Reviewing the Dynamic Interactions of Foreign Direct Investment, Domestic Investment and Gross Domestic Product on Each Other in Iran (1990-2009)

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Abstract: Investment is one of the key factors to create a steady growth in economy of the developing countries. In today’s world, only the countries are considered important that have a production line and technological support to back it up. For this, a great deal of capital is needed and to accumulate it using a foreign source to supplement the domestic resources sounds rational. This also could be a way to import the modern technology in the country. However, it must be born in mind that in order to attract foreign investment, one should find and modify the influencing factors on direct foreign investment. In this study using the VAR model, we reviewed the interaction between foreign direct investment and domestic investment and the economic growth during 1990-2004 in Iran.

Key words: Foreign direct investment, domestic investment, substitution effect, VAR model, import, Iran

INTRODUCTION

Foreign Direct Investment (FDI) is one of the most important channels to transfer the technology. Transferring technology using FDI usually happens when a country signs a contract with a multi-national company in which the capital and the technological skills is transferred over time also marketing and managerial skills are transferred. In this way, the company uses its franchises in the host country to fulfill the contract. It is also notable to mention that multi-national companies can have the maximum, minimum or the full ownership over his franchises in the foreign country. Since, usually these multi-national companies have the technology, they play an essential role in transferring technology to developing countries. However, they are usually criticized for the lack of accuracy in transferring the technologies. And foreign direct investment is usually on those countries which either have plenty of natural resources or have cheap and expert labor.

The need for foreign investment during the 1960s has been felt in Iran due to lack of modern machinery or technology and inefficiency in investments also the rate of population growth in which was 4% and rebuilding the destructions after war and also competing with the South Eastern Asian countries. In the current situation, the need to keep up with the international market and also keeping down the prices and improving the production lines will lead us to attract more and more foreign direct investment which could lead us to enter the international market and export non-petroleum products. In this study, after a quick glance at the history of foreign investment in Iran, the researchers will review the literature of the research and the previous studies after wards the VAR model is introduced and then the correlation between foreign direct investment, domestic investment and gross domestic product during 1990-2009 in Iran.

MATERIALS AND METHODS

Foreign direct investment: Any kind of investment in a foreign country which is done by a private company or a person and not the loans of countries to one another are called Foreign Direct Investment (FDI). In Foreign Direct Investment, the agency is pursuing a series of monetary ambitions which is not possible through the portfolio of foreign investment (Yao and Wei, 2007; Metwally, 2004). Foreign Direct Investment is a long-term contract based upon mutual interest and lasting supervision of personal property in the country were the company’s headquarter is. This type of investment consists of a primary exchange between the two parties and the subsequent exchanges between the two. Here, three factors are notable:

- Capital equity: Buying one unit of product from another country
- Reinvested examines: Share of the foreign investor

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• Intra-company loans and Intra-company transactions:
Long-term or Short-term loans between the two
companies

According to the Research and Development
Conference of United Nations, Foreign Direct Investment
is a long lasting transaction between the two parties which
shows a control over the resources and capital equity of
the other country or side.

Those in favor of Foreign Direct Investment would
argue that since it has researchers in the western countries
it could research in other places as well (Pearce, 1992).

Foreign investment in Iran: Foreign investment started in
Iran towards the end of 19th century. Investment started
in fishery in the North in search of natural resources and
petroleum industry began. During the years of 1881 and
1992 (1288-1331), 27 agreements has been signed between
Iranian government and Russian counterparts. These
agreements ranged from exploitation of telegraph, fishery
in Caspian sea, establishment of the Russian Bank in Iran,
transportation and insurance, borrowing from Russia and
transition of petrol from Anzaly to Rasht and if we
subtract the amount spent on properties and that Iran
owed to Russia, we can estimate that Russia’s investment
in Iran is about 56.99 million rubles which include the
56.99 million for ships and foreign market places and 20
million for the Russian Bank and finally 10 million for
Linaanazif’s fishery.

The rest of the investment was on the Anzaly’s
harbour company and Gharache Dagh mines and Belgic
railroads shares and also a Greek company’s exploration
of northern forests with Russian investment.

During the years of 1862-1913, about 217 economic
agreements between Iranian government and its English
counterpart has been signed. These were about
establishment and exploitation of telegraph lines, roads
and banks and the licence of publication of bills,
exploitation of mines plus giving the franchise of
petroleum industry plus Iran’s borrowing from Britain and
the railroad between Mahmare (Khoran Shar) Khoram,
Abad and Brojerd. In this period, the overall investment
entered Iran was 68.9 million Lear and by subtracting the
debts and the loans, we would come to 8.11 million Lear.
One of the most important of the contracts was Reuter
(25 July, 1872) and Darcy (28 May, 1901) which ended in
establishment of petroleum company.

During 1332-57, the investment grew more and more
because it was supported by the law (1334), it reached its
peak during (1352-57). Most of the investments were on
industrial machinery. For example, 150 times during
1350-56 were done on industrial tools and electronic
machinery. Considering the effect of investment on
technology, one should say that transformation of
technology during 1345-56 is 28% of foreign investment
which has been accompanied by 26.9% of times giving
license, 14.9% of times foreign investment to establish
industrial structures, 13.8% of times franchises were given,
9.7% were with technical support and only 6.7% of times
a technical team were associated to Iran.

After the revolution, investors emigrated from Iran
and with them a large amount of capital left the country,
alongside with the post revolution crises many banks had
difficulty getting back the money, there were problems
between the workers and employers in the companies. So,
the government had no choice but to unify or nationalize
banks and economic infra-structures. Thus, the Foreign
Direct Investments were limited.

If we take a quick look at the first economic, cultural,
social and political plans, we would notice that there is no
place there for foreign investment. And there were only
numbers of credits which were never fulfilled. With the
2nd plan in 1372 and the admission of foreign investment
and the establishment of a law on how to manage the free
industrial economic areas of Islamic Republic after 15 years
of silence foreign investment came under observation but
it was poorly conducted thus we were unable to attract
foreign investment. We can judge about the low amount
of capital entering Iran only when we compare it to other
developing or developed countries. Table 1 shows the
amount of import and export of capital in Iran, China and
Korea during the 5 years.

If just throw a quick glance at the numbers we would
find out that Iran is not able to compete with them. And
even this very small amount of investment in Iran has
been fluctuating which could be traced back into the lack
of the trust of the investors.

Model: In early 1980s, foreign investment started to rise
both in developed and developing countries. Willing to
attract most of FDI both groups started to compete. Most
of the FDI was attracted by developed countries and in s
search of necessarily technology to develop, developing
countries were keen on inserting the needed technology
via FDI. Based on marketing schemes, we conclude that
there are two ways of FDI affecting economic growth
(Baharumshah and Thanoon, 2006; Seo and Suh, 2006).

Accumulation of capital in the host country: By increasing
the capital, it will help the economic growth of the country.
In this case, the accumulation of capital can temporarily
help the growth by entering the new technology and
replacing the inadequate DI. However if it is not replaced
by DI, it could lead to a decrease in the growth.
Table 1: Foreign direct investments

<table>
<thead>
<tr>
<th>Countries</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iran</td>
<td>610000000</td>
<td>548000000</td>
<td>482000000</td>
<td>996000000</td>
<td>300600000</td>
</tr>
<tr>
<td>Korea</td>
<td>352760000</td>
<td>234598000</td>
<td>352500000</td>
<td>926570000</td>
<td>433650000</td>
</tr>
<tr>
<td>China</td>
<td>4311231221</td>
<td>49533605360</td>
<td>47008708808</td>
<td>543325688</td>
<td>7954238525</td>
</tr>
</tbody>
</table>

Increased knowledge and human resources in the host country: By improving the knowledge the costs of innovations will decrease in a country. Based on what has been said and the importance of FDI, this study is to review the interrelations between the GDP, DI and FDI. And based on this module, VAR tries to explain them. According to Sims, there is a dynamic simultaneous equivalence. The module is as follows:

\[
\Delta \text{FDI}_t = b_{01} + b_{11}\Delta \text{FDI}_{t-1} + \sum_{i=1}^{p} \gamma_{yi} \Delta Y_{t-1} + \\
\sum_{i=1}^{p} \gamma_{f,1}\Delta \text{FDI}_{t-1} + \sum_{i=1}^{p} \gamma_{y,1}\Delta Y_{t-1} + \varepsilon_{1t} 
\]

\[
\Delta \text{DI}_t = b_{20} + b_{21}\Delta \text{DI}_{t-1} + \sum_{i=1}^{p} \gamma_{yi} \Delta Y_{t-1} + \\
\sum_{i=1}^{p} \gamma_{f,1}\Delta \text{FDI}_{t-1} + \sum_{i=1}^{p} \gamma_{y,1}\Delta Y_{t-1} + \varepsilon_{2t} 
\]

\[
\Delta Y_t = b_{10} + b_{11}Y_{t-1} + \sum_{i=1}^{p} \gamma_{yi} \Delta Y_{t-1} + \\
\sum_{i=1}^{p} \gamma_{f,1}\Delta \text{FDI}_{t-1} + \sum_{i=1}^{p} \gamma_{y,1}\Delta Y_{t-1} + \varepsilon_{3t} 
\]

Where:

FDI = Foreign direct investment
DI = Domestic investment
Y = Gross domestic product

The period is between the years of 1974-2009 and the data is gathered from the National Investments Organization, Central Bank of Iran and statistics websites Penn World Table and World Bank. These equations were done by Eviews software.

**RESULTS AND DISCUSSION**

The results of variance of the expected error for variables of DI in Iran have been categorized in a 10 years period. Table 2 shows that DI is explained in the 1st part by the momentum of DI itself. In the long term, FDI reaches 26% and DI hits 60% and GDP is 13%. Table 2 is the results of variance of the expected error for FDI have been categorized. It also shows that in a short period, 97% of the FDI's fluctuation is based on itself and only <3% is due to the two other variables. In the long term, though it is influenced more till it is about 6% and

![Fig. 1: Foreign direct investment, net inflows (GDP (%)) of Iran](image-url)

FDI is due to GDP's changes and about 3% is because of DI (Table 3). They also show that in long term GDP and DI's influence on FDI is insignificant. In this part, the dynamic interaction of the variables for the next two periods is shown and Fig. 1 shows the reactionary function of FDI, DI and GDP against the structural momentum of FDI which equals one unit of standard deviation (Table 4). The 1st chart shows that in long term FDI in a long and slow process is minimized. In the Fig. 2, the results show a standard deviation in FDI and its influence on DI which after the 2nd period is considered positive on DI and in third till tenth period is consistently decreasing and is regarded as positive. Figure 3 shows the
Table 4: Variance decomposition for FDI

<table>
<thead>
<tr>
<th>Period</th>
<th>FDI</th>
<th>DI</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>97.98414</td>
<td>0.357127</td>
<td>1.658732</td>
</tr>
<tr>
<td>2</td>
<td>96.87680</td>
<td>0.719569</td>
<td>2.403695</td>
</tr>
<tr>
<td>3</td>
<td>94.84393</td>
<td>1.659949</td>
<td>3.496118</td>
</tr>
<tr>
<td>4</td>
<td>93.19967</td>
<td>2.553958</td>
<td>4.546372</td>
</tr>
<tr>
<td>5</td>
<td>92.31775</td>
<td>2.505213</td>
<td>5.087034</td>
</tr>
<tr>
<td>6</td>
<td>91.81523</td>
<td>2.816231</td>
<td>5.368538</td>
</tr>
<tr>
<td>7</td>
<td>91.53534</td>
<td>2.941722</td>
<td>5.522939</td>
</tr>
<tr>
<td>8</td>
<td>91.38084</td>
<td>3.019550</td>
<td>5.596614</td>
</tr>
<tr>
<td>9</td>
<td>91.28560</td>
<td>3.072424</td>
<td>5.641973</td>
</tr>
<tr>
<td>10</td>
<td>91.22290</td>
<td>3.109599</td>
<td>5.647798</td>
</tr>
</tbody>
</table>

Fig. 2: The standard deviation in FDI and its influence on DI

Fig. 3: The response of FDI to DI innovation

The effect of FDI's shock is one unit of standard deviation and the effect of this on GDP in 3 periods is increasing rapidly and then decreases in the long-term. Figure 2a-c shows a standard deviation in FDI, DI and GDP, respectively. According to the Fig. 2a, one can see that the effect of DI in FDI during two periods has decreased. And then from the 3rd to the 6th, the changes has been positive and after that they went to zero. Figure 2b shows that the shock of FDI does not influence DI in the long-term. In a way that after the second period, there is equilibrium in the variable.
In Fig. 2c, the interesting point is that the effect of DI’s shock in the changes of GDP in the 2nd period is negative which shows a decreasing inflation in Iran which brings about the King’s parsimony puzzle. Using an analytic framework, Keynes in is parsimony puzzle shows that the increase in capital under any situation is not profitable. And if in the depression, one tends to accumulate more capital it would have negative effect. Keynes tries to show that if in depression people decide to save their money and since saving more means buying less the demand for products decreases and thus, the national wealth decrease which in turn decrease the savings themselves. Figure 4 shows that DI increases for the 1st 2 years but in the 3rd year it began to decrease and after that will go back to normal. Figure 4 shows the reaction of DFI in GDP which is one standard deviation unit. Figure 4 shows that at first, DFI increases rapidly but after that since the investors were not satisfied and thus decreasing the growth process. And this fluctuating change continues until it goes back to its place before the shock. Figure 4 shows the reaction of GDP to a shock which is one unit of standard deviation in GDP. According to the chart, one can see that after the shock GDP is decreasing but in the long-term it goes back to its previous state.

CONCLUSION

The results show a short-term supplementary effect between the two investments. This effect however, does not have a long-term effect. Moreover, the results show the existence of inaction inflation and they prove parsimony puzzle in Iran.

REFERENCES


