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A Pre-Condition for Foreign Direct  
Spillover Effects in Egypt

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## A Pre-Condition for Foreign Direct Spillover Effects in Egypt

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### Abstract

The paper investigates the hypothesis that financial development is the leading channel through which the foreign direct investment (FDI) positive spillovers accelerate growth rate. A simultaneous equations model (SEM) was specified using quarterly data within period (1993-2005). The estimated model evidenced a unidirectional causality from economic growth towards FDI. However, the reverse equations traced the indirect impact of the FDI on economic growth through its dualistic influence on both the financial sector as well as domestic investment. Therefore, further financial liberalization is highly recommended if and only if the planned institutional and regulatory reforms are politically supported. Then, financial derivatives were proposed as a part of the liberalization scenario from one side and as a tool towards managing risks in the Egyptian financial market from the other side.

### JEL classification

G32, E22, F36

### Keywords

Financial Development, Foreign Direct Investment, Financial Integration, Financial Instruments

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*“Economic evolution is a continuity of cause and effect. It is a scheme of blindly cumulative causation, in which there is no trend, no final term, no consummation..., a theory of the process of consecutive change, realized to be self-continuing or self-propagating and to have no final term”, Veblen (1919, pp.36-37).*

## 1. Introduction

Financial development has been highlighted recently as a prerequisite for the positive impact of foreign direct investment and private equities, especially after the successive series of financial crisis in different regions globally wise, raising the importance of risk management awareness and launching new financial instruments. Putting into consideration the fact that having an efficient capital market where the government budget deficits can be financed rather than being monetized through the commercial banking system, leads to low inflation rates contributing to the development of bond market, which in turn is expected to enrich the financial development cycle, thus encourages more capital inflows.

On other hand, foreign Direct Investment (FDI) has been a subject of major concern for several decades particularly for developing economies. Till now, it is believed that bridging the gap in technology between foreign country and the host country is the *main effect of FDI*, since incorporating new inputs and foreign technologies in the production function of the host country augments its level of knowledge, which in turn improves the productivity and growth of the given country as emphasized by Moosa (2002). However, the volume and the type of FDI inflows as well as the degree of its impact on economic growth are argued to depend on the *absorptive capacity* of the host country as evidenced by Grima (2003), where the given capacity can be assessed at the macro-level through the trade regime, legislation, political stability, human resources, institutional and financial absorptive capacity, balance of payment constraints, and the size of the domestic market for the produced goods funded by FDI as argued by Durham (2004).

As a result extensive literature has examined the relationship between foreign direct investment and economic growth whether in developed or developing countries. Most of them showed that FDI growth and GDP growth tends to granger cause each other, however, the direction of causality depends on the recipient economy's

structure “market size, technological capabilities, degree of macroeconomic stability and trade policy”. Few studies have emphasized the role of the financial institution, and argued that the lack of development of local financial market can limit the economy’s ability to take advantage of potential FDI spillovers.

For instance, Borensztein, De Gregorio, and Lee (1998) argue that FDI has a positive growth-effect when the country has a highly educated workforce that allows it to exploit FDI spillovers. Blomstrom, Lipsey and Zejan (1994) argued that FDI has a positive growth-effect when the country is sufficiently rich. Alfaro, Chandra, Kalemli-Ozcan, and Sayek (2001) find that FDI promotes economic growth in economies with sufficiently developed financial markets. They highlight the role of financial development in accelerating the FDI spillovers that is particularly conditioned by costless improvements in the organization of the workforce, thus, maximizing the economic growth. Reisen and Soto (2001) found that developing countries should encourage foreign direct investment and portfolio equity inflows to stimulate long-term growth prospects. This predominant view is that the increased availability of financial instruments and institutions reduces transaction and information costs in an economy helping economic agents to hedge, trade and pool risk which in turn raise investment and economic growth (i.e. the costs of implementing financial strategies for institutions using derivatives can be a tenth to a twentieth of the cost of using underlying cash-market securities). Many economists showed that financial development itself exerts a strong positive effect on economic growth not only through transferring technology and efficiently allocating resource but also through eliminating the risk and managing it effectively to the extent that they can enhance wealth through supervising the intermediation ratio.

For developing countries, empirical research showed that there is a positive but weak relationship between FDI as a share of GDP and gross fixed capital formation (UNCTAD, 2003:77). The overall empirical evidence seems to suggest that although FDI may affect growth, growth itself is also a crucial determinant of FDI.

Despite that both economic theory and recent empirical evidence suggest that FDI has a beneficial impact on developing host countries, recent work points to some potential risks:

- It can be reversed through financial transactions;
- It can be excessive owing to adverse selection and fire sales;
- Its benefits can be limited by leverage; and,
- A high share of FDI in a country’s total capital inflows may reflect its institutions’ weakness rather than strength.

Logistically, a passive policy which assumes that FDI *will substitute for domestic investment* is unlikely to achieve its desired effects, but FDI can generate benefits if the government invests in public infrastructure and helps domestic enterprises create the domestic capabilities needed to absorb and internalize the spillovers. A heated debate has been explored concerning that issue, generating a common trend argued that if the competition between potential FDI is *perfect*, all benefits from the superior FDI management skills accrue to the host economy, leaving the FDI investors with a return on their investment similar to that of the world interest rate. These gains can be categorized as follows: *conventional gains* that allow a more efficient inter-temporal allocation of consumption (e.g. via consumption smoothing); *intrinsic gains* associated with the superior micro-management by FDI investors. However, if the competition is *imperfect*, gains will split between FDI investors and the host country. On the other hand, Bothworth and Collins (1999) provides evidence concerning the effect of three types of capital inflows (FDI, portfolio investment and bank loans) on domestic investment for 58 developing countries and 18 emerging economies during 1978-95. They evidenced that FDI appears to bring about close to one-for-one increase in domestic investment and the other types seems to have no effect or ambiguous.

Moreover, Hausmann and Arias (2000) found that while the share of FDI in total liabilities tends to be higher in countries that are safer, more promising and with better institutions and financial markets, the share of FDI in total flows is not an indication of good health “bad Cholesterol view”. The given view is represented by debt, especially of the short-term variety. FDI is driven by speculative considerations based on interest rate differentials and exchange rate expectations, not on long-term considerations. Its movement is often the result of moral hazard distortions such as implicit exchange rate guarantees or the willingness of governments to bailout the banking system. On the contrary, countries that are riskier with less financially developed markets and weaker institutions tend to attract less capital but more of it in the form of FDI. Razin (2003), evidenced that the share of FDI in total inflows is higher in riskier countries (measured by credit rating for sovereign debt) and those where quality corporate governance institutions are lower.

In sum, there are two broad views; *optimistic modernization* version viewed FDI as a healthy component of a liberal development strategy involving technology transfer, job creation and infrastructure improvement. *Pessimistic dependency* version argued that FDI has a corrupting, homogenizing and explorative character.

It is obvious, that ambiguity is everywhere, whether concerning the bi-directional anticipated relationship between FDI and economic growth, and the role of local financial market as a channel of impact. Highlighting the process through which the

later can act as a technology transformer by introducing new financial instruments, which are expected to allow risk transfer without adding new layers of intermediary claims atop the underlying real capital stock. However, the given view can not be dealt with a stylized fact in case of emerging economies, but each country should be studied on a case by case basis.

The paper is going to present the theoretical background concerning the relationship between foreign direct investment and economic growth, the direction of causality between both variables, why is it important to underline the financial sector development as a leading channel of transmission, channel through which FDI versus economic growth can affect each others in case of Egypt. Then, policy implications will be drawn concerning financial system development and the extent of liberalization in financial services needed to enforce boosting economic growth through FDI spillovers.

## 2. Literature Review

Within the framework of the neo-classical models -the new growth theory- economic growth generally comes from two sources: factor accumulation and factor productivity as argued by Felipe (1997), thus, the impact of FDI on the growth rate of output was constrained by the existence of diminishing returns in the physical capital. Solow (1956) emphasized that FDI could only exert a *level effect* on the output per capita, but not a *rate effect*, unable to alter the growth rate of output in the long run, which in turn is supported by the diminishing return principle, where the FDI can contribute to speeding up a economy's convergence to its balanced growth path but tends to have little effect on the path. Therefore, a group of economists did consider FDI as a drive engine of growth by *mainstream economics*. As opposed to the neoclassical growth theory, the endogenous growth literature points out that, FDI can not only contribute to economic growth through capital formation and technology transfers, Blomstrom et al (1996) and Borensztein et al (1998), but also through the augmentation of the level of knowledge through labor training and skill acquisition, De Mello (1997; 1999). In the context of the New Theory of Economic Growth, however, FDI may affect not only the *level* of output but also its *rate* of growth.

On other hand, the direction of causality between FDI and economic growth has been highly debatable issues. Some economists evidenced that FDI contributes significantly to economic growth. Wang (2002), using data from 12 Asian economies over the period of 1987-1997, found that FDI in the manufacturing sector has a significant and

positive impact on economic growth. Nair-Reichert and Weinhold (2001), using a sample of 24 developing countries, find positive causal relationship running from FDI to economic growth. Similarly, Makki and Somwaru (2004) examine the impact of FDI on economic growth in 66 developing countries and identify FDI as a major source for stimulating domestic investment and growth.

Others showed that the causality runs from economic growth to FDI, Johansen and Juselius (1997) using a cointegrating model with a vector error correction mechanism, utilizing annual data of India over the period 1974-1996.

Moreover, Liu, Burridge and Sinclair (2002) found a bi-directional causal relationship among FDI, growth and exports in china, using a cointegrating framework of quarterly data within 1981-1997.

Obviously, there are enormous numbers of studies that has investigated the relationship between FDI and economic growth. JBIC (2002) has summed up the given relation in an attempt to answer for the following four questions: Does FDI significantly affect the growth of income or productivity? Does FDI “crowd-out” or “crowd-in” domestic investment? Do technology and knowledge spillover occur in the domestic economy? Are there any necessary pre-condition (e.g. human capital, technological or financial development)?

In addition, the relationship between financial development (depth) and economic growth can be traced back to the work of Schumpeter (1912), McKinnon (1973) and Shaw (1973) and recently King and Levine (1993b) who have showed a strong positive link between the given variables, evidencing the predictive power of the former. Moreover, Levine and Zervos (1998) found that stock market liquidity and banking development can positively predict growth, capital accumulation and productivity improvements. Patrick (1966) postulated as well a bi-directional relationship between financial development and economic growth, where he showed that the direction of causality goes from economic growth to financial development is “*demand driven*”, and that goes from financial development to economic growth is “*supply initiatives*”, which in turn stimulate the demand for more financial development. In support, Jung (1986) evidenced that the causal direction running from financial to economic development by less developed countries but reversed in case of developed economies.

On the other hand, only few argued that financial development can act as a precondition for “*Good Cholesterol*” FDI to magnify its positive impact on economic growth. Alfaro, Chanda, Sayek and Kalemli-Ozcan (2005) showed that a 1% increase in FDI generates four times more growth for countries with deeper financial markets.

Hermes and Lensink (2003) showed that a more developed financial system contributes positively to the process of technological diffusion associated with FDI, thus promotes economic growth. At the micro-level, Rajan and Zingales (1998) analyze the relationship between industry-level growth performance across countries and financial development. They found that the state of financial development reduces the cost of external finance to firms, thereby promoting growth. Demirgüç-Kunt and Maksimovic (1996) argue that firms with access to more developed stock markets grow faster. Wurgler (1999) showed that even if financial development does not lead to higher levels of investment, it seems to allocate the existing investment better and hence promote economic growth. Bekaert et al. (2005) showed that foreign investors, enjoying improved financial diversification benefits, will drive up local equity prices permanently thereby reducing the cost of capital, which in turn leads to investment efficiency, then more economic growth. Rioja and Valev (2002), using dynamic panel generalized method of moments (GMM) techniques<sup>1</sup>, found that financial development exerts a strong positive effect on economic growth only once it has reached a certain *size threshold*. They defined the given threshold as follows: the middle regions have moderate levels of private credit that increase within range 0.15:1.00 percent and grew annually within range 5.15:5.9 percent; the low regions have low level of private credit that increase within range 0.02-0.25 percent and grew annually within range -1.46:-0.48 percent, where the effect is uncertain either negative, zero or positive effect; the high regions have high level of private credit that increase within range 0.9:2.5 percent and grew annually within range 1.4:1.9 percent. This indicates that the growth effect of the financial development declines once it reaches very high levels. These results are highly supported by Demetriades and Hussein (1996), who showed that financial development, can affect growth in different manners per country or time horizons and Levine et al (2000), who, showed that the positive and monotonic effect on growth declines as the level of financial development increases, assuming the diminishing returns hypothesis.

Moreover, Eller, Haiss and Steiner (2005) argued that financial reform in emerging economies that normally implemented with more liberalization, usually maximize foreign direct investment in financial sector (FSFDI), which in turn increase the economic growth (gGDP) via the following channels as shown in Figure (1 & 2).

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<sup>1</sup> This technique has been examined for 47 countries during period “1966-95”, where Egypt is included as one of the countries in the middle region level of financial development (i.e.  $0.12 < \text{Private credit} < 0.37$ ).



Figure (1): Identified Transmission Channels between FSFDI and Economic Growth

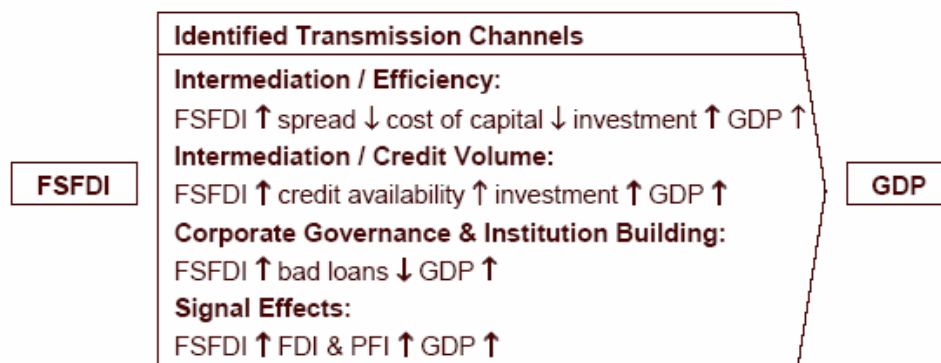
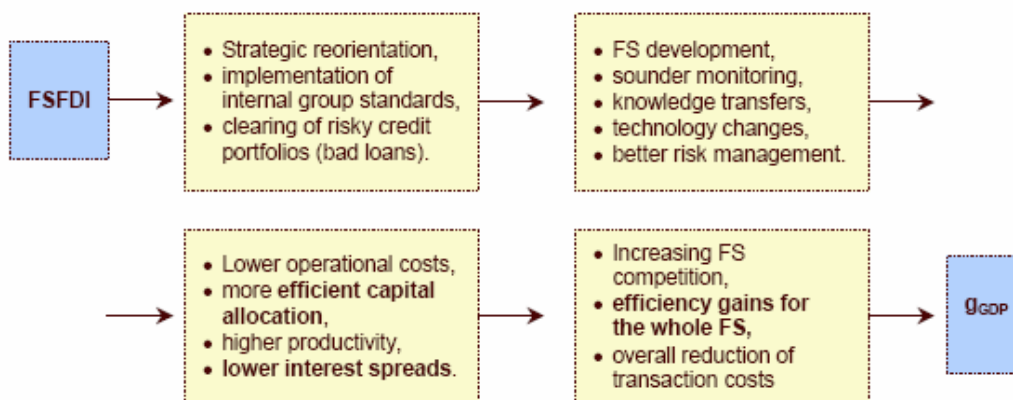


Figure (2): FSFDI-Induced Efficiency-Led Growth

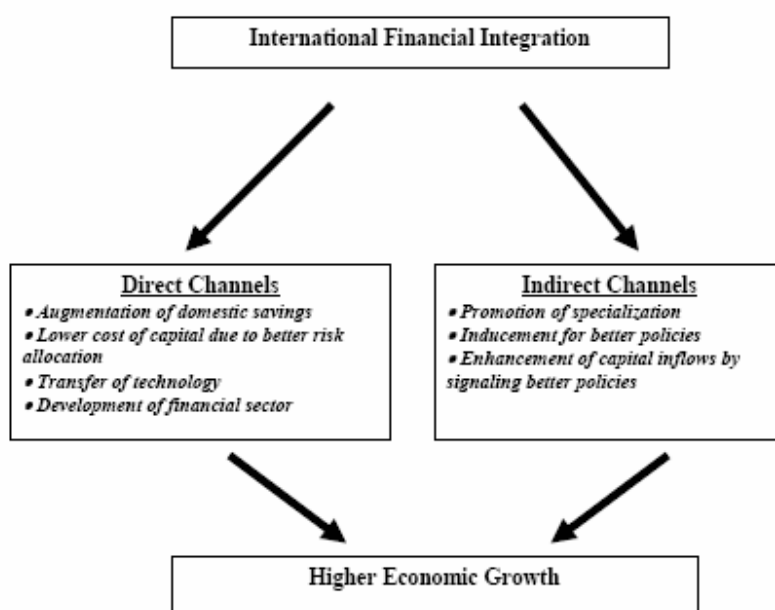


Source: Eller, Markus, Haiss, Petter and Steiner, Katharina (2005), "Foreign Direct Investment in the Financial Sector: The Engine of Growth for Central and Eastern Europe", *EuropaInstitut, University of Economics and Business Administration Vienna, Working paper No. 69, p.6.*

Moreover, it has been enormously evidenced that financial integration moves hand-in-hand with the depth of the domestic financial system, and that the later is the only channel through which liberalization can positively affect economic growth in the long run. Verikios and Zhang (2003) estimated the impact of liberalizing financial services by an increase in the world GNP of about 0.1 percent, putting into consideration that these gains can be realized only in case of being preceded or parallelized by institutional reform, including enforceable property rights, commercial codes and bankruptcy rules as well as sound corporate and public governance, in addition to transparency and anti-corruption measures as well as human capital development as emphasized by Findlay and Sidorenko (2005). In support, Goldsmith (1969) found "*rough parallelism*" between economic growth and financial development. Moreover, François and Schukenckert (1999), evidenced a

positive relationship between growth and net capital real GDP on the concentration ratio of financial sector as a proxy of trade openness. Mattoo et al (2001) run cross-country regression for a sample of 60 countries within period (1990-99), where Egypt was included, evidencing a robust positive and significant relationship between liberalization of financial services and economic growth. Levine (2004) reported that increasing financial deepening from the mean of the lowest quartile to the mean of the upper quartile of the distribution of domestic credit/GDP increases growth by 1 percentage point.

*Figure (3): Channels through which Financial Integration can raise Economic Growth:*



*Source: Prasad, Eswar, Rogoff, Kenneth, Wei, Shange-Jin, and Kose, M. Ayhan (2003), "Effects of Financial Globalization on Developing Countries: Some Empirical Evidence", International Monetary Fund Publishing (March), p. 24.*

However, it is worthy to note that estimated financial depth does not usually represent financial development. This argument has been robustly supported by Rousseau and Wachtel (2005), where they used rolling regression techniques for 84 countries including Egypt over period from 1960 to 2003, and empirically evidenced that for low income countries (income below \$3000), the effect of financial deepening on economic growth is positive but insignificant, however, in middle income range (from \$3000 to \$12000), there seems to be clear evidence of a finance growth relationship. At higher income countries, the relationship disappears.

Here in appraised the importance of defining well the “Financial Deepening”, whose role might affect the relationship between FDI and economic growth. In this research paper, it means explicitly financial development, which is simply the extent to which domestic firms are able to realize their investment plans in case external finance from banks or stock markets is needed, as well as the degree of efficiency in allocating financial resources over investment projects at the macro-level as argued by Hermes (2005).

### **3. Financial Development as a Leading Channel for Egypt: Lessons**

Over period 1967—1996, Hussein (1999) investigated the relationship between financial liberalization, financial development and economic growth in Egypt, using the autoregressive distributed lag (ARDL) procedure similar to that adopted by Pesaran and Shin (1999). He showed that a rise in the ratio of private credit to total credit of 1% leads to an increase in the real GDP per capita growth by 0.17% in the long run.

Moreover, Abu-Bader and Abu-Qarn (2005) examined the causal relationship between financial development and economic growth in Egypt within period (1960-2001), using four indicators of financial development: the ratio of money stock ( $M_2$ ) to nominal GDP, the ratio of  $M_2$  minus currency to GDP, the ratio of bank credit to the private sector to nominal GDP and the ratio of credit issued to non-financial private firms to total domestic credit, excluding credits to banks. The results of the cointegration and granger causality test support the finance-led growth paradigm either directly through enhancing investment efficiency or through increasing investment resources. The variance decomposition support Hussein’s findings that the private credit is more significant to economic growth through increasing investment efficiency than the other measures, since it explains about 35 percent of the forecasting error variance of real GDP per capita after 5 years, and about 24 percent after 20 years, which is the largest proportion compared to other variables.

It is worthy to note that the investigated period covered by the referred authors, witnessed the uneven financial reform and dynamic liberalization introduced by the government in 1991, accomplished in tandem with a comprehensive regulatory reform. Several laws have been issued to develop the Egyptian financial sector: the capital market law no. 95 of 1992 and its amendments in 1998 to reinforce the CMA’s role in regulating insider trading and central depository facilities essential for the dematerialization of securities, the central depository law of 2000 to enhance the

market security copying it in line with the International Organization of Securities Commission's objectives and principles of securities regulation, the banking law no. 97 of 1996, to permit international partners to have majority ownership of joint ventures, Anti-money laundering law no. 80 of 2002 to ensure that funding going through the banking system, whether deposits, transfers, or investment capital, would be scrutinized to ensure that they are not associated with criminal activity. As a result, Egypt has been removed from the list of non-cooperating countries and territories blacklist on February 27<sup>th</sup>, 2004 and real estate finance law no. 148 of 2001 to introduce various mechanisms for long term mortgage financing.

Also, it does not include the Central bank's July 2003 listed here-in below priorities which has been followed by the issuance of law no. 88 and its executive regulations on March 2004, which requires commercial banks to raise their capital levels as an official initiative towards more integration, Femise (2004; pp.66)

- Reinforce the information infrastructure for creditworthiness and other decision making by banks;
- Modernize the payment system, including the introduction of real time gross settlement;
- Strengthen the corporate governance and internal rating systems of banks; and
- Privatize joint-venture banks.

The given law is expected to indirectly result in enhancing competition in the banking sector through lowering and eliminating barriers which limit the operational flexibility, in addition to the anticipated enforcement of electronic signature which is expected to facilitate e-commerce and e-banking services.

Furthermore, it does not cover the dramatic innovations that have taken place in the capital market; the new automated system of disclosure for Cairo and Alexandria Stock Exchange (CASE), which allows online surveillance at CASE and offline surveillance at CMA, backed by a Settlement Guarantee Fund (SGF) to ensure timely settlement transaction, in addition to a new trading mechanism that was initiated in July, 2002. In the insurance sector which witnessed a law that has been prepared by the Egyptian Insurance Supervisory Authority (EISA), and is currently negotiated with the government, in parallel with the recent measures that has been admitted by the ministerial decree of 2003 towards more liberalized insurance eliminating the insurance companies obligations to re-insure 30 percent of non-life and 50 percent of life insurance with the Egyptian reinsurance company and in the mortgage market since 2004 cabinet reshuffle, where the first private real estate finance company was established in January 2004, in which IFC has 20 percent equity stake and law no. 3 was issued in February, 2004 to amend the property registration law no. 70 of 1964, reducing the fees from 4.5 percent to 3 percent.

## 4. Empirical Methodology

In order to test the importance of foreign direct investment for economic growth, and the financial development as a channel of maximizing the positive spillover in Egypt, as suggested by Konan and Kim (2004) where they demonstrated that liberalization of trade in services through foreign investment “commercial presence – mode 3 in GATS” was responsible for the largest share in estimated welfare gains in Egypt.

The researcher specifies a modified version of the simultaneous equations model (SEM) which has been initially conducted by Roy and Van den Berg (2006) to test the relationship between FDI and economic growth rate of the United States, extrapolated from the neo-classical production function “Cobb-Douglas form” spirit. The difference between the modified version and the other initiative is that the former includes private credit “PC” and trade openness “T” rather than labor and exports in addition to the interaction term. Consequently, some changes have been implemented for the explanatory equations; inflation rate “ $\pi$ ” rather than the growth rate of hourly wage index, trade openness “T” rather than per capita income which have been included in equation (1.1), and liquid liability of the financial system LL and market capitalization MC which have been included in equation (1.3). These models are always used to overcome the alleged biases which are anticipated to result in case of variables with an anticipated bi-directional relationship as argued by Greene (2003). The model used quarterly data within period (1993:Q1 – 2005:Q4):

$$\text{Gr (Y)} = a_0 + a_1 (I/Y) + a_2 (FDI/Y) + a_3 \text{Gr (P}_C) + a_4 \text{Gr (T)} + a_5 (F) + t \quad (1)$$

$$(FDI/Y) = b_0 + b_1 \text{Gr (Y)} + b_2 \text{Gr (T)} + b_3 \text{Gr (P}_C) - b_4 (\pi) + t \quad (1.1)$$

$$(I/Y) = c_0 + c_1 \text{Gr (Y/N)} + c_2 (FDI/Y) + c_3 \text{Gr (P}_C) + t \quad (1.2)$$

$$\text{Gr (P}_C) = d_0 + d_1 \text{Gr (Y)} + d_2 (FDI/Y) + d_3 \text{Gr (L}_L) + d_4 \text{Gr (M}_C) + t \quad (1.3)$$

Equation (1) is the main model, the rest of the three equations are explanatory for the exogenous variables of the former. Where Gr (Y) is the *economic growth rate*<sup>2</sup>, (I/Y)<sup>3</sup> is the *domestic investment as a percentage of GDP* to approximate the growth rate of domestic capital, (FDI/Y) is the *foreign direct investment*<sup>4</sup> as a percentage of GDP to approximate the growth rate of foreign capital, (P<sub>C</sub>) is the *private credit financed by*

<sup>2</sup> The data sourced from the quarterly bulletin published by the Ministry of Planning. It is worthy to note that the available data at the referred source was only since 2000, the time series for the period before 2000 have been segmented by the author using the same methodology identified by the Ministry.

<sup>3</sup> Same procedures and source of economic growth rate are used.

<sup>4</sup> The data sourced from the Central Bank of Egypt. However, it is worthy to note that the quarterly data was only given started from year 1999, the time series for the period before 1999 have been segmented based on the annual data published by the Central Bank of Egypt, using same methodology adopted by the Ministry of Planning.

*money bank deposits and other financial institutions as a percentage to GDP*<sup>5</sup> to approximate the financial development level. The given variable has been chosen due to the current bank-based financial system, Levine et al (2000). However, it is worthy to note that in general there are many other variables that have been used as proxy for financial development: ratio of broad money to GDP (M2/GDP), ratio of currency to narrow definition of money, commercial central bank assets as a ratio to the given bank in addition to the central bank assets, and particularly in case of Arab countries where Algeria, Egypt, Jordan and Tunisia are included, the total market capitalization relative to GDP has been chosen by Durhan (2004) as a proxy for financial development to investigate its efficiency as a transmitting channel of positive impacts from FDI to growth. Durham showed that only Jordan scores high enough on stock market capitalization to potentially benefit from FDI. On the other hand, Hermes and Lensink (2003) found that domestic credit provided by banking system should exceed 12 percent of GDP for host country to be able to absorb the potential technology diffusion of FDI. Similarly, Sadik and Bolbol (2003) through their investigation of four different measures of private sector, using Arab countries panel data, found that FDI will start benefiting the host economy only when the banking sector credit to the private sector is above 13 percent of GDP. (F) is the variable which examine the role of FDI on growth through financial market, where FDI and the proxy of the financial sector is interacted *to test for the significance of financial markets in enhancing the positive externalities associated with FDI flows*, and (T) is *the openness to international trade*<sup>6</sup>, using the ratio of the sum of exports plus imports to total output (GDP). Despite of the fact that there are many other variables that have been used by researchers to proxy for trade openness: foreign trade shares measured in relevance to purchasing power parity exchange rates, Alcalá and Ciccone (2004) and adjusted by the country's population size, Neuhaus (2005), or using the volume of trade restrictions which are measured either by the ratio of imports duties to total import volume or the percentage of imports that are subject to a non-tariff trade restriction. Moreover, a time trend,  $t$ , has been added in each equation to capture the effect of deterministic trend in level variables.

In addition,  $(Y/N)$  denotes the *real per capita GDP*<sup>7</sup> as a proxy for the cost of human capital "labor", and  $(\pi)$  the *inflation rate*<sup>8</sup> measured as the percentage change in GDP deflator is used as a proxy for macroeconomic stability.  $(L_L)$  is the *liquid liabilities of*

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<sup>5</sup> In case of Egypt, our estimates for the data sourced from the World Bank Financial Structure Database <http://www.worldbank.org/research/projects/finstructure/database.htm>, for the banking credit to private sector as a percentage of GDP was 31.67% on average, and after including other financial institutions, it reaches 36.7% on average within the investigated period.

<sup>6</sup> This variable is estimated by the authors based on the data published by the Ministry of Trade & Industry.

<sup>7</sup> Data is sourced from the quarterly bulletin of the Ministry of Planning.

<sup>8</sup> Data is sourced from the quarterly bulletin of the Central Bank of Egypt.

*the financial system*<sup>9</sup> measured as currency plus demand and interest-bearing liabilities of banks and non-financial intermediaries divided by GDP, and ( $M_C$ ) is the *market capitalization*<sup>10</sup> which captures the relative size of the stock market, measured as the average value of listed domestic shares on domestic exchanges in a year as a share of the size of the economy (GDP).

*First;* Unit root tests<sup>11</sup> of the null hypothesis of non-stationarity are conducted using *Augmented Dickey-Fuller (ADF) test* that has been initially calibrated by Dickey and Fuller (1981) – asymptotically equivalent – despite of the fact that it may differ substantially in finite samples due to the different ways in which it corrects for serial correlation in the test regression as argued by Blough (1992), to determine the order of integration of the variables. Robustness of results will be checked by reporting *Kwiatkowski, Phillips, Schmidt and Shin (1992) KPSS test*<sup>12</sup>.

*Second;* the model will be estimated using three stage least squares (3SLS), Zellner and Theil (1962) which is a combination of multivariate regression and two stage least squares obtained by estimating a set of non-linear (or linear) equations with cross-equation constraints imposed, but with a diagonal covariance matrix of the disturbance across equations. The parameters estimates obtained are used to form a consistent estimate of the covariance matrix of the disturbances, which is then used as a weighting matrix when the model is re-estimated to obtain new values of the parameters. The first and the second equation will be estimated twice: first using Gr (T) trade openness as a proxy for the degree of liberalization and second using Gr (X) *Egyptian total exports as a percentage of GDP*. The later has been suggested based on Abou Statit (2005) findings, where he evidenced an export led growth paradigm for Egypt, despite of its dependency on raw materials exports using co-integration analysis during 1997-2003.

## 5. Empirical Results

*First;* Both ADF and KPSS tests as shown in table (1) confirm the presence of a Unit Root in the following series: (I/Y), (FDI/Y), (F) and ( $\pi$ ). However, all other variables

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<sup>9</sup> Data is sourced from the World Bank Financial Structure Database.

<sup>10</sup> Data is sourced from the World Bank Financial Structure Database.

<sup>11</sup> The power of unit root tests diminish as deterministic terms are added to the test regressions.

<sup>12</sup> The hypotheses to be tested are  $H_0 : \sigma^2_{\varepsilon} = 0 \Rightarrow y_t \sim I(0)$ ;  $H_1 : \sigma^2_{\varepsilon} > 0 \Rightarrow y_t \sim I(1)$  in the following model:  $y_t = \beta'D_t + \mu_t + u_t$ ,  $u_t \sim I(0)$ ;  $\mu_t = \mu_{t-1} + \varepsilon_t$ ,  $\varepsilon_t \sim WN(0, \sigma^2_{\varepsilon})$ ;  $D_t$  = deterministic components.

are stationary according to both tests. Then, all the non-stationery variables in level were first differenced before being included in the model.

**Table (1): Stationarity Test Results:**

Variables	ADF Test	KPSS Test
Gr (Y)	-5.289	0.203
(I/Y)	-3.738	0.536
(FDI/Y)	-3.256	0.348
Gr (P <sub>C</sub> )	-4.556	0.252
Gr (T)	-4.637	0.196
(F)	-2.726	0.326
Gr (Y/N)	-5.272	0.487
(π)	-2.113	0.509
Gr (L <sub>L</sub> )	-4.909	0.242
Gr (M <sub>C</sub> )	-5.386	0.199

*N.P.:* The critical value for the ADF test with constant and trend at the 90 percent level is -4.135, while that for KPSS test with constant and trend at the 90 percent level is 0.284.

*Second;* the model is estimated using the three stage least squares (3SLS) as shown below:

*Equation (1):*

$$\text{Gr (Y)} = 0.012 + 1.02 \text{ (I/Y)} + 1.53 \text{ (FDI/Y)} + 1.35 \text{ Gr (P}_C\text{)} + 0.067 \text{ Gr (T)}^{13} + 0.552 \text{ (F)} + 0.41\text{E-}03t$$

(5.51)\* (3.39)\* (0.17) (0.75) (2.68)\* (2.05)\*\* (0.35)

*Equation (1.1):*

$$\text{(FDI/Y)} = 0.27 + 0.84 \text{ Gr (Y)} + 0.71 \text{ Gr (T)}^{14} + 1.46 \text{ Gr (P}_C\text{)} - 0.52 \text{ (}\pi\text{)} - 0.12\text{E-}02t$$

(3.05)\* (2.75)\* (0.34) (0.59) (-3.56)\* (0.43)

*Equation (1.2):*

$$\text{(I/Y)} = -0.12 + 1.36 \text{ Gr (Y/N)} + 0.99 \text{ (FDI/Y)} + 0.23 \text{ Gr (P}_C\text{)} + 0.37\text{E-}03t$$

(-4.07) (5.25)\*\* (3.66)\* (4.17)\* (0.28)

<sup>13</sup> In case of using exports Gr(X), the sensitivity of economic growth increased, since the coefficient is 0.251 and significant at 95 percentage level.

<sup>14</sup> In case of using exports in extent of trade openness variable, the coefficient becomes significant at 90 percentage level, these results are highly supported by Eid (2006), where she investigated the direction of causality in short and long run between USFDI in Egypt and Egyptian Exports to the US market. She found a positive bidirectional relationship.



*Equation (1.3):*

$$\text{Gr (P}_C) = 0.08 + 1.76 \text{ Gr (Y)} + 0.81 \text{ (FDI/Y)} + 0.31 \text{ Gr (L}_L) + 1.25 \text{ Gr (M}_C) + 0.34\text{E-}03t$$

(2.45) (3.76)\*\*    (2.13)\*\*    (5.09)\*    (4.72)\*\*    (0.23)

Based on the estimates of equation (1), it is obvious that the coefficients of both variables (FDI/Y) and Gr (P<sub>C</sub>) are positive but insignificant, however, that of the interaction term is positive and significant at 95 percent level, implying the importance of having a well-developed financial sector as *a mean to an end and not an end in itself*, rejecting the hypothesis that both FDI and the interaction between FDI and financial market are zero. Using Alfaro et al (2001) methodology, equation (1) has been estimated without the interaction term, the coefficient of the (FDI/Y) was still positive and insignificant, and however, that of the Gr (PC) was positive and significant at 90 percent level. Moreover, the coefficients of both the domestic investment and trade openness are positive and significant at 90 percent level. However, the coefficient of the former is greater highlighting its importance for the economic growth.

Equation (1.1) results indicate a *unidirectional causal relationship* between economic growth and FDI, where the direction of causality goes from the former, whose coefficient is positive and significant at 90 percent level, this can be rationed based on the fact that the majority of FDI in Egypt is Greenfield investments, whose final impact depends on the behavior of domestic investors. On the other side, the coefficient of the inflation is *negative* and significant at 90 percent level as showed by Hassan (2003) in his examination to the important factors that contribute to FDI and economic growth in the world compared to eight selected MENA countries “Egypt, Iran, Jordan, Saudi Arabia, Morocco, Tunisia, Turkey, and Yemen” with total set of 95 countries within period 1980-2001. The other two variables “openness and Financial market” were found positive but insignificant.

In equation (1.2), all coefficients are positive and significant at 90 percent level except that of the per-capita income which registers the greater impact at 95 percent level. In addition, the sign of the coefficient of the (FDI/Y) implies a *crowding-in effect* between foreign direct investment and domestic investment; it appears to bring about *close to a one-for-one* increase in domestic investment, quiet similar to Loungani and Razin (2001) results. Moreover, the sign and the significance of the coefficient of financial development with regard to the results of equation (1) imply that “*the overall level of financial development makes domestic investment more responsive to output growth – accelerator enhancing effect*” as argued by Ndikumana (2003), where he showed that the level of financial development not the type of financial system

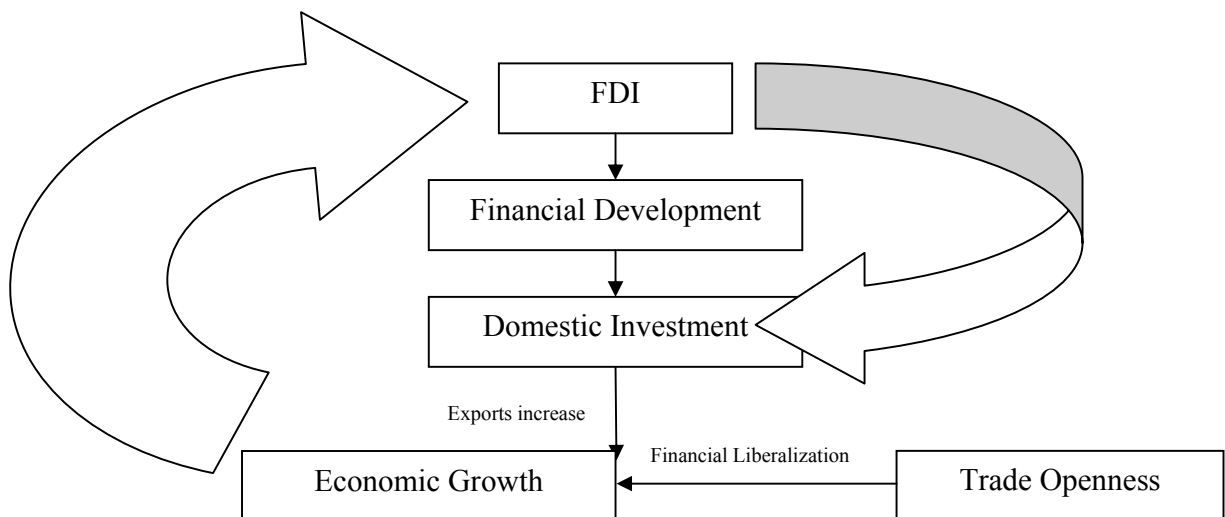
only matters for domestic investment in the long run. His regression results show a positive and statistically correlation between domestic investment and all indicators of financial development.

In equation (1.3), all coefficients are positive and significant. The coefficient of the economic growth in addition to the reverse impact of financial development (in case of excluding the interaction term from equation 1), indicates a bi-directional causal relationship between both variables, with greater impact for the former. On the other side, the sign of the (FDI/Y) coefficient indicates a unidirectional causal relationship directed from FDI to financial development. Then, the two other variables implicitly indicate the extent to which the chosen variable – representing financial development – captures the impact of both sectors; the banking sector and the capital market in Egypt. Moreover, it is worthy to note that the financial development variable is highly sensitive to ( $M_C$ ) greater than to ( $L_I$ ), since the former identify the level credit worthiness on which basis the firms gain more access to banking sector.

## 6. Conclusion and Policy Implications

In sum, it is obvious from the estimated simultaneous equation model, which is justified by the significant reverse relationships between the dependent and explanatory variables in the first equation, that foreign direct investment directly affects domestic investment and indirectly through its impact on financial development. Then the later accelerate the output growth impact of both domestic and foreign investment, leading to an increase in economic growth which in turn positively affects the foreign direct investment. This is analyzed comprehensively in the following figure:

Figure (4): The Direction of Causality in Egypt



Consequently, the drawn figures implies that ONLY in case of *confirming the continuation of the planned institution and regulatory reform*, financial liberalization<sup>15</sup> is expected to increase financial depth in case of Egypt, which in turn positively accelerate economic growth leading to FDI encouragement, that crowd-in domestic investment on one side and expand investment in financial sector raising competition in the sector. As a result, funds will be reallocated in more efficient manner, improving social infrastructure. On the other hand, if the witnessed successive entry into financial sector is accompanied by adequate prudential supervision and full competition, this will result in insider lending and poor investment decision. Thus, practicing risk management is no option any more, it is an

<sup>15</sup> Although the financial sector in Egypt is being liberalized and reinforced, no specific export financing or insurance schemes are available, Femise (2004; p. 112)

obligation to survive in the global market, and one of the highly recommended instrument that is expected to efficiently maximize the anticipated gains is financial derivatives, especially swaps that is to be used initially by the government due to its dual impact; activating bond market leading to approach the targeted liquidity, constructing an effective yield curve, which in turn will empower the monetary policy side and shorten the maturity of the public debt thus empower the fiscal policy side in parallel, creating a stable economic environment where financial soundness is guaranteed. Thus, it is highly recommended to investigate the importance of launching swaps in Egypt as a path towards enhancing the wealth management process in Egypt, directly and indirectly.

Moreover, further supportive polices should be implemented; First, technical and financial assistance should be directed towards the following operational priorities:

- Continued analytical work in-house on a broad front including standard trade diagnostics, investment climate surveys, trade facilitation diagnostics, and sector strategy papers in key trade-related services sectors such as finance, transport and telecommunications;
- Strengthening of regional analytical work and institutions to support in-country and in-region capacity for trade-related work; and
- Strengthening training of trade-related staff in governments to be able to better define and implement the agenda of reform.

Second, domestic political support is needed to deliver improved market access and accelerate the enforcement of new issued laws, amended ones and those under construction.

Third, more effort should be exerted to direct the FDI inflows towards infrastructure within a comprehensive national agenda (i.e. telecommunication, logistics “transport, distribution”, energy network, water and waste network, financial services system, and research and development).

*“The more FDI a developing country secures, the more it needs to service it and keep the system going”, Tandon (2004).*

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## Annex 1: FDI – Growth: Literature Survey

Authors (year)	Data/coverage	Questions addressed	Estimation technique	Major findings
Agosin and Mayer (2000)	UNCTAD. 32 developing countries over the 1970-96 period.	(2)	Three investment equations (one for each region) on pooled data using SUR (seemingly unrelated regression).	In Asia, there has been substantial crowding in of investment, while crowding out has been the norm in Latin America. In Africa, FDI has increased overall investment one-to-one. The positive impacts of FDI on domestic investment are not assured.
Alfaro, Chanda, Kalemil-Ozcan and Sayek (2001)	Net FDI inflows from IMF, <i>IFS</i> . Three samples (39-41 countries), Data averages over the 1981-97 period.	(1), (4)	Cross-country OLS (ordinary least squares) and IV (instrumental variables) regressions.	FDI contributes significantly to economic growth, but the positive effects do not materialise unless local financial markets are sufficiently developed.
Bende-Nabende, Ford and Slater (2000)	WB data on FDI inflows as a percentage of GDP. Five ASEAN countries over the 1970-94 period.	(1), (3)	System of equations estimated using 3SLS (three-stage least squares). A specific equation is estimated for each endogenous dependent variable in the growth regression (six channel equations). The model is estimated separately for each of the five countries.	FDI has a positive and significant coefficient in the growth equation for three out of five countries. The negative sign of FDI in Singapore and Thailand is attributed to the specific characteristics of capital formation in these countries. Authors claim that FDI boosts growth in countries with a fair balance of domestic private capital and FDI. Furthermore, FDI is positively associated with positive spillover effects that lead to human resource development, transfer of technology, expansion of trade and learning by doing. The spillover process is positively related to the level of economic development.
Blomström, Lipsey and Zejan (1994)	FDI inflows from IMF. 78 developing countries over the 1960-85 period.	(1)	Granger causality.	FDI Granger-causes economic growth.
Borensztein, de Gregorio and Lee (1998)	Gross FDI outflows from OECD countries. 69 countries, two periods: 1970-79 and 1980-89.	(1), (2), (4)	Two-equation (one for each decade) system estimated using SUR and IV.	FDI and growth: FDI exerts a positive effect on growth only when a minimum level of human capital exists. FDI and domestic investment: the complementarity between foreign and domestic investment is not robust to different specifications.

## Annex 1: FDI – Growth: Literature Survey (continued)

Authors (year)	Data/coverage	Questions addressed	Estimation technique	Major findings
Carkovic and Levine (2001)	Gross FDI inflows from new WB database and IMF. Period: 1980-95.	(1), (2), (4)	Dynamic panel data estimator (GMM).	The impact of the exogenous component of FDI on GDP growth is not significantly different from zero, nor is FDI strongly linked to productivity (TFP) growth. These results are robust after controlling for the level of human capital and financial development.
De Mello (1999)	Net FDI inflows from IMF's <i>Balance of Payments Statistics</i> . 16 OECD and 17 non-OECD countries over the 1970-90 period.	(1), (4)	Stationarity and cointegration analysis plus dynamic panel estimation (fixed-effect and mean group estimators).	The FDI-growth nexus is not robust in all countries. Where the positive relationship holds, it depends on country-specific factors. FDI enhances output growth through higher productivity in OECD countries, and through capital accumulation in non-OECD countries. The growth impact of FDI tends to be lower in technological leaders and higher in laggards.
Hermes and Lensink (2000)	WB data on FDI as a percentage of GDP. 67 least developed countries, average of 1970-95 data.	(1), (4)	Cross-country OLS with stability tests.	FDI enhance growth once a country has reached a given threshold of human capital and financial market development. For most developing countries (30 of 67, almost all countries in sub-Saharan Africa), this threshold has yet to be attained.
Lensink and Morrissey (2001)	WB data on FDI/GDP over the 1975-98 period in 115 countries.	(1) (4)	OLS and IV for cross-section using the 1975-98 average values. Fixed-effect panel using three ten-year periods.	FDI exerts a robust positive impact on growth. This result is not conditional on the level of human capital. Volatility of FDI has a negative impact on growth, but it probably captures the growth-retarding effects of unobserved variables such as political uncertainty.
McMillan (1999)	IMF and UNCTAD. 1970-96.	(2)	Dynamic panel data on investment equations.	FDI is a strong catalyst for domestic investment in developing countries. Lagged FDI has a stronger effect on private domestic investment than does lagged private domestic investment itself.
Reisen and Soto (2001)	WB data on net FDI inflows. 44 non-OECD countries over the 1986-97 period.	(1)	Dynamic panel data.	Different types of capital inflows have different impacts on growth. FDI and portfolio equity flows show a positive and significant correlation with growth; debt inflows show a negative correlation.

## Annex 1: FDI – Growth: Literature Survey (continued)

Authors (year)	Data/coverage	Questions addressed	Estimation technique	Major findings
UNCTAD (2000)	UNCTAD data on FDI inflows. Five-year periods from 1970 to 1996 for more than 100 LDCs.	(1)	Granger causality and OLS	Results from analysis of time-series characteristics of the explanatory variables show that: (1) FDI is always positively related to contemporaneous growth in per capita income; correlation with past growth rates is not robust; and (2) FDI is not related to past investment, while it is correlated with past trade. Growth regressions including lagged FDI and investment and other controls over individual and pooled periods have poor explanatory power. Lagged FDI is found to exert a positive but not statistically significant impact on growth. It turns out to be significant only when interacted with the level of schooling.
Usha Nair and Weinhold (2001)	WB data on net FDI inflows as percentage of GDP for 243 developing countries over the 1971-95 period.	(1), (4)	Non-dynamic fixed-effect panel, first-differenced instrumented panel and mixed (fixed and random) effect model (heterogeneous panel)	Standard fixed-effects estimation points to a significant and positive impact of FDI growth on GDP growth. Results from the dynamic model under the assumption of heterogeneity reinforce this claim and show how the indirect impact of FDI on growth works differently across countries.
Xu (2000)	Share of MNE affiliates' value added in host-country GDP. 40 countries over the 1986-94 period. Data from the US Direct Investment Abroad Benchmark Survey.	(1), (4)	Instrumental variables panel data estimation with country- and time-specific effects.	FDI boosts total factor productivity growth. Strong evidence of technology diffusion from US affiliates to developed countries, but only weak evidence for developing countries.
Zhang (2001)	Inward FDI stock from WB and UNCTAD/TNC for 11 Latin American and East Asian countries. Period: 1970-95.	(1), (4)	Stationarity and cointegration.	FDI is found to promote growth in five out of 11 countries, four of which are Asian. The impact of FDI on growth is country-specific and tends to be positive where policies favouring free trade and education are adopted to encourage export-oriented FDI.

Source: JBIC Institute (2002), "Foreign Direct Investment and Development: Where Do we Stand?" Japan Bank for International Co-operation, June, pp. 37-39.