

## **FDI and Local Financial Market Development in Oil Exporting and Importing Emerging Economies: VAR Panel Approach**

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### **Abstract**

The literature on foreign direct investment (FDI) has introduced the several links between financial market developments and FDI inflows across developing and developed countries. Also, the empirical literature demonstrates that financial market development reduces informational frictions and promote resource allocation more efficiently. Moreover, financial systems are vital for both productivity and development, where the better developed financial systems can receive more benefit from FDI and FDI inflows depend on the condition of the host country and their characteristics. The paper tries to examine and compare the relationship between foreign direct investment and local financial market development across oil exporting and importing emerging market economies by using VAR panel model during 1970-2014. The results illustrate that there is a relationship between financial market development and FDI, and financial development indicators are causality for FDI, particularly banking system indicators. Moreover, the banking system is more important and efficient in oil importing countries than oil exporting countries to attract FDI from abroad.

**Keywords:** FDI, Financial Market Development, VAR Panel.

**JEL Classification:** F21, P45, O16, G1.

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## 1. Introduction

Generally, various justifications of the linkages between financial market development and FDI inflows through developing and developed countries have been introduced by the literature of FDI. Moreover, the role of FDI in total capital flows has been significantly increased during past decades wherein 1998, more than half of all private capital flows to developing countries have been contained by FDI. This shift in the combination of capital flows has been simultaneous with a change in emphasis among policymakers in developing countries to absorb more FDI, particularly after the 1980s debt crisis and the recent distress in emerging market economies (EMEs). Since FDI has numerous positive effects such as productivity advantages, technology relocations, the presentation of new procedures, managerial skills, and know-how in the domestic market, worker training, international production networks, and access to markets, policymakers have had significant efforts to attract FDI in EMEs during past decades (Alfaro et al, 2003).

If foreign firms suggest new products or processes to the local market, propagation of new technology lead to gain for domestic firms. Also, technology propagation can happen from labor migration as domestic workers move from foreign to national firms. In addition to the direct capital financing that caused by FDI, these gains imply that FDI has a significant role in updating the domestic economy and stimulating growth. Hence, governments have offered extraordinary motivations to foreign firms to absorb companies in EMEs. However, growth regressions introduced by Borensztein et al. (1998) and Carkovic and Levine (2003) indicate that there is little support for FDI as an exogenous positive effect for economic growth at the macroeconomic level.

Also, the empirical studies following Hirschman's (1958) tried to introduce and promote the role of FDI in EMEs including backward linkages to achieve economies of scale for existing firms and the importance of linkages that multinationals can generate for the creation of new firms. However, it should be mentioned that adequate developed financial markets are important to create potential linkages of FDI.

Moreover, the empirical studies such as Hermes and Lensink (2003), Alfaro et al. (2004, 2010), Durham (2004), Azman-Saini et al. (2010), Choong (2012) show that the development of the financial market is important. The traditional insight indicates that financial development is a critical factor and

also the main catalyst for economic growth. As the first reason, Shen and Lee (2006) show that a more developed financial system can raise the efficiency for allocation of resources and monitoring of economic conditions and decrease information asymmetries, so lead to high economic growth. Furthermore, according to Greenwood and Jovanovic (1990) and Levine(1991), financial system can create facility for economic growth via two channels including i) mobilizing savings (i.e. raising the capacity of resources accessible to finance investment, ii) screening and monitoring investment projects (i.e. lowering information attainment costs); hence the efficiency of the projects will be increased via two channels. For the second reason, the volume of credit rationing in financial markets can be influenced by financial systems and so potential entrepreneurs will be constrained which it can affect economic growth. This phenomenon is particularly prevalent for an entirely new technology that influences on domestic and export markets (Alfaro et al. 2004). As the third reason, when foreign firms tend to extend their innovative operations in the host country, the financial sector can determine the ability of foreign firms to borrow, which it can lead to increase the possibility for technological spillovers to local firms. So, if financial markets in the host country are more developed, the diffusion procedure will be more effective and the subsidiary of a multinational corporation can easily invest in the host country (Hermes and Lensink, 2003).

Hence, a sound financial sector is a critical element and prerequisite for the country to emerge new innovations and allocate its resources efficiently (Demetriades and Andrianova, 2004). So, finance can be as a facilitator for growth except for its role as a determinant for growth. It should be mentioned that the productivity of the financial market is important to the economic growth. Indeed, some studies such as Bordo and Meissner (2006) and Beck et al. (2000) have explained that the probability of a financial crisis occurring will be decreased and the economy can be more resilient in the face of crises in countries with efficient financial systems. In fact, the economic growth will be faster in countries with healthier developed financial systems, since the more efficient financial markets and institutions work most productive in mobilizing savings (Bekaert et al. 2003; Ranciere et al. 2006). Moreover, Blejer (2006) show that the probability of banking and currency crises is less in countries with efficient financial systems, and the

countries endure much less when a crisis does happen. While empirical studies as a stylized fact show that the financial system has a significant and positive effect on the relationship between FDI and economic growth, the question is that how financial system effects on this relationship.

Finally, evidence shows that FDI now represents the largest component of net resource flows to developing countries, surpassing official development assistance, portfolio investments, and bank loans (Miyamoto, 2003, De Mello, 1999, Zhang, 2001 and Ashraf Abdelaal, 2010). So this study tries to evaluate the interactions between FDI and financial development indicators in oil exporting and importing EMEs<sup>1</sup> based on data availability. The EMEs has been selected by BBVA Research criteria.

The rest of the paper is structured as follows. Section (2) reviews the literature on FDI and its related interaction with financial development. Section (3) discusses the realized facts. The methodology of research will be represented in Section (4). Section (5) analyzes the empirical results and finally, Section (6) concludes relevant remarks.

## 2. Literature Review

FDI is traditionally measured as a type of international inter-firm collaboration that includes considerable equity stake and effective management decision power in, or ownership control of, foreign enterprises. Moreover, FDI is considered to contain other broader,

<sup>1</sup>. In November 2010, BBVA Research introduced a new economic concept, to identify a key emerging markets. This classification is divided in two set of developing economies. As of March 2014, the groupings are as follows: A) EAGLEs (emerging and growth-leading economies): Expected Incremental GDP in the next 10 years to be larger than the average of the G7 economies, excluding the US. B) NEST: Expected Incremental GDP in the next decade to be lower than the average of the G6 economies (G7 excluding the US) but higher than Italy's. C) Other Emerging Markets. These countries has been divided in two groups as oil exporting and importing economies. Oil exporting EMEs are Iran, Kazakhstan, Kuwait, Mexico, Nigeria, Russia, Saudi Arabia, United Arab Emirates, Venezuela and oil importing EMEs are Argentina, Bangladesh, Brazil, Chile, China, Colombia, Egypt, India, Indonesia, Korea, Malaysia, Pakistan, Peru, Philippines, South Africa, Sri Lanka, Thailand, Turkey.

heterogeneous non-equity forms of cooperation that include the supply of palpable and impalpable assets by a foreign company to a local firm. Those broader cooperative associations comprise the most type of quasi-investment agreement, such as licensing, leasing, and franchising; start-up and international production sharing procedures; joint ventures with limited foreign equity participation; and comprehensive R&D cooperation (De Mello, 1999).

In the existence of FDI, aggregate production in the host economy is carried out by merging labor and physical capital. Generally, by increasing the stock of physical capital in the host economy, as foreign-owned capital is cumulated, and indirectly, by encouraging human capital development and promoting technological improvement, FDI influences growth directly. Moreover, the degree of complementarity and substitution between domestic investment and FDI should be investigated, because a simplistic Schumpeterian view of FDI related innovative investment that emphasizes creative destruction through substitution may neglect the scope for complementarity between FDI and domestic investment. Under complementarity, innovations included in foreign investment may produce, rather than reduce, rent accruing to older technologies (Young, 1993). Furthermore, if FDI is expected to affect growth positively, it may be discussed that it needs some degree of complementarity with domestic investment, at least in the short-run.

Moreover, the presentation of FDI in standard Ramsey models introduces important consequences. Under constant results to domestic capital, the condition for saddle point stability with FDI indicates that negative consumption may not be prevented, and so FDI can be immiserizing (Bhagwati, 1973; Brecher and Diaz Alejandro, 1977; Calvo et al., 1996) or dynamically inefficient. Also, according to endogenous growth models, the long-run growth can be realized if the marginal product of capital be different from the rate of time preference when the stock of FDI rises, and it depends positively on FDI. Hence, if diminishing returns exist in the aggregate, the output growth rate will temporarily increase when in the stock of foreign-owned capital rises. However, the FDI-led growth can also be displayed to depend on the degree of complementarity between capital stocks employing domestic and foreign technologies, and the volume of FDI as a share of GDP. Thus, the capital stock and output have constant

growth rates under linearity, and they are equal to the growth rate of consumption, and permanent increase in FDI lead to long-term in the output growth rate (De Mello, 1999).

## 2.1 Review of the Literature on FDI and Growth

There is a massive literature emphasizing the positive impact of FDI on economic growth. In addition to the direct rise of capital formation of the host economy, FDI can stimulate the growth by presenting new technologies, such as new production procedures and methods, administrative skills, ideas, and new varieties of capital goods. Moreover, the significance of technological change for economic growth has been emphasized in the new growth literature (Grossman and Helpman, 1991; Barro and Sala-i-Martin, 1995). The growth rate of less developed countries (LDCs) is very dependent on the adoption and implementation of new technologies which are available in developed countries (DCs). Hence, the LDCs can catch up to the levels of technology in DCs by adopting new technologies and ideas (i.e. technological spillover). It should be mentioned that FDI is the important channel through which adoption and implementation of new technologies and ideas by LDCs can occur, and the new technologies can spillover from subsidiaries of multinationals to domestic firms in LDCs (Findlay, 1978). Moreover, the spillover effects can happen via different channels such as (i) demonstration and/or imitation where domestic firms copy new technologies of foreign companies, (ii) competition due to entry of foreign companies (that leads to pressure on domestic companies to change their costs and to present new technologies), (iii) linkages (spillovers through relations between multinationals and domestic companies), (iv) and/or training where domestic companies try to promote the skills of their employees to work with the new technologies (Kinoshita, 1998; Sjöholm, 1999a).

However, the main question is what situations in the host country are vital to maximizing the technology spillovers? Generally, in the literature, it has been emphasized that the spillover effect can only be effective under specific characteristics and macroeconomic environment in the host country where they are essential and together specify the absorption capacity of technology spillovers of the host country. Therefore, FDI can only stimulate economic growth via spillovers when there is a satisfactory absorptive capacity in the host country.

The empirical studies have been introduced different results about the role of FDI spillovers on economic growth and also the productivity effects of FDI spillovers on companies or enterprises using micro-level data. While positive effects from spillovers have been shown for, e.g. Mexico (Blomstrom and Persson, 1983; Blomstrom and Wolff, 1994; Kokko, 1994), Uruguay (Kokko et al. 1996) and Indonesia (Sjöholm, 1999b), no spillovers were founded in studies for Morocco (Haddad and Harrison, 1993) and Venezuela (Aitken and Harrison, 1999). These different results may emphasize the critical role of specific host country features essential to let FDI stimulate positively to economic growth via spillovers. Hence, these studies emphasize the difference in absorptive ability between countries to accept FDI.

In this regard, some empirical studies discuss that the attraction of new technologies and management skills and generally high-level capital goods needs high-quality inputs such as labor that is able to understand and work with the new technology. Thus, an assured minimum or 'threshold' level of human capital available in the host country is necessary to happen technological spillover (Borensztein, et al., 1998). This proposes that FDI and human capital are complementary in the procedure of technological transmission. Other empirical studies claim that the existence of well-functioning markets may be more efficient in the procedure of technological spillovers. Under these conditions, the more competitions and fewer market distortions in the environment may enhance the exchange of knowledge among firms form FDI (Bhagwati, 1978; Ozawa, 1992; Balasubramanyam et al., 1996). Also, some empirical studies argue that the creation of property rights and especially intellectual property rights is critical to absorb high technology FDI (Smarzynska, 1999). If intellectual property rights are weakly in a country, foreign firms will carry out low technology investments, which decreases the opportunities for spillover effects and enhancements of productivity of domestic firms.

## 2.2. Financial Development and Economic Growth

Generally, some incentives for the appearance of individual types of financial contracts, markets and intermediaries have been created due to the costs of obtaining information, applying contracts, and making transactions. Also, different kinds and combinations of

information, administration, and transaction costs in linkage with different legal, regulatory, and tax systems have introduced different financial contracts, markets, and intermediaries across countries and throughout times (Levine, 2004).

Moreover, due to modifying market frictions, financial systems naturally affect the allocation of resources across time and place (Merton and Bodie, 1995). For example, the appearance of banks that promote the achievement of information about companies and managers will certainly modify the allocation of credit. Also, financial agreements about the ability of payments by firms in the future will probably affect how people allocate their savings. Similarly, the development of stock and bond markets reveals that people can exchange claims to multi-year plans on an hourly basis instead of abandon control over their savings. Hence, this may deeply alter how much and where people save.

While there are other ways to categorize the functions represented by the financial system, according to the literature, there are five comprehensive functions presented by the financial systems to reduce information, enforcement, and transactions costs and to influence savings and investment decisions and hence growth (Merton, 1992; Merton and Bodie, 1995, 2004). Generally, financial systems:

- Gather information ex-ante about potential investments and allocate capital;
- Scout and check investments and apply corporate governance after providing finance;
- Simplify the trading, diversification, and management of risk;
- Mobilize savings; and
- Facilitate the trade of goods and services.

However, it should be mentioned that although all financial systems present these financial act, there are huge differences in how well financial systems present them.

Generally, financial development happens when financial instruments, markets, and intermediaries modify (not necessarily eliminate) the effects of information, enforcement, and transactions costs, and thus carry out a correspondingly better work at introducing the five financial functions. Thus, the financial development includes developments in the (i) construction of ex-ante information about potential investments, (ii) checking of investments and performing of corporate governance, (iii) exchange,

diversification, and management of risk, (iv) mobilization savings, and (v) trading of goods and services. Each of these financial functions can affect savings and investment decisions and henceforth economic growth. Due to existing many market frictions and significantly different laws, regulations, and policies across economies and over time, one dimension improvements in financial market may have different consequences for resource allocation and welfare and it is depending on the other frictions and their role in the economy (Levine, 2004).

Furthermore, to evaluate and aggregate the links between finance and growth theory, two general points are important and should be considered. First, according to the growth accounting literature, physical capital accumulation necessarily does not lead to long-run economic growth (Jorgenson, 1995, 2005). Therefore, to describe economic growth by finance, the author needs theories that explain how financial development effects resource allocation decisions for higher productivity growth (Levine, 2004).

Second, there are two general indeterminacies between economic growth and the appearance of financial arrangements that promote resource allocation and decrease risk. Particularly, higher returns unclearly influence saving rates due to familiar income and substitution effects. Also, lower risk unclearly influences savings rates (Levhari and Srinivasan, 1969). Therefore, financial decisions that promote resource allocation and lower risk may appear lower saving rates. In a growth model with physical capital externalities, hence, financial development can delay economic growth and create lower welfare if the decreasing in savings and the externality integrate to produce a sufficiently large effect (Levine, 2004).

### **2.3. Interaction between FDI and financial development**

According to the literature, there are several explanations about the links between financial market development and FDI inflows and FDI have a positive influence on financial development through the transfer of new technology and spillover efficiency. However, the mentioned positive impact depends on specific conditions. Stiglitz (1998) argues that capital shortage may lead to poverty in developing countries, has been regularly

associated with deficient and unstable financial markets that fail to gather and distribute resources efficiently. Also, in countries with little money to lend, enterprising stockholders and traders are restricted, because they cannot at once borrow the capital (Bagehot, 1873).

Schumpeter (1912) discusses that monetary institutions have a critical role in the economy and money can be a distinct leader factor. Also, the literature on finance argues that decrease transaction costs and allocate the capital to the highest returns plans will cause higher economic growth and lower poverty. Gurley and Shaw (1955); Goldsmith (1969) and Hicks (1969) discuss that the more developed financial system acts as accelerating for the economic growth. Moreover, McKinnon (1973) and Shaw (1973) claim that an increase in the level of financial development and hence more financial liberalization will create the higher growth.

Greenwood and Jovanovic (1990) and King and Levine (1993) found that financial market development decreases informational frictions and promotes resource allocation more efficiently. Also, Hermes and Lensink (2003) display that FDI has a significant role in stimulating the economic growth but the level of financial development is critical to revealing their positive effects. Moreover, Alfaro et al. (2004) and Choong et al. (2005) argue that FDI has more influences on the developed financial systems. Omran and Bolbol (2003) found that domestic financial developments should protect policies stimulating FDI. Furthermore, Beck et al. (2000) propose that financial systems are essential for both productivity and development. Ashraf Abdelaal (2010) displays that countries with sound financial systems and well business situation can receive more FDI. Rebecca et al. (2009) evaluated the fluctuations of capital flows (including FDI, portfolio flows, and other debt flows) after the financial market liberalization and they have shown that capital

flows have a different response to financial liberalization. Although, portfolio flows have had little reaction to this phenomenon, while FDI flows indicate considerable fluctuations, especially in emerging markets countries (Ashraf Abdelaal, 2010).

James Ang (2009) finds that effective financial system accelerates FDI to produce backward linkages, which are beneficial to the local firms due to production efficiency. This suggests that financial market development has a vital role in the host country and it facilitates the attraction of FDI and absorption of its benefits. Also, Durham (2004) indicated that the more developed financial systems have more ability to absorb capital inflows including FDI. Moreover, the financing of investment and business actions are affected by financial markets. Wurgler (2000) found that even if financial development does not lead to higher levels of investment, it allocates the current investment more efficient.

### 3. Realized Facts

It is accepted that FDI experienced an extraordinary surge in the early 1990s, caused by the elimination of barriers on capital flows, the formation of regional free trade arrangements, and the extension of global vertical production methods and inter-process (component parts) trade (among others, see Fry, 1993; Athukorala and Menon, 1997).

In Tables (1) and (2), net FDI inflows to oil importing and exporting EMEs has been shown. Generally as Table (1) and (2) show, net FDI inflows (as percentage of GDP) increased by more than 6 times during 1990-2014 in oil exporting and importing EMEs. In addition, it shown that net FDI inflow to oil importing countries is more than oil exporting counties which it is not unexpectedly.

**Table (1): Net FDI Inflow (% GDP) for Oil Exporting Emerging Market Countries**

Country	FDI Inflow (% GDP)					
	1990	1995	2000	2005	2010	2014
Mexico	0.97	2.77	2.65	2.87	2.49	1.87
Russia	na	0.52	1.05	2.03	2.83	1.23
Iran	-0.29	0.02	0.04	1.31	0.78	0.49
Kazakhstan	na	4.73	7.01	4.46	5.04	3.49
Nigeria	1.91	3.78	2.46	4.44	1.63	0.82
Saudi Arabia	1.59	-1.32	-0.99	3.69	5.55	1.074
United Arab Emirates	-0.23	0.61	-0.49	6.03	1.92	2.52
Kuwait	0.03	0.02	0.04	0.29	1.13	0.29
Venezuela	0.96	1.32	4.01	1.86	0.48	na

Source: World Bank

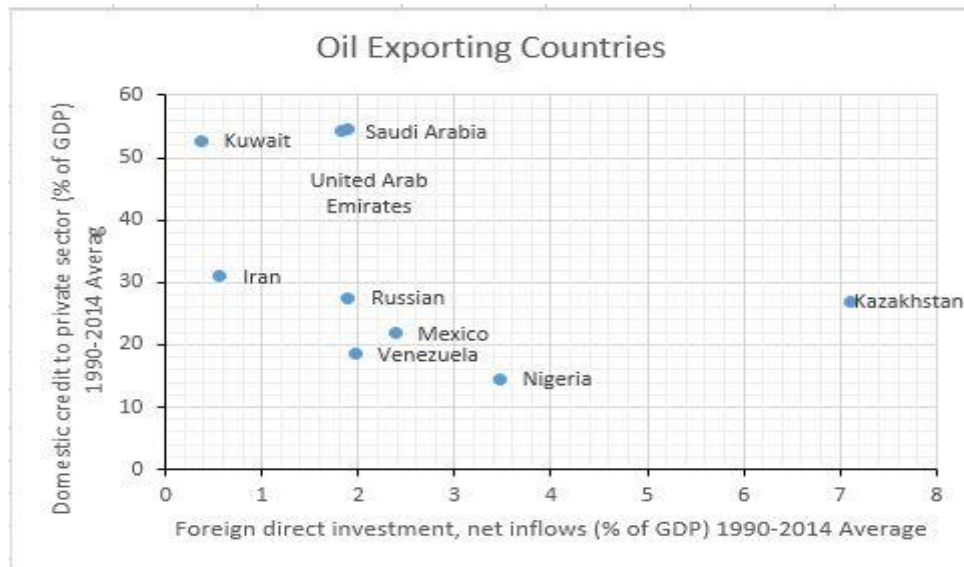
**Table (2): Net FDI Inflow (% GDP) for Oil Importing Emerging Market Countries**

Country	FDI Inflow (% GDP)					
	1990	1995	2000	2005	2010	2014
Brazil	0.21	0.62	4.99	1.73	2.41	4.13
China	0.97	4.89	3.19	4.59	4.04	2.79
India	0.07	0.58	0.75	0.87	1.60	1.65
Indonesia	0.96	2.15	-2.76	2.92	2.03	2.97
Turkey	0.45	0.52	0.37	2.08	1.24	1.59
Argentina	1.29	2.17	3.67	2.38	1.69	1.13
Bangladesh	0.01	0.01	0.53	1.09	1.07	1.44
Chile	2.09	4.14	6.13	5.61	7.23	8.53
Colombia	1.24	1.05	2.44	6.98	2.24	4.28
Egypt	1.70	0.99	1.24	5.99	2.92	1.67
Malaysia	5.29	4.71	4.04	2.73	4.27	3.14
Pakistan	0.61	1.19	0.42	2.01	1.14	0.73
Peru	0.16	4.92	1.59	3.44	5.69	3.89
Philippines	1.19	1.99	2.76	1.61	0.54	2.178
South Africa	-0.07	0.80	0.71	2.53	0.98	1.64
Thailand	2.86	1.22	2.66	4.34	4.32	0.92
Korea, Rep.	0.28	0.32	1.65	1.52	0.87	0.70
Sri Lanka	0.54	0.43	1.06	1.12	0.84	1.19

*Source:* World Bank

Moreover, Figures (1) and (2), data on FDI and financial development show the links between financial market development (domestic credit to private sector) and FDI inflows for oil exporting and importing countries respectively. Generally, the results for

oil exporting countries seem different from oil importing countries. It seem that there is a negative relationship between FDI inflows (%GDP) and domestic credit to private sector (%GDP) for oil exporting countries, while it is positive for oil importing countries.



**Figure (1). FDI Inflows (%GDP) and Domestic Credit to Private sector (%GDP) for Oil Exporting Countries, 1990-2014 (Average).**

*Source:* World Bank and Research Calculation

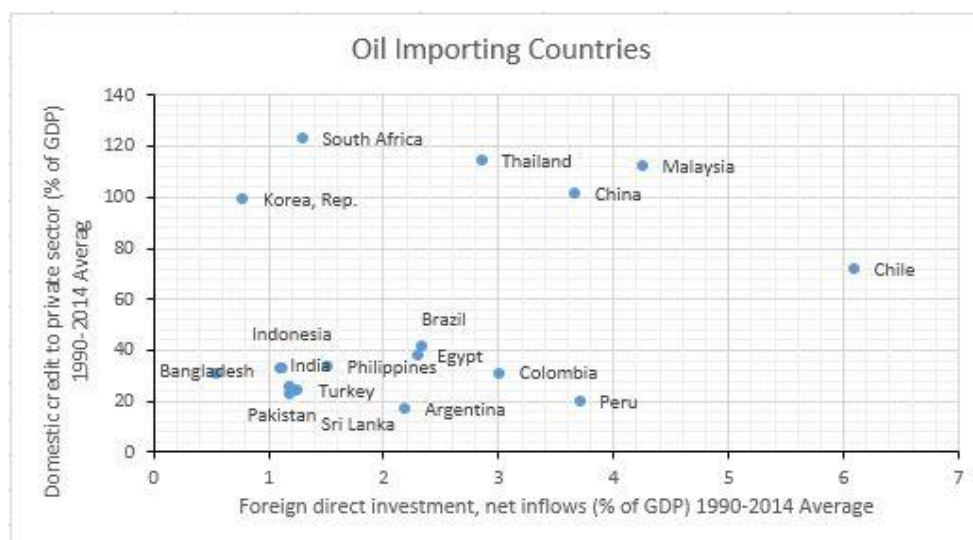


Figure (2). FDI Inflows (%GDP) and Domestic Credit to Private sector (%GDP) for Oil Importing Countries, 1990-2014 (Average).

Source: World Bank and Research Calculation

#### 4. Methodology and Data

The data used in the study including the measures of FDI, and financial market development indicators has been described in this section. One of the essential problems in empirical and theoretical literatures is that, precise causality analysis of the relationship between FDI and financial market development indicators has not been suggested. Because the suitably long time series necessary for using Granger causality tests are not accessible. However, recent theoretical developments in Granger causality approaches have introduced tests using relatively short time series possible through the use of panel data approach which the methodology proposed by Larrain et al. (1997) Hurlin and Venet (2001) and Robert et al. (2005) and applied by Erdil and Yetkiner (2009).

This study tries to investigate Granger causality between FDI and local financial market development indices. It should be mentioned that FDI calculated by the net inflow of foreign direct investment/GDP, which is the total of equity capital, reinvestment of earnings, long-term capital and short-term capital that are displayed in the balance of payments. However, FDI inflows with a negative sign imply that at least one of the three elements of FDI is negative and not balance by positive amounts of the remaining elements. The data are from World Bank Financial Structure Database.

Secondly, local financial market development introduced by various measure which can be categorized into two levels: measures relating to the banking sector and

measures relating to the equity markets. For the first group, the study will employ first, **Private Credit by Deposit Money Banks to GDP (DCPS)** and second, **Private Credit by Deposit Money Banks and Other Financial Institutions to GDP (DCPBS)**. They are the indicators of the activity of financial intermediaries in one of its major function: channeling savings to investors. Both measures have been employed by empirical studies (the first by Levine and Zervos (1998) and the second by Levine et al. (2000, 2002) and Beck et al. (2000).

Third, **liquid liabilities** of the financial system (LL) that it is sum of currency and interest-bearing liabilities of banks and other financial institutions as ratio of GDP. It is the main available index of financial intermediation, since it contains all three financial sectors. Also, as a usual indicator of financial depth and the general size of the financial sector is liquid liabilities which it does not distinguish between the financial sectors or between the uses of liabilities.

For the second group, to calculate the activity or liquidity of the stock markets, the study uses **stock market total value traded to GDP (MCLC)**, which is defined as total shares traded on the stock market exchange as ratio of GDP, and as measure of the size of the stock market, the study uses the **stock market capitalization to GDP ratio (ST)** which equals the value of registered shares as percentage of GDP. Data for financial variables are available from the World Bank Financial Structure.



The selected sample comprises two group countries of emerging markets including oil exporting and importing. In November 2010, BBVA Research introduced a new economic concept, to identify a key emerging markets. This classification is divided in two set of developing economies. As of March 2014, the groupings are as follows: Expected Incremental GDP in the next 10 years to be larger than the average of the G7 economies, excluding the US, and or to be lower than the average of the G6 economies (G7 excluding the US) but higher than Italy's. The first group of our sample comprises namely Mexico, Russian, Iran, Kazakhstan, Nigeria, Saudi Arabia, United Arab Emirates, Kuwait and Venezuela. These countries were classified into oil exporting countries and emerging markets. And the second group emerging markets oil importing include Brazil, China, India, Indonesia, Turkey, Argentina, Bangladesh, Chile, Colombia, Egypt, Malaysia, Pakistan, Peru, Philippines, South Africa, Thailand, Korea, Rep., and Sri Lanka from 1970-2014.

## 5. Empirical Results

In a panel data approach, suppose a time-stationary vector auto-regressive specification. For each cross section  $i$  and  $\forall t \in [1, T]$ :

$$FDI_{i,t} = \sum_{k=1}^p \gamma^k FDI_{i,t-k} + \sum_{k=1}^p \beta^k FIN_{i,t-k} + U_{i,t} \quad (1)$$

$$FIN_{i,t} = \sum_{k=1}^p \lambda^k FIN_{i,t-k} + \sum_{k=1}^p \phi^k FDI_{i,t-k} + V_{i,t} \quad (2)$$

with  $p \in N^*$  and  $U_{i,t} = \alpha_i + \varepsilon_{i,t}$ ,  $V_{i,t} = \delta_i + \omega_{i,t}$  where  $\varepsilon_{i,t}$  and  $\omega_{i,t}$  are  $i.i.d(0, \sigma_\varepsilon^2)$ ,  $i.i.d(0, \sigma_\omega^2)$ , respectively.

At the first step, the hypotheses to be tested are the homogenous non-causality hypotheses, as follow:

For equation (1):

$$H_0 : \beta^k = 0 \quad \forall t \in [1, N], \forall k \in [1, p] \quad (3)$$

$$H_1 : \beta^k \neq 0 \quad \exists(i, k)$$

For equation (2):

$$H_0 : \phi^k = 0 \quad \forall t \in [1, N], \forall k \in [1, p] \quad (4)$$

$$H_1 : \phi^k \neq 0 \quad \exists(i, k)$$

In the general case, the test statistics can be calculated by the following Wald test proposed by Hurlin and Venet (2001):

$$F_{hnc} = \frac{(RSS_1 - RSS_2)/(Np)}{RSS_1[SN - N(1+p) - p]} \quad (5)$$

where SN represents the total number of observations,  $RSS_2$  stands for the restricted sum of squared residuals achieved under  $H_0$ , whereas  $RSS_1$  is unrestricted sum of squared residual calculated from equations 3 and 4. This method pursues a standard Granger causality assumption where the variables listed into the system should be time-stationary. The results for unit root test of FDI and financial development indicators based on Im, Pesaran and Shin test (IPS) (1997) are reported in Table (3). It should be mentioned that because of unbalanced data, IPS test is employed. The null hypothesis is that there is a unit root.

**Table (3): Results of the Unit Root Test for FDI and Financial Market Indicators**

Variable	Oil Exporting Countries		Oil Importing Countries	
	Level	First Dif.	Level	First Dif.
FDI	-4.71 (0.001)	-	-4.45 (0.00)	-
DCPS	1.73 (0.96)	-8.19 (0.00)	6.39 (0.99)	-9.44 (0.00)
DCPBS	2.06 (0.98)	-8.02 (0.00)	5.53 (0.99)	-9.85 (0.00)
LL	0.43 (0.67)	-10.12 (0.00)	4.38 (0.99)	-12.13 (0.00)
MCLC	-1.22 (0.11)	-6.38 (0.00)	-3.56 (0.00)	-
ST	-0.93 (0.18)	-5.26 (0.00)	-1.63 (0.05)	-11.51 (0.00)

The Figures in parentheses are probability.

Source: Research Findings

According to Table (3), FDI is stationary at level in both oil exporting and importing countries. However, the all financial development indicators are stationary at first difference in both oil exporting and importing countries, except MCLC which is stationary at level in oil importing countries. Given these results, we have to use stationary first difference level variables for conducting the Granger causality analysis. It should be mentioned that

the causality relationships between two variables are subject to evaluation. The results for Granger causality test are represented for both oil exporting and importing countries in Table (4) and Table (5) where financial development indicators are Granger cause for FDI in Table (4) and FDI is Granger cause for financial development indicators in Table (5).

**Table (4): Granger Causality Analysis FDI to Financial Market**

Variable	Oil Exporting Countries		Oil Importing Countries	
	$F_{hnc}$		$F_{hnc}$	
DCPS	4.11		3.04	
DCPBS	2.75		2.97	
LL	8.07		2.48	
MCLC	0.29		0.23	
ST	1.71		1.07	

*Source:* Research Findings,  $F_c$  is 1.6.

**Table (5): Reverse Granger Causality Analysis Financial Market to FDI**

Variable	Oil Exporting Countries		Oil Importing Countries	
	$F_{hnc}$		$F_{hnc}$	
DCPS	0.54		2.83	
DCPBS	0.24		2.72	
LL	0.94		1.82	
MCLC	3.01		1.18	
ST	3.02		2.29	

*Source:* Research Findings,  $F_c$  is 1.6.

The panel data VAR models (equation 1, 2) have been fitted to examine the simultaneous relationships between FDI and Financial market development indicators. For both oil exporting and importing countries, the econometric specification has been considered as  $FDI=f(X)$  where X denotes to financial development indicator. The results are given in Table (6) and (7) for oil exporting and importing countries, respectively. The results show that all models revealed an acceptable overall fit. Also, the impulse response functions are represented in

Figures (3) and (4) for both oil exporting and importing countries, respectively.

For oil exporting countries in Table (6), there are positive and significant coefficients for FDI lag, stock market total value traded to GDP and stock market capitalization to GDP ratio, which it implies that countries with high levels of financial market development attract more FDI. However, the coefficients are negative and not significant for domestic credit to private sector provided by banks (% of GDP), domestic credit provided by banks and other financial institutions (% of GDP), liquid liabilities (M3) as % of GDP in oil exporting countries.

**Table (6): Contemporaneous Relationship between FDI and Financial Development Indicators for Oil Exporting Countries**

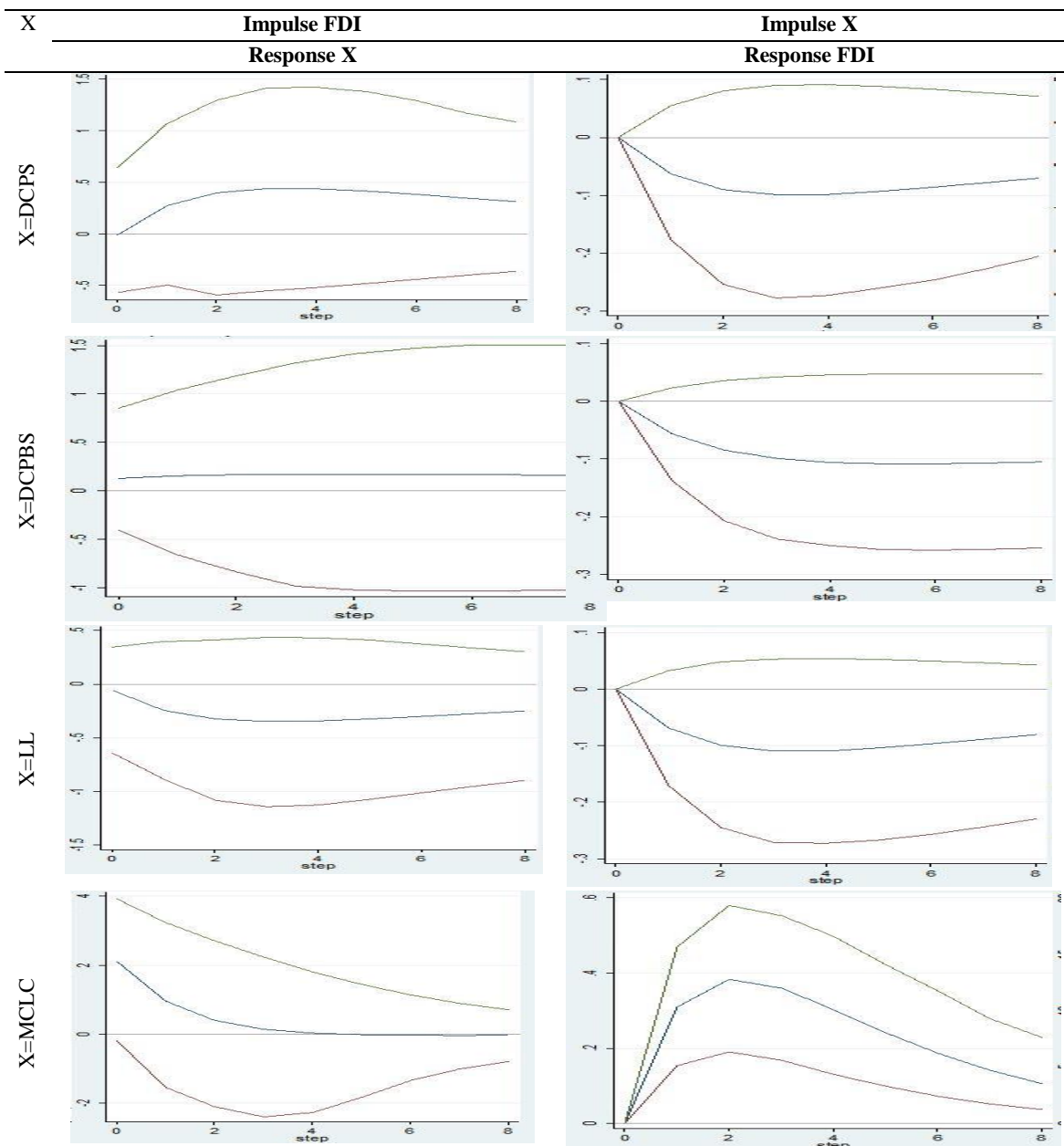
Model FDI=f(X)	Parameter	Coef. I1_ FDI	Coef. I1_ X	Diagnostic Test	
				F	R <sup>2</sup>
X=DCPS	Parameter	0.547	-0.010	76.70 (0.0000)	0.4817
	t-test	12.32	-1.09		
	Prob.	0.000	0.277		
X=DCPBS	Parameter	0.545	-0.009	76.99 (0.0000)	0.4823
	t-test	12.24	-1.27		
	Prob.	0.000	0.206		

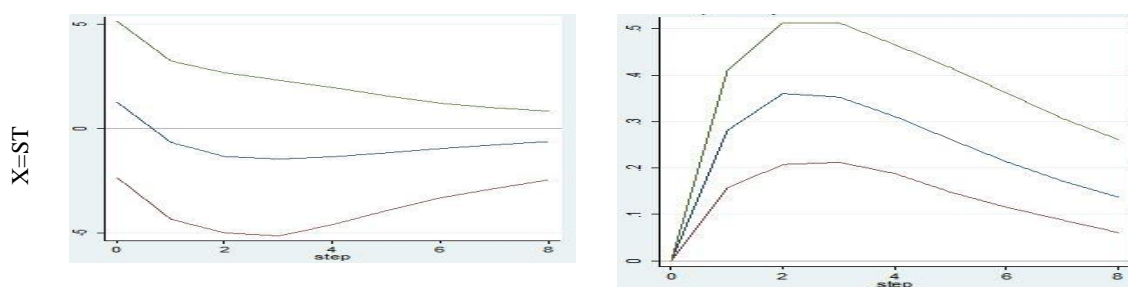
X=LL	Parameter	0.546	-0.013	82.17 (0.0000)	0.4836
	t-test	12.63	-1.31		
	Prob.	0.000	0.191		
X=MCLC	Parameter	0.474	0.019	65.15 (0.0000)	0.7194
	t-test	7.76	4.01		
	Prob.	0.000	0.000		
X=ST	Parameter	0.453	0.013	53.19 (0.0000)	0.7199
	t-test	7.13	4.14		
	Prob.	0.000	0.000		

Source: Research Findings

The impulse response function based on VAR panel results are shown in Figure (3) for oil importing countries. According to the

Figure, the shock will be eliminated after a few periods.





**Figure (3): Impulse Response Functions for FDI and Financial Development Indicators in Oil Exporting Countries**

Source: Research Findings

Results for oil importing countries has been displayed in Table (7). According to the results in Table (7), there are positive and significant coefficients for FDI lag and other financial development indicators except for stock market capitalization to GDP ratio. Also, the significant coefficients of domestic credit to private sector

provided by banks (% of GDP) and domestic credit provided by banks and other financial institutions (% of GDP) implies that the banking sector of oil importing countries and high levels of financial market development lead to attract more FDI.

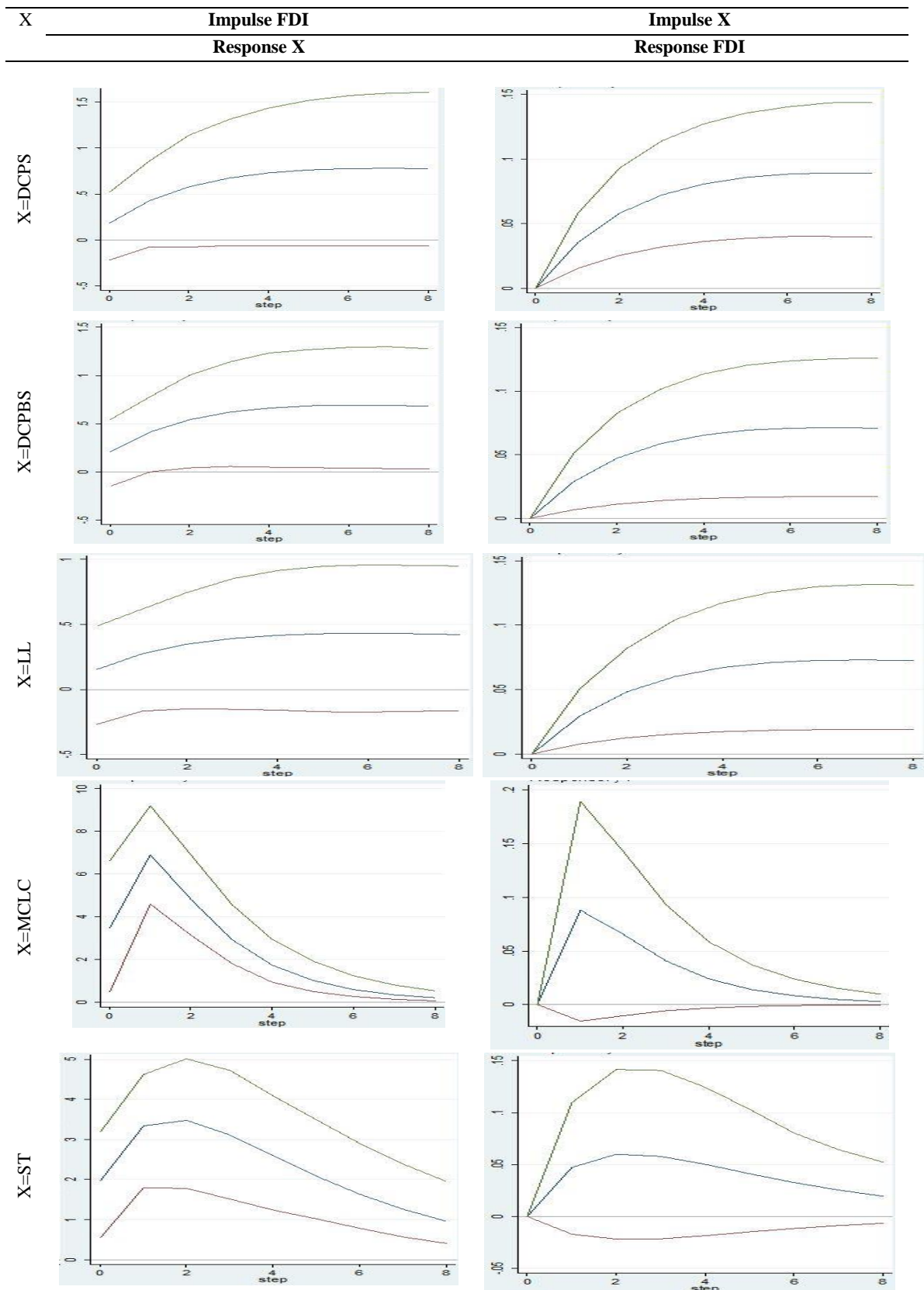
**Table (7): Contemporaneous Relationship between FDI and Financial Development Indicators for Oil Importing Countries**

Model FDI=f(X)	Coef.	Coef.	Diagnostic Test		
			F	R <sup>2</sup>	
X=DCPS	Parameter	0.664	0.007	358.28 (0.0000)	0.6921
	t-test	24.21	3.39		
	Prob.	0.000	0.001		
X=DCPBS	Parameter	0.672	0.006	354.29 (0.0000)	0.6904
	t-test	24.70	2.73		
	Prob.	0.000	0.007		
X=LL	Parameter	0.675	0.006	353.16 (0.0000)	0.6900
	t-test	24.93	2.50		
	Prob.	0.000	0.013		
X=MCLC	Parameter	0.553	0.002	125.41 (0.0000)	0.6731
	t-test	14.98	1.70		
	Prob.	0.000	0.090		
X=ST	Parameter	0.547	0.003	123.40 (0.0000)	0.6765
	t-test	14.70	1.33		
	Prob.	0.000	0.185		

Source: Research Findings

The impulse response function based on VAR panel results are shown in Figure (4) for oil importing countries. According to the Figure, the stock market indicators have had efficient role in the model than banking system

indicators and the results are acceptable between FDI and stock market indicators where shock will be eliminated after a few periods.



**Figure (4): Impulse Response Functions for FDI and Financial Development Indicators in Oil Importing Countries**

*Source:* Research Findings

## 6. Conclusion

Generally, the literature on foreign market investment (FDI) has advanced several explanations of the links between financial market developments and FDI inflows across developing as well as developed countries. Also, the empirical literatures show that financial market development reduces informational frictions and improves resource allocation more efficiently. Moreover, financial systems are important for both productivity and development, where a better developed financial systems can receive more benefit from FDI and FDI inflows depend on condition of host country and their characteristics.

The paper tried to evaluate and compare the relationship between foreign direct investment and local financial market development across oil exporting and importing emerging market economies using VAR panel model during 1970-2014. The selected indicator for financial development were private credit by deposit money banks to GDP (DCPS), private credit by deposit money banks and other financial institutions to GDP (DCPBS), liquid liabilities of the financial system (LL), stock market total value traded to GDP (MCLC) and stock market capitalization to GDP ratio (ST).

Generally the results show that for banking sector development indicators, the paper found that for all samples, financial market development levels Granger cause inward FDI flows. Also banking system is more important and efficient in oil importing countries than oil exporting countries to attract FDI from abroad. On the other word, since oil revenues in oil exporting countries usually transfer to economic sectors without planned program, the financial development did nor occurred and influenced by banking system operations and hence did nor success to attract FDI. So we can conclude that FDI goes to countries with good institutions and fundamentals, helping develop the domestic financial system.

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