration the sectoral distribution of FDI in enhancing the economic impacts from the endowed resources of the nation. The result from the concentrated efforts to attract FDI is a key enabler of economic growth.

As an empirical work, we have analyzed the direct and indirect effects of FDI on economic growth of Iran during the period 1970-2012. Results of regression model estimation have showed that coefficient of FDI (foreign direct investment, net inflows (% of GDP)) wasn't significant, but interaction between FDI and private sector has a significant impact on economic growth of Iran at 5% significant level in the period 1970-2012. This finding show that impacts of FDI on economic growth depends on the extent of the development of the private sector. Our findings support economic literature that FDI is the prime modality for stimulating economic and industrial development in developing nations like Iran.

Private sector acts as a channel for the linkage effect to be realized and create positive spillovers. Also, our findings indicate that trade openness is positively and significantly

correlated with economic growth of Iran in the selected period. So, the findings must prod policymakers in economies such as Iran to give utmost priority to the development of the private sector and encourage viable linkages between the private sector and foreign sector.

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