

The Impact of Foreign Direct Investment on Economic Growth: *Empirical Evidence* from Egypt (1980 -2022)¹

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ABSTRACT

The impact of foreign direct investment (FDI) on economic booming remains a thorny question for researchers. It has been argued theoretically that FDI is growth-enhancing. However, some existing empirical studies have left researchers and policymakers perplexed as they found an insignificant impact in some special cases. This paper revisited the FDI literature accompanied with analytical review for the FDI spillover transmission channels – that can control the net effect of foreign direct investment on growth – of labor mobility, technological effects, and competition. In addition, it empirically re-examined the impact of Foreign Direct Investment (FDI) on economic growth utilizing time series data of 42 years covering the period 1980 – 2022 in Egypt and estimated Johansen's co-integration and vector error correction model (VECM) in the methodology. The results, based on co-integration analysis, conclusively revealed that FDI affected growth positively in the long run. In addition, VECM has shown that cross-border capital inflows have a significant positive impact on growth in Egypt.

Keywords: Economic Growth, Foreign Direct Investment, Spillovers, Co-integration, VECM..

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I. INTRODUCTION

The international economic era has witnessed unprecedented transformations since the beginning of the nineteenth century, this was shown in the economic globalization that has been achieved through the open markets and removing commercial limitations, also shown in the increase of international trade and the size of its financial exchanges. One of the most important of these financial exchanges is (FDI) which has become of the most remarkable landmarks of the international economy and a feature of its globalization. In this context, the Egyptian economic conference came (the Future of Egypt) to prove the importance and necessity of Foreign Direct Investment (FDI) for Egyptian economic development.

International capital migration has been seen by many international economists and institutions as the catalyst for economic growth and the most effective way to accelerate growth, especially for developing countries. In 2002 OECD published that FDI is even the only way to growth and industrialization for fragile economies. That is why FDI is given priority in any developing country because of its significant impact on the economy.

FDI also contributes to human capital development as the investing country tends to provide employee training and stimulates the skills of the human input, besides the resulting increase in the corporate tax revenues in the host country which represents extra profits generated to the national budget. On the other hand, it may cause negative effects on growth if capital is injected into a country where the fragile situation of institutions, weak market rules, market competitiveness issues, and political instability. This can pressure the balance of payments negatively because of the huge outflow of profits and large input imports (increasing net imports) and weaken the productive capabilities of the host country, this might be the case also if FDI brings more capital-intensive technologies that bring job losses or if the foreign investors tried to monopoly the market and damage local producers.

Positive or negative effects of FDI depend on the area in which capital is injected, investing countries or investing enterprises or agencies internationally choose adequately the country or the region where their money will be invested as their main objective is maximizing their potential profits. When it comes to this point

many factors arise on the surface that contributes to attracting international capital, not only do these factors determine the attractiveness of a country to invest in but also determine the direction of the impact on economic growth and other FDI spillovers.

Literature also asserts the ambiguity of the results; this can be explained by the existing gap in the research concerning the ways through which FDI influences the host country's economic growth. It did not give a strict result in such studies, the availability of factors such as modern management, legal facilities, feasible attractive market conditions, type of investment, and political stability and security may sign a positive impact of FDI on growth, a debate can easily be noticed about the true effect of FDI on growth and the factors behind these mixed results, and it was proven that this effect depends on many factors like the initial situation of the economy, the studied country whether developed or developing, the time frame of the study, degree of openness of the economy, domestic conditions, the state of technology and the type of investment injected.

Therefore, this study investigated empirically the effect of FDI on economic growth in the Egyptian context from 1980 -2022 and explained the results after proper investigation aligned with policy recommendations for enhancing the transmission channels responsible for the direction of FDI's effect on Egyptian economic growth. In this regard, the study pointed insights into crucial actions that should be implemented for policy-making and development planning.

In addition to the introduction and conclusion, the paper is divided to other 4 sections. Section2 devoted for reviewing the literatures related to the paper, the third section investigated FDI spillovers and transmission channels to growth. Section 4 addressed the paper's methodology and database, followed by empirical Investigation to test this mentioned impact in Section 5.

2. LITERATURE REVIEW

Even though the effect of FDI on growth is widely studied, there are still several questions about the real consequences of FDI on an economy, foreign direct investment expands the opportunity of the country to provide various goods and services, in addition to the economic impact in international capital markets by injecting capital into the host country which in turn stimulate the economy and provide employment opportunities. Moreover, FDI expands the exports of

the host country which support the status of the balance of payments and allows for the transfer of technology that cannot be achieved through traditional trade or the various types of financial investments. In addition, it promotes competition in local markets, especially local input markets, but on the other hand, it can have serious negative impacts on growth, each side of these conflicting results has a theoretical background that supports it.

2.1 THEORETICAL FRAMEWORK

Since the great depression, many theories in economics tried to frame the relationship not only between FDI and economic growth but also between FDI and their spillovers, whether employment, technological transfer, or competitiveness. This direction became increasingly important and under the scope of economic studies in the era of globalization. The notion of economic growth promotion through foreign direct investment was emphasized by the neoclassical theory in the Solow growth model. Throughout the model economic growth deeply depends on capital accumulation and technological progress which are affected by FDI through increasing the productivity of the host country either directly and indirectly as a result of the transfer of technology and also capital accumulation can be increased through the increase in FDI leading to higher total investment (Solow, 1956). As a result, output increases and accelerates economic growth mainly through total factor production (technology) and capital formation.

Also, the Endogenous growth literature argued that FDI has a positive impact on the level of output and economic growth through permanent knowledge and technology transfer (Romer, 1986). Unlike the neoclassical theory, that argued that the return on capital will diminish along with the economic growth.

In contrast, dependency theories oppose that FDI promotes the economic growth of the host developing countries instead they claim a negative impact due to many factors assumed by the theory; i) FDI can harm the host developing economy through inequality in favor of multinational corporations, ii) multinational corporations distort the domestic markets of the host country by crowding out national corporations and boosting monopolization, iii) exhaust natural resources iv) disturb income distribution and weaken the local culture, v)

interfere in the political process in the host country by different means which harm the host country (Singer 1950; Prebisch, 1968).

Regarding the relationship between FDI and employment, it depends on the trade theories that argue that FDI affects positively resource allocation, hence increasing total factor productivity and employment in host countries directly and indirectly; directly through job opportunities generated by FDI and indirectly through depending on local inputs which prosper local market (Caves, 1996). This positive relationship can be explained by four factors which are i) employment crowding in, ii) employment creation, iii) employment loss and iv) employment shift. By contrast, when FDI is based on privatization it has a negative effect on employment, as a result of the rationalization process adopted by foreign owners, employment is affected negatively when foreign firms depend on imported inputs instead of local ones (Jenkins, 2006).

Technological spillovers from FDI were discussed by Industrialization theories which emphasize that domestic firms have advantages over multinational corporations which are the geographical and cultural factors, making the multinational corporation, that would like to operate in a foreign country, possess a special advantage over local firms, these advantages are mainly technological dominance, management skills and brands (Caves, 1971; Kindleberger, 1984). Technology transfer as a function of FDI is assumed to be increasing as the FDI increases in the host country, as this links the host country with the industrialized part of the world to speed up the process of catching up with the technological progress worldwide, but this only happens when there is a wide gap between the developed nations and the host country (Findlay, 1978).

From the theoretical background of the relationship between FDI and growth, it is more likely to claim that the effect of FDI differs according to the country's conditions and adapted policies. This hypothesis makes this field of study crucial for policy planning to give more attention to the factors affecting FDI impact on the economy to get the desirable effect targeted from the reform process, especially in developing countries.

2.2 EMPIRICAL LITERATURE

Existing literature on the impact of FDI on the host countries' economic growth is quite divergent as mentioned, although this relationship is investigated widely using data for a single or a group of countries, no consensus on empirical findings among researchers was found (Dinh et al., 2019). Prophecies from early endogenous growth theories suggest positive FDI-Growth linkage. But this theoretical relationship is not always true concerning empirical country-specific literature (Kar, 2019).

For empirical studies in a single country, a positive influence of FDI on growth can be supported by the findings of a study on Korea from 1980-2009, the researcher justified a significant positive impact of FDI and growth as well as on employment, exports, and human capital (Koojaroenprasit, 2012). The same results were found by research on Taiwan from 1959-1995 (Bende, 1998).

Chinese economy seems to be affected positively by capital inflow, a claim that was asserted by a study from 1984-1998 (Zhang, 2001). India and Pakistan followed such results with a positive long-term effect in a studied period from 1974 to 1996 (Chakraborty, 2002; Rahman, 2010). On the contrary, Poland showed no positive effect of FDI on growth in a study from 1993 to 1997, the researcher stated that it even hindered growth in countries such as Romania that were challenged by trade imbalances and monopolies (Konings, 2001).

Besides studies with a single country, the FDI-growth nexus was obvious in studies with a sample of countries, a study on 30 lower-middle-income developing countries from 2000 to 2014 concluded that a negative impact of lagged FDI for one and two periods on the economic growth exists in the short run. On the other hand, in the long run, a positive impact becomes significant (Dinh et al., 2019). Another study on a group of developing countries stated that FDI can be an effective intermediary for growth especially if the relevant country has huge human capital (Borensztein et al., 1998). Also, the growth of 32 Asian countries from 1986 to 2008 was significantly fostered by FDI and global commercial activity (Tiwari and Mutascu, 2011).

In addition, 66 developing countries were studied from 1970 to 1996, 12 Asian countries, 30 Africans, 21 South America and Caribbean, and 3 other island countries, the findings show a positive impact of FDI but only in 29 countries

(44% of the sample) with lower impact in Asian countries (Duttaray et al., 2008). In other studies results were ambiguous and depend on other factors mainly the absorption capacity of the host country which determines the spillover effect of FDI on the economy (Hermes, 2003).

Another research on ten transition European countries from 1994 to 2008 supported the positive effect on growth in both the short run and the long run (Ozturk, 2012). Additionally, a study on the US economic growth found a negative effect of FDI on growth, a result that contradicts a study by Ashegian that revealed positive impact of foreign capital injections as growth accelerator (Ashegian, 2004; Kasibhatla et al., 2008). This came along with many other studies that demonstrated the same results (Maki and Somwaru, 2004; Li and Liu, 2005; Hansen and Rand, 2006)

Up to a point, the relationship in literature is proven to be both ways, most of the empirical evidence supported the positive effect of FDI on growth. However, this effect depends on many characteristics in the host country that can reverse this effect such as openness to trade, capacity to absorb FDI spillovers, level of existing technology, and taxation policies. The paper is trying to reinvestigate this relation analytically in section 3 by elaborating the FDI Spillovers to economic growth and empirically by testing the impact of FDI on Egyptian economic growth through assuming a positive effect of FDI on growth during studied period.

3. FDI SPILLOVERS AND TRANSMISSION CHANNELS

This section of the paper examines the different channels through which FDI productivity spillovers can occur leading eventually to positive economic growth. It is quite important to examine those channels as they control the net effect of FDI on both economic growth and employment.

FDI is not only regarded as a catalyst for growth strategies but there is also a broad perception that FDI improves local firms' productivity given the fact that foreign firms who invest often bring their proprietary technology to the host country (Scitovsky, 1954). FDI-induced productivity spillover effects on economic growth are seen to be demonstrated via three channels: demonstration (technology), worker mobility and unemployment, and competition effects (Papandreou, 1998).

Generally, Literature divided spillover effects into two types according to their nature; technological and pecuniary spillovers: technological spillovers – not captured by market mechanism– take place through the direct effect of FDI on the intra-industry production process caused by the transmission of knowledge from one firm to another and pecuniary spillovers that are captured and driven by market mechanism (Papandreou, 1998).

3.1 DEMONSTRATION AND TECHNOLOGY ADOPTION EFFECT

When it comes to demonstration it means the demonstration of new products and newly implemented production strategies. It's typically a technological spillover that happens through the non-market mechanism “knowledge transmission” that is; local firms make the best use of the superior technology introduced by foreign affiliates and boost their productivity and efficiency by enhancing the production process (Kokko, 1998).

Numerous well-studied processes show how the transfer of technology by FDI occurs. It dives into two main paths: Vertical technological spillover and horizontal technological spillover. Illustrated as follows:

Horizontal spillovers - known as intra-sector spillovers - occur when FDI businesses' knowledge and technology are passed to rival enterprises in the same industry that is, a foreign firm and a local company in the same industry interact such that the domestic company is expected to raise its productivity. And because of the fierce competitiveness, foreign corporations usually defend their technology to prevent domestic competitors from duplication behavior by imposing well-established strategies in the market (Kee et al., 2010).

Vertical spillovers - known as inter-sector spillovers - are indicated as the spillovers that go up the supply chain from foreign intermediate suppliers to local manufacturers or more typically, as shown in Fig1, from foreign-invested enterprises to domestic input suppliers (Newman et al., 2015).

Vertical linkage is a type of interaction that involves a relationship between domestic and foreign corporations from different business sectors. This vertical interconnection could be in the shape of a backward or forward linkage. Backward linkage is a connection in which foreign firms receive a product. However, it's supplied locally by domestic retailers. On the contrary, Forward linkage is just a reversed process (Dine and Chalil, 2010).

Technology adoption depends on imitation, the matter that makes its effect depends on the workers' capabilities to understand and implement the new process so the local firm can achieve efficiency and productivity gains (absorption capabilities). But, if the domestic firms are unable to absorb this technological transmission due to low-skilled labor and less sophisticated managerial strategies, they won't be able to imitate or increase their efficiency instead they will be left behind and most probably lose their market share according to this knowledge gap.

Having mentioned this, the more the absorption capacity of the firm the higher the gains of productivity and efficiency, therefore an increase in the average labor wage demonstrates labor's increasing ability to absorb external technologies and be open to new knowledge unsurprisingly leading to greater efficiency (Sugiharti, 2022).

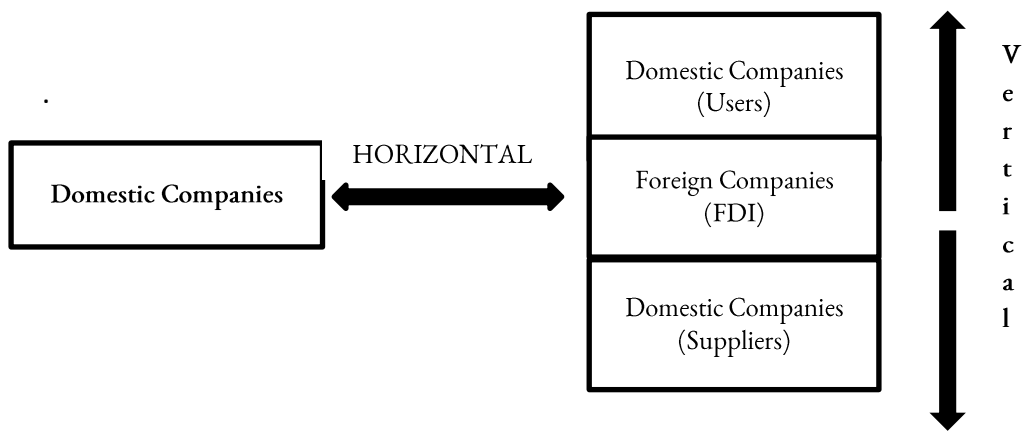


Figure1: Vertical and Horizontal Technological Spillovers

Source: made by authors

Taking the analysis to an Egyptian context, it was published that Egypt enjoys high stock of human capital and a nationwide network of R&D institutions that construct an attractive base for labor abundance, well-established technological infrastructure, and high absorptive capabilities on the micro level. Nevertheless, the contribution of FDI flows to Egypt's local technological development is unpretentious.

Although Egypt gives high attention to local technology institutions, high education, and human capital development, it gives modest attention to

international technology transfer (ITT). It's not only about the severe limitations on the imports of capital goods which are the main source of ITT, but also about the trivial role that technological licensing plays whether internally or externally. The domestic shortcomings regarding ITT are the main reason behind the inadequate exploitation of FDI resources that eventually restricted the potential of the Egyptian economy to grow (Moran and Javorcik, 2007).

Another reason could be that the national spending on R&D was only 0.22% of GNI within a decade (1987-1997) which is even far below the benchmark for developing economies of 1% of GNI. Unsurprisingly this has been reflected in the negligible value of technology-based product exports and echoed in the small number of technology patents held by locals. According to people assembly, there is very limited technological licensing activity. That is; the total number of patents held by Egyptian residents internationally was only 12 patents between 1992 and 1996 (Correa, 2000).

Up to a point, although there is an adequate technological infrastructure in the country, it suffers from inadequate exploitation of R&D resources, weak integration between spending on R&D and spending on its actual activities, inefficient domestic technology management strategies represented by a shortage of supervisory managerial skills and ITT marginalization, and this what makes the technological spillover effect on growth in Egypt positive but unpretentious (Kadah, 2019).

3.2 LABOR MOBILITY CHANNEL AND UNEMPLOYMENT

The labor mobility channel differs from the transmission channels of technology and demonstration in the idea that the skills and experience embodied in the human capital can only be transmitted through the physical mobility of labor across firms in the economy whether they are local or foreign or foreign affiliates. That's why labor mobility channels can take place via technological or pecuniary spillovers (Chattoraj, 2023).

It has been argued that skills, high knowledge, and experience embedded in the human capital of domestic workers reflect the technological spillover. When those skilled or trained workers by non-local affiliates move to domestic corporations, they boost their productivity. On the other hand, non-local firms

may offer a higher wage compared to local firms to attract skilled and experienced labor. Inducing a pecuniary spillover effect (Beata, 2004).

Regarding unemployment, there is interdependence between foreign direct investment and different aspects of the labor market creating a connection between FDI and unemployment in a growth context. Literature reveals the effect of FDI on unemployment as a channel of growth is highly dependent on the type of investment (Said et al., 2022).

From one side FDI affects unemployment via an indirect impact by increasing the real wages of labor, thus increasing government tax revenues and local investment projects that will give a space for creating new job opportunities by investing in labor-intensive projects, another indirect effect is that FDI will reduce brain drain phenomenon and preserve the factors of production (human capital and physical capital) as skilled workers can work with the foreign investor in the host home country and add to its GNP instead of leaving the country. On the other side, FDI has a direct impact on unemployment through increasing job chances in the complementary back and front industries (Alalawneh et al., 2015).

This favored impact of reducing unemployment in the economy is dependent not only on the type of investment and the way the investment is demonstrated but also on the related sector into which investment is injected. If it is the services sector, more labor will be laid off or can be easily replaced by their foreign counterparts, on the contrary, if it is an industrial sector; it will boost employment as this sector is considered to be a labor-intensive sector. Also, if it is a new foundational investment, it will create new job opportunities. But, if it's acquisitions or mergers, it will cause more unemployment (Alalawneh et al., 2015).

Taking this to the Egyptian context, services get the highest level of FDI injections although it isn't the largest sector contributing to growth. In 2016, the largest sectors contributing to growth were mainly commodity sectors. The petroleum and mining sector was the highest, followed by wholesale trade, manufacturing, and agriculture.

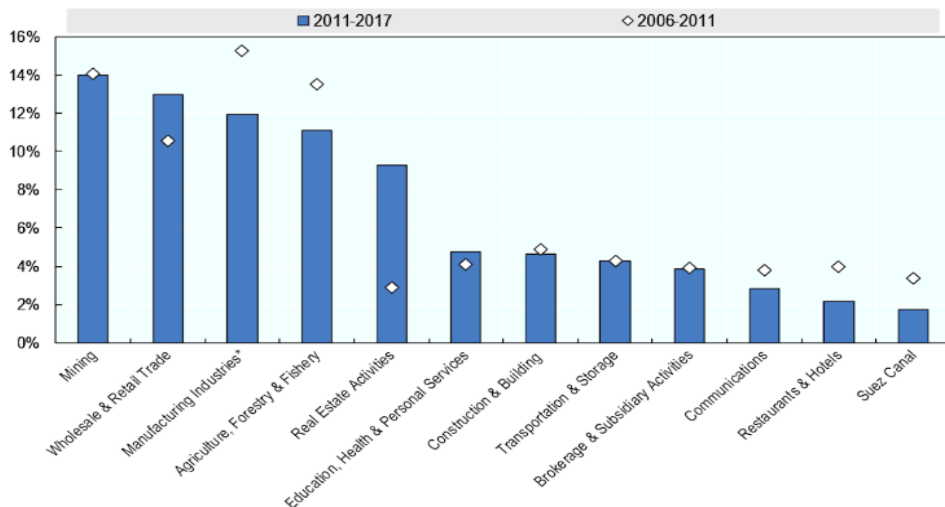


Figure 2: Sectoral contributions to Economic Growth in Egypt

Source: OECD based on Central Bank of Egypt Data

The relatively large sectors contributing to growth have limited potential to create jobs and absorb unemployment as they have relatively lower labor intensity. Given that most of FDI contributes to the services sector, the relation between FDI and unemployment rates shows a negative correlation; FDI injections helped alleviate unemployment in Egypt as shown in Fig (3). However, there is a serious threat from concentrating FDI in the services sector as it might lead to much higher levels of unemployment if the competition between domestic and foreign entities was in favor of the foreign players in the economy.

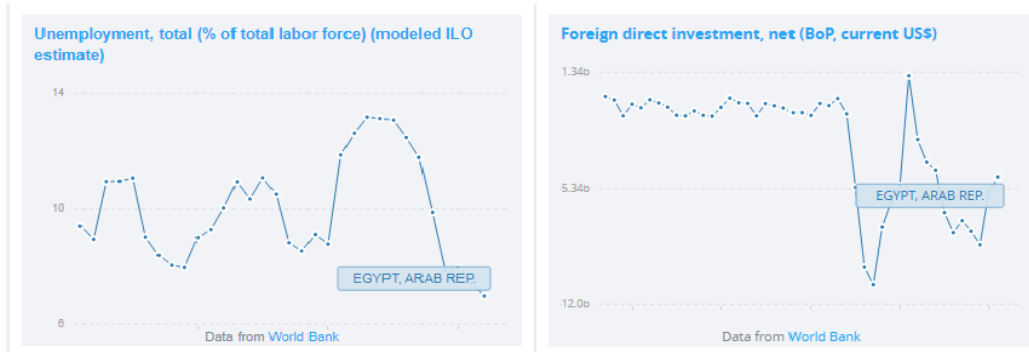


Figure 3: Unemployment and FDI from 1980 to 2022

Source: made by authors using World Bank data

3.3 COMPETITION CHANNEL

It is postulated that competition - unlike other channels - affects growth through market mechanisms as it is responsible for a pecuniary spillover effect in the economy. Competition can be considered an incentive for domestic firms to increase their productivity through utilizing the existing technology and resources more efficiently in production or even by shifting to a new technology through imitation which induces a positive pecuniary spillover effect (Murakami and Otsuka, 2020). Consumers also will gain access to a wider range of competitively priced products.

In contrast, if foreign firms are going through well-established managerial strategies to conquer the market and prevent local firms from imitating their technology, a negative pecuniary spillover effect will be demonstrated upon the loss of domestic firms their market share or getting out of the local market altogether, an effect named by economists crowding out effect (Denema and Mansoob, 2018).

In conclusion, FDI spillovers do have a positive transmission impact on the economic growth of Egypt. However, this contribution is very modest due to the lack of R&D spending on actual activities, inefficient technological licensing activities, and the shortage of managerial skills. Moreover, FDI spillover effects find their path through some transmission channels. The more these channels are developed and enhanced, the greater the gains from cross-border capital injection.

In this context, the spillover effect through its channels can have a significantly stronger beneficial impact if local firms have the criteria of developed transmission channels explained as follows:

Firm-level heterogeneity:

Firms differ when it comes to their technological competence and absorptive capacity. Therefore, spillovers may not emerge evenly across domestic firms, or be equally valuable to all existing firms in the economy (Demena and Mansob, 2018). If there is a technology gap between local and foreign firms that is, domestic firms have low technology levels, this will increase the probability of higher spillover gains (Wang and Blomstorm, 1992).

Absorptive capacity:

Spillovers are postulated to depend on the absorptive capacity of domestic firms. The concept of absorptive capacity includes the ability of a firm to efficiently and effectively exploit the external source of knowledge and technology from other firms in a competitive market (Narula, 2003).

Absorptive capacity is not only about imitation as the external knowledge that the firm reaps may be specific to the firm. This is what makes it crucial for the firm to invest in its absorptive capacity to modify this technology to fit into its implementation strategies. Therefore, the greater the absorptive capacity, the greater the gains are from capital injections (Levinthal, 1990).

Ownership structure:

Spillover effects vary with the degree of foreign ownership. The majority of foreign ownership enhances the transfer of advanced foreign technology in the domestic economy, and thus the potential for spillovers, but they are suspicious of a technology leakage (Crespo and Fontoura, 2007).

So, the incentive to transfer new technology on the part of the foreign subsidiaries may diminish with a greater domestic ownership share. In this regard the greater the majority ownership the greater the benefits from investment.

4. DATABASE AND RESEARCH METHODOLOGY

A mixed approach of quantitative and qualitative analysis is used to find relevant conclusions for the research questions using time series data from 1980 to 2022 to measure the effect of the implemented reform policy regarding investment and derive reliable results. The qualitative approach is used to analyze the behavior of FDI and economic growth, the influence of FDI spillovers on the host economy such as competitiveness, technology, and employment then a sectoral analysis of FDI in the main sectors contributing to growth in Egypt in the period under study. The quantitative approach is used for the empirical analysis to study the effect of FDI on the Egyptian economic growth during studied period using a multivariate time series analysis with real GDP per capita, openness to trade, FDI inflows to Egypt, inflation, government balance, private R&D and R&D of the government as variables explaining economic growth. Meanwhile, two dummy variables were added as control variables based on literature - REVDUM and

COVDUM- to account for the economic crises faced by the economy during the studied period (Abdel-Halim, 2023).

After estimating the VAR model to determine the best lag structure for the vector error correction dynamics, and conducting ADF test for all variables to test the availability of applying a co-integration test to investigate the existence of a long run relation between FDI and economic growth in the Egyptian context, a system of equations is estimated (VECM) to get the long run estimates represented in the co-integration equation and the short run convergence speed represented in the error correction part of the model.

Table 1: Specification of variables and data source

Variables	Definition	Measurement	Source
Changes in Real GDP per capita	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for the depreciation of fabricated assets or for the depletion and degradation of natural resources. Data are in constant 2015 U.S. dollars.	Absolute values	World Bank
FDI	Foreign direct investments are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors and is divided by GDP.	As a percentage of GDP	World Bank
LAGGED GDP per capita	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for the depreciation of fabricated assets or for the depletion and degradation of natural resources. Data are in current U.S. dollars. (Note that, This GDP per capita is a lagged variable which refers to the value of growth in time t-1. This was added because growth is affected by its previous levels (Mehic et al., 2012)).	Absolute values	World Bank
DI	Consists of outlays on additions to the fixed assets of the economy plus net changes in the level of	In equilibrium -as stated by economic theory-	World Bank

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Variables	Definition	Measurement	Source
	inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales	investment equates with savings. So, domestic savings are used as a proxy as a percentage of GDP	
IR	The real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator. The terms and conditions attached to lending rates differ by country, however, limiting their comparability.	Percentage	World Bank
OP	Openness to trade is the degree to which a country is open to the outside world. The sum of exports and imports divided by GDP is used as a proxy.	Percentage of GDP	World Bank
EXR	Official exchange rate refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (local currency units relative to the U.S. dollar).	The US. Dollar to EGP exchange rate	World Bank
INF	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.	Percentage	World Bank
FD	Financial Development is the relative ranking of countries on the depth, access, and efficiency of their financial institutions and financial markets, it's an aggregate of the financial institutions index and the financial market index	Absolute values	IMF
GB	Referred to as government budget balance, is calculated as the difference between a government's revenues (taxes and proceeds from asset sales) and its expenditures.	Based on literature the government budget can affect the current account (trade balance) in 12 ways. Also, the way the deficit is financed affects current account directly. In other words, local budget can be seen as a part of the current account. So, it is used as a proxy (Percentage of GDP) (Mansur, 2010).	World Bank
REVDUM & COVDU	These variables were added to account for the crisis's periods: revolution period from 2011-2013, and the COVID period 2020/2021.		

Source: made by authors

4.1 MODEL SPECIFICATION

The empirical analysis of FDI's effect on economic growth uses time series data covering the period from 1980 to 2022. The relationship between FDI and Egyptian economic growth is studied in an integrated framework and built on earlier models estimated in literature (Silajdzic, 2015). However, variables capturing differences in the scope of analysis were added from previous studies (Alaa, 2021) to account for different data types. Accordingly, the following model is specified:

$$GDPGR_t = \beta_0 + \beta_1 FDI_{t-1} + \beta_2 GDP_{t-1} + \beta_3 DI_{t-1} + \beta_4 IR_t + \beta_5 OP_t + \beta_6 ExR_t + \beta_7 inf_t + \beta_8 FD_t + \beta_9 GB_t + REVDUM + COVDUM + \epsilon_t$$

Where the response variable $GDPGR_t$ denotes changes in real GDP per capita in period t

FDI_{t-1} denotes foreign direct investment for Egypt at period t-1

GDP_{t-1} denotes the GDP per capita of Egypt in the period t-1

DI_{t-1} denotes domestic investment of Egypt in the period t-1

IR_t denotes the interest rate of the country in the period t

OP_t denotes exports and imports share in the GDP of the country in the period t

ExR_t denotes the exchange rate of the country in the period t against the US dollar

inf_t denotes the inflation rate for Egypt at period t

FD_t is the Financial Development Index for Egypt at period t

GB_t denotes the government budget deficit in period t

REVDUM dummy variable added to account for the revolution period

COVDUM dummy variable added to account for the pandemic period

ϵ_t represents random error.

4.2 DATA AND VARIABLES

Secondary time series data were collected for the studied period from the database of the world bank (WB) and the international monetary fund (IMF), another target here is to provide variables descriptions for the specified model, changes in real GDP per capita is the dependent variable of the model and the variables of interest that are used to explain the dependent variable are FDI, R&D and human capital (Silajdzic, 2015). However, R&D and human capital were dropped due to a lack of data availability and incomplete proxies for the complete selected times series, and then other variables were added -real interest rates and exchange rates-following relevant literature (Alaa, 2021).

Moreover, FDI was lagged since investments' effect on growth is not instantaneous, this variable in this analysis is used as a proxy for technological and knowledge spillovers dependent on absorptive capacities of local industries, for the same reason DI was lagged as well. Given this, a positive relationship between FDI-related variables and GDP growth is anticipated in this analysis. FDI inflows of Egypt are used to measure this variable, not the net FDI as the interest is the level of inflows. In addition, variables such as government balance and inflation are used to account for the long-run macro-conditions stability in the studied period (Silajdzic, 2015).

Control variables were added to assert precise results; the time control variable was dropped due to degrees of freedom considerations instead openness to trade and financial development for Egypt were added as control variables following (Alaa, 2021). Finally, lagged GDP per capita was added to the model to test the existence and capture the convergence influence on a country's economic growth rate (Mehic et al., 2012). Also, dummy variables were added to represent periods of crises that hindered investment activities.

In equilibrium -as stated by economic theory- investment equates with savings. So, domestic savings are used as a proxy for domestic investment as a percentage of GDP. Also, based on literature the government budget can affect the current account (trade balance) in 12 ways. Also, the way the deficit is financed affects current account directly. In other words, local budget can be seen as a part of the current account. So, it is used as a proxy (Percentage of GDP) (Mansur, 2010).

5. EMPIRICAL ANALYSIS AND DISCUSSION OF RESULTS

5.1 DESCRIPTIVE ANALYSIS

Table 2: Correlation coefficients of studied variables

	DLOG(GDP_PER_CAPITA)	ln(FDI_INFLOW(-1))	GDP_PER_CAPITA(-1)	FD	INF	IR	OP	CA	EX_RATE	DI(-1)
DLOG(GDP_PER_CAPITA)	1.00	0.45	-0.25	0.25	-0.01	0.01	0.18	-0.41	-0.11	0.18
ln(FDI_INFLOW(-1))		1.00	0.10	0.30	0.16	-0.19	0.45	-0.27	0.11	0.10
GDP_PER_CAPITA(-1)			1.00	0.49	0.06	-0.30	0.67	-0.11	0.85	-0.77
FD				1.00	-0.18	-0.10	0.43	-0.06	0.31	-0.10
INF					1.00	-0.91	0.34	0.10	0.19	0.01
IR						1.00	-0.46	0.02	-0.26	0.06
OP							1.00	-0.36	0.70	-0.48
CA								1.00	-0.12	0.24
EX_RATE									1.00	-0.82
DI(-1)										1.00

Source: made by authors using E-views software.

GDP per capita growth lagged is found to be highly correlated with exchange rates. Also, exchange rates are correlated with domestic investment. Exchange rate variable was dropped from the analysis as it was found to be insignificant and causing significance and multicollinearity problems to the whole model estimates (Bhandari, 2020).

So, the final form of the model embedded in the analysis is:

$$\begin{aligned}
 &GDPGR_t \\
 &= \beta_0 + \beta_1 FDI_{t-1} + \beta_2 GDPPC_{t-1} + \beta_3 DI_{t-1} + \beta_4 IR_t + \beta_5 OP_t + \beta_6 inf_t \\
 &+ \beta_7 FD_t + \beta_8 GB_t + REVDUM + COVDUM + \epsilon_t
 \end{aligned}$$

5.2 RESULTS OF UNIT ROOT TEST

Getting the long-run relationship depends on whether we can find co-integrating vectors in the model if the series were non-stationary, that's why the stationarity test and degrees of integration determination of each series is the main step in the analysis.

For testing the stationarity of each series and getting the degrees of integration denoted as $I(1)$, ADF tests were employed (Dickey and Fuller, 1979) as shown in Table 3, series are shown at their levels, and the first difference to show the

degrees of integration of each series as a first step for testing the existence of a long run relationship between FDI and Growth in Egypt using co-integration analysis (Johansen test, 1991).

Table 3: Unit root tests at levels and after the first difference

Augmented Dickey-Fuller test		
At level		
Variables	Intercept Probability	Intercept and trend probability
$GDPGR_t$	0.2263	0.9174
FDI_{t-1}	0.0362*	0.0097*
DI_{t-1}	0.1200	0.6408
IR_t	0.0002*	0.0001*
OP_t	0.2806	0.5245
Inf_t	0.0019*	0.0003*
FD_t	0.6515	0.3142
CA_t	0.0568*	0.0214*
At 1 st difference		
Variables	Intercept Probability	Intercept and trend Probability
$GDPGR_t$	0.0194*	0.0036*
FDI_{t-1}	0.0040*	0.0006*
DI_{t-1}	0.0000*	0.0000*
IR_t	0.0000*	0.0000*
OP_t	0.0001*	0.0000*
Inf_t	0.0000*	0.0000*
FD_t	0.0001*	0.0000*
CA_t	0.0000*	0.0001*

Source: made by authors using E-views software, * shows results that are significant at a 5% level

The results show that variables like GDPGR, OP, FD, and DI lagged are non-stationary at levels with P-value greater than 0.05 whereas all other variables are stationary at levels with ($P < 0.05$). However, after taking the first difference all variables became stationary (integrated of order one), which allows for co-integration testing to examine the existence of co-integrating vectors that allow for a long-run relationship estimation (Johansen, 1991).

But even before this, it's essential to determine the lag structure that will be used in estimation. So, VAR was used to determine the best lag structure for the analysis.

Table 4: VAR estimation output

Lag	LogL	LR	FPE	AIC	SC	HQ
0	230.5402	NA	7.70e-18	-11.02701	-10.60479	-10.87435
1	539.0366	447.3198	2.64e-22	-21.45183	-16.80741*	-19.77255
2	699.0627	152.0248*	3.64e-23*	-24.45313*	-15.58652	-21.24725*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: made by authors using E-views

As shown in Table 4, the best lag structure according the Acaikie information criterion is 2 lags.

5.3 JOHANSEN CO-INTEGRATION TEST

The existence and the number of co-integrating equations are tested through the Johansen procedure after determining the best lag structure from VAR analysis according to the AIC criterion (2 lags), where trace statistic and maximum Eigen value are employed to get the number of co-integrating vectors between variables of interest, results are shown in the study appendix.

The results shown by the Johansen test -Table Appendix (1-2)- ascertain the existence of a long-run equilibrium relationship between FDI and Egyptian economic growth from 1980 to 2022, and the direction of this relationship could be predicted from the normalized co-integrating coefficients that showed five co integrating equations relying on maximum Eigen value that is the relationship is not unique in the long run.

The normalized co-integrating long run equation shows a positive significant impact of FDI on Egyptian economic growth. By reversing the cointegrating coefficient signs, shown in Table Appendix (1-2), it is obvious that increasing the proportion of lagged FDI to GDP by one percent can increase GDP growth. And these results were supported by a study that found positive effects along with many other studies that demonstrated the same results (Makki and Somwaru, 2004; Li and Liu, 2005; Hansen and Rand, 2006; Asheghian, 2004).

5.4 VECM ESTIMATION

VECM is estimated in a way that can be seen as an extension of the VAR estimation. Besides the long run co-integrating equation that gives the long run relationship, an error correction system of equations were estimated where each variable was considered as dependent at a time, that shown in details in Table Appendix 2.

In this regard, VECM was estimated to get the adjustment speed¹ of the short-run dynamics to maintain the long-run path.

By focusing the analysis on the equation of the study's interest, where FDI was a regressor on GDP per capita growth showed in Table 5, error correction part highlighted a negative the adjustment speed that reflects a good signal for the relationship converging the long run path.

The deviations of the previous year will be corrected in the following year with an adjustment speed of less than 1%. This slow speed could be explained by the idea that FDI takes time to have a noticeable effect on growth. In addition, the amount of FDI might be relatively small or insufficient to have a strong effect on growth in the short run (Mah, 2010).

Having asserted the existence of a stable long run path, it would be complementary to have an insight about the direction of this effect in the long run that was found to be positive as shown in the left- hand side of Table 5.

¹ The speed at which disequilibrium, that occur in the short-run, converges into the long-run equilibrium to maintain the long-run path.

Table 5: VECM results Summary

Vector Error Correction Estimates			
Standard errors in () & t-statistics in []			
Cointegrating Eq: Long Run Relationship		Error Correction: CointEq “short run deviations”	
$CA_t(-1)$	1.000000		
$IR_t(-1)$	-0.173233 (0.32602) [-0.53136]	D (FDI (-1))	-9.38E-06 (4.8E-06) [-2.10001]
$OP_t(-1)$	1.102320 (0.13104) [8.41205]	C	0.70742
$Inf_t(-1)$	-1.75062 (0.27994) [-3.84038]	R-squared	0.541181
$FDI_{t-1}(-1)$	2.066276 (0.31451) [6.56974]	Adj. R-squared	0.360931
$FD_t(-1)$	0.458816 (0.20347) [2.25490]	Sum sq. resids	0.011975
$DI_{t-1}(-1)$	-2.579270 (0.33526) [-7.69332]	S.E. equation	0.020681
$COVDUM (-1)$	0.229955 (0.03901) [5.89510]	F-statistic	3.002392
$REVDUM (-1)$	0.070089 (0.02940) [2.38436]	Log likelihood	105.5180
		Akaike AIC	-4.675898
		Schwarz SC	-4.169235
		Mean dependent	0.000780
		S.D. dependent	0.025870
		Determinant resid covariance	2.93E-23
		Determinant resid covariance	8.28E-25
		Log likelihood	541.4339
		AIC	-20.57170
		Schwarz criterion	-15.08284

Source: made by authors using E-views software.

On the other hand, a significant positive effect of FDI on the economic growth of Egypt is shown in the long run, these results are supported by literature (Henri et al., 2018; Aga, 2014).

5.5 FINDINGS OF EMPIRICAL ANALYSIS

Regarding the Impact FDI on economic growth, results indicated a significant positive impact in the long run. However, there was a slow adjustment speed in the short run reflecting that FDI took time to influence economic growth. This positive impact of FDI wasn't reversed by the previously mentioned crises throughout decades supporting the idea that the Egyptian economy is a rigid economy that can absorb recessions and recover relatively faster than other economies. However, to derive the reasons behind this, another analysis should be conducted.

The above-mentioned results are in accordance with the empirical studies in literature (Alaa, 2021; Hansen and Rand, 2006; Henri et al. 2018; Aga, 2014). Also, they came along with the neo-classical economic theory which states that the transfer of knowledge and technology between countries can enhance human capital and boom economic growth (Baharumshah, 2006).

The research effort can be extended in numerous ways. First, an alternative econometric specification could be used in order to further examine the robustness of the FDI-economic growth relationship. Second, another model could be estimated to analyze the factors behind the negative impact of domestic investments in the long run. Finally, a sub-period analysis could be made, i.e., divide the time period into an early period before the 25th Jan revolution in 2011, the post-revolutionary period, and the mature period after 2014.

The statistically proven positive impact of FDI on Egyptian economic growth will raise curiosity about what might be the channels that transmitted this investment and eventually reflect a positive impact on growth. FDI is transmitted through a few channels - known from literature as FDI-driven spillovers - which are demonstration (technology), competition and labor mobility, and unemployment. The more those channels are developed the greater the gains from FDI on growth. Importantly, those channels will be discussed in an Egyptian context in the next section to stand upon the weaknesses that hinder higher gains from FDI.

6. CONCLUSION AND POLICY IMPLICATIONS

The paper endeavored to investigate the effect of FDI on economic growth in the Egyptian context and the situation of FDI transmission channels that highly influence the net effect of FDI on growth. In the first and second section, it was proven from literature the FDI channels are main factors in determining the FDI effect where it showed positive effect of FDI in the economies especially if it is accompanied with high absorptive capacity, strict and firm local institutions and productive labor. Then given an Egyptian context the effect of FDI on economic growth was investigated empirically in the following sections using VAR and VECM Methodology to capture the convergence of FDI impact on growth to the long run path.

Through the empirical analysis a positive effect of FDI on Egyptian economic growth was found to be significant. However, this effect is relatively small and the convergence speed is quite slow in the short run dynamics that could be interpreted by insufficient amount of foreign capital. Thereby, strengthening the ability of the economy to attract more FDI and achieving attractive Preconditions has become an imperative of economic policy. A significant determinant of FDI is exchange rates hence, the central bank of Egypt should adopt an exchange rate policy that maintains stable exchange rates to attract more capital injections.

Moreover, the soundness of the financial system is crucial in the country, especially the local stock exchange market. Special interest should be devoted to stock exchanges that have a force to be reckoned with in permitting international enterprises to engage in the stock market, providing new capital, expertise, and investment services. So, the government should incentivize foreign banks to operate in Egypt to remedy the banking sector and support merging the actual banks in operation to consolidate their position.

Another indispensable factor that's very sensitive in the Egyptian context is the stability of the price level. The economic decision-making process regarding prices should consider that changes in prices have to remain predictable to persist in their information function. As the Egyptian pound has suffered recently from unstable conditions due to the global inflationary wave caused by the war between Russia and Ukraine, the largest oil and grain exporters globally, and the

earlier wave caused by the devaluation of the Egyptian pound by 15 % to tackle the pressure of payments imbalances. Therefore, inflation has to be curbed through a tight monetary policy and particularly higher interest rates in real terms.

Suggestions about taking the golden advantage of the low cost of labor in Egypt to attract the FDI that outflows from Korea and Taiwan in search of low labor costs for their labor-intensive manufacturing investments would be beneficial. This newly attracted FDI will compensate for losses in employment caused by the tight monetary policy adopted by the government to curb inflation.

This statistically significant positive effect is strongly correlated with the FDI transmission channels to growth and how they are able to increase effectively and efficiently gains from FDIs given the needed attention. Given the technological spillover effect on growth in Egypt was proven to be positive but limited and restricted due to noticeable neglect in various aspects as discussed in the third section, if the government increased R&D spending and boosted the number of patents on one hand, and adopted policies that incentivize imports of capital goods, enhance ITT regulations, and channels, and develop strong managerial supervision in domestic firms. On other hand, Egypt would benefit from higher gains from FDI injections in the economy.

Another important point that is worth to be highlighted is the biases of FDI towards the services sector instead of the commodity sector causing an imbalance in the distribution of FDI in Egypt. This phenomenon restricts gains from FDI regarding unemployment due to the unneglectable fact that the sectors contributing the highest to Egyptian growth – which are agriculture, manufacturing, and Mining – are commodity sectors. The outcome is an obvious unbalanced growth with a relatively poor performance of agriculture and manufacturing that has resulted in the creation of a highly dependent economy on petroleum earnings and workers' remittances. Consequently, wise policy should target structural modifications that have become a force to be reckoned with in rebalancing the economy between services-producing sectors and commodity-producing sectors. This can be achieved through creating zone areas for investment that follow zone-based policies creating a special environment in the aforementioned neglected sectors. Moreover, policies should take into consideration the relatively low job-creation potential of the main

commodity sectors contributing to growth by developing more efficient labor-based strategies of production in those sectors. There by avoiding the concentration of FDI in one sector.

In addition, the government should give more attention to increasing the competitive capabilities of domestic firms, especially in the services sector to save the local share in the market and eliminate the threat of future unemployment from this sector. Such reforms can be implemented by providing a rigid and transparent regulatory framework, increasing domestic labor productivity, eliminating unneeded restraints to competition by marginalizing the size of the government-led firms in the economy to avoid crowding out the private sector and developing a common vision through coordination between private and public agencies. This will create a better environment for investment for both foreign and domestic firms in the economy.

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APPENDIX

Table (Appendix 1-1): Co-Integration Rank Test Results

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.910632	411.8570	239.2354	0.0000
At most 1 *	0.878600	315.2575	197.3709	0.0000
At most 2 *	0.816515	230.9109	159.5297	0.0000
At most 3 *	0.739365	163.0861	125.6154	0.0000
At most 4 *	0.648213	109.3008	95.75366	0.0042
At most 5	0.436126	67.51160	69.81889	0.0753
At most 6	0.379859	44.59465	47.85613	0.0980
At most 7	0.359080	25.48232	29.79707	0.1449
At most 8	0.174779	7.688314	15.49471	0.4993
At most 9	0.000104	0.004152	3.841466	0.9473

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.910632	96.59951	64.50472	0.0000
At most 1 *	0.878600	84.34661	58.43354	0.0000
At most 2 *	0.816515	67.82485	52.36261	0.0007
At most 3 *	0.739365	53.78530	46.23142	0.0066
At most 4 *	0.648213	41.78916	40.07757	0.0318
At most 5	0.436126	22.91696	33.87687	0.5368
At most 6	0.379859	19.11232	27.58434	0.4059
At most 7	0.359080	17.79401	21.13162	0.1377
At most 8	0.174779	7.684162	14.26460	0.4117
At most 9	0.000104	0.004152	3.841466	0.9473

Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Source: made by authors using E-views software

Table (Appendix 1-2): Co-Integration Test Co-efficient Estimations

Unrestricted Cointegrating Coefficients (normalized by b*S11*b=1):

	CA	COVDUM	DI_LAGGED	FD	FDI_INFLOW	GDP_PER_CAP ITA	INF	IR	OP	REVDUM
	20.58387	4.733360	-53.09136	9.444203	42.53195	-0.000592	-22.12894	-3.565813	22.69001	1.442895
	-6.192173	-1.646663	103.1461	-43.51749	-30.16822	0.000834	-9.538650	26.81148	10.62445	-3.870128
	-3.350042	3.737576	7.895450	22.56527	-38.42105	6.06E-05	79.74008	90.21692	-3.006763	5.474617
	23.73656	4.819952	-6.336370	3.680466	-73.03850	-0.000167	-34.70847	-62.39589	5.251524	-2.655779
	6.247089	-9.009765	30.34276	-19.81229	5.072953	0.000292	-20.09802	-7.500726	24.62506	-6.713265
	60.30747	-2.238870	-11.01611	-44.83646	19.81499	-0.000291	-118.2850	-110.6650	42.40586	-1.766352
	-5.079509	0.300385	0.550878	24.51382	-7.165747	-0.000199	10.04869	0.690901	1.370110	1.927975
	-33.10504	5.019481	29.55465	-2.090802	35.61782	0.000501	55.49822	20.38652	-39.91164	0.328274
	15.65106	1.833372	-8.424365	15.96828	22.57131	8.50E-05	23.40658	16.64796	-19.47305	1.360106
	-19.06240	3.498846	3.611059	8.108433	-13.55490	0.000204	8.078475	-2.058169	-17.10653	1.843051

Unrestricted Adjustment Coefficients (alpha):

	D(CA)	D(COVDUM)	D(DI_LAGGED)	D(FD)	D(FDI_INFLOW)	D(GDP_PER_CAPITA)	D(INF)	D(IR)	D(OP)	D(REVDUM)
	0.000798	-0.003892	0.001022	-0.006351	-0.003488	-0.007784	1.60E-05	0.003041	0.000602	6.50E-05
	-0.075934	-0.035750	0.049945	-0.044473	0.042498	-0.000981	-0.036505	-0.005457	-0.021721	0.000132
	0.008022	-0.004235	0.001236	0.002816	0.001871	-0.003165	-0.005161	0.001566	0.000766	8.14E-05
	0.002462	-0.007338	-0.002846	0.000582	-0.011264	0.003471	-0.010983	-0.003875	-0.001021	-2.56E-05
	-0.002688	-0.003171	-0.000185	0.004702	-4.15E-05	0.000978	0.000957	-0.004237	0.000125	-1.22E-05
	107.2327	-106.1964	-78.22847	-13.16095	70.84532	7.198219	24.99719	-12.67042	-3.006662	-2.070461
	0.003637	0.008223	-0.019780	-0.019742	0.002194	-0.004847	0.000399	-0.013121	0.007084	8.82E-05
	-0.006261	-0.008559	0.009676	0.016477	-0.002954	0.006132	0.000289	0.011400	-0.005631	-4.83E-05
	-0.007815	-0.001249	-0.014529	-0.004697	-0.004435	0.003958	-0.003835	-0.003146	0.010791	-6.98E-05
	-0.045240	0.072401	-0.057143	0.083172	0.044768	-0.065298	-0.015225	0.030467	0.016709	0.000208

1 Cointegrating Equation(s): Log likelihood 541.4339

Normalized cointegrating coefficients (standard error in parentheses)

	CA	COVDUM	DI_LAGGED	FD	FDI_INFLOW	GDP_PER_CAP ITA	INF	IR	OP	REVDUM
	1.000000	0.229955 (0.03901)	-2.579270 (0.33526)	0.458816 (0.20347)	2.066276 (0.31451)	-2.88E-05 (3.0E-06)	-1.075062 (0.27994)	-0.173233 (0.32602)	1.102320 (0.13104)	0.070089 (0.02940)

Source: made by authors using E-views software

Table Appendix 2: Vector Error Correction Estimates

2 Vector Error Correction Estimates

Standard errors in () & t-statistics in []

Cointegrating Eq:	CoIntEq1	Cointegrating Eq:	CoIntEq1
CA (-1)	1.000000		
COVDUM (-1)	0.229955 (0.03901) [5.89510]	INF (-1)	-1.075062 (0.27994) [-3.84038]
DI_LAGGED (-1)	-2.579270 (0.33526) [-7.69332]	IR (-1)	-0.173233 (0.32602) [-0.53136]
FD (-1)	0.458816 (0.20347) [2.25490]	OP (-1)	1.102320 (0.13104) [8.41205]
FDI_INFLOW (-1)	2.066276 (0.31451) [6.56974]	REVDUM (-1)	0.070089 (0.02940) [2.38436]
GDP_PER_CAPITA (-1)	-2.88E-05 (3.0E-06) [-9.49139]	C	0.703724

Error Correction:	D(CA)	D(COVDUM)	D(DI_LAGGED)	D(FD)	D(FDI_INFLOW)	D(GDP_PER_CA PITA)	D(INF)	D(IR)	D(OP)	D(REVDUM)
CointEq1	0.016427 (0.06731) [0.24405]	-1.563010 (0.50714) [-3.082013]	0.165121 (0.05662) [-1.435009]	0.050685 (0.10048) [0.50442]	-0.055326 (0.03855) [-2.91624]	2207.264 (1051.04) [2.10007]	0.074860 (0.17344) [0.43163]	-0.128879 (0.13669) [-0.94285]	-0.160853 (0.13145) [-1.22368]	-0.931222 (0.75429) [-1.23457]
D(CA (-1))	0.196425 (0.15408) [1.27479]	0.466107 (1.16097) [0.40148]	0.146912 (0.12962) [1.13340]	-0.057460 (0.23003) [-0.24980]	0.063809 (0.08826) [0.72300]	-1851.274 (2406.11) [-0.76941]	-0.379585 (0.39704) [-0.95604]	0.365012 (0.31292) [1.16647]	0.039493 (0.30092) [0.13124]	-1.159565 (1.72677) [-0.67152]
D(COVDUM (-1))	0.032040 (0.02666) [1.20198]	-0.213137 (0.20085) [-1.06119]	-0.059205 (0.02242) [-2.64021]	-0.013157 (0.03979) [-0.33063]	0.017066 (0.01527) [1.11776]	-1508.632 (416.254) [-3.62430]	0.086785 (0.06869) [1.26346]	-0.017709 (0.05413) [-0.32713]	0.148758 (0.05206) [2.85745]	0.070824 (0.29873) [0.23708]
D(DI_LAGGED (-1))	-0.333952 (0.23230) [-1.43760]	2.675000 (1.75028) [1.52833]	-0.253890 (0.19542) [-1.29922]	-0.226559 (0.34679) [-0.65330]	0.077340 (0.13305) [0.58127]	4924.663 (3627.46) [1.35761]	0.475622 (0.59858) [0.79458]	-0.590516 (0.47176) [-0.95157]	0.431705 (0.45368) [0.95157]	0.990207 (2.60328) [0.38037]
D(FD (-1))	0.408246 (0.14465) [2.82238]	0.095279 (1.08995) [0.08742]	0.117401 (0.12168) [0.96483]	0.057228 (0.21594) [0.26502]	0.139355 (0.08265) [1.68203]	-1188.175 (2258.72) [-0.52604]	-0.258400 (0.37272) [-0.69328]	0.300256 (0.29375) [1.02214]	-0.121045 (0.28249) [-0.42849]	-2.656777 (1.62099) [-1.63898]
D(FDI_INFLOW (-1))	0.110923 (0.30226) [0.36698]	2.766904 (2.27742) [1.21493]	0.049209 (0.25427) [0.19353]	0.133977 (0.45123) [0.29691]	0.526200 (0.17313) [3.03939]	2710.498 (4719.95) [0.57426]	0.062382 (0.77886) [0.08009]	0.097503 (0.61384) [0.15884]	1.629547 (0.59031) [2.76050]	0.718842 (3.38732) [0.21222]
D(GDP_PER_CAPITA (-1))	1.44E-05 (8.3E-06) [1.73351]	0.000222 (6.3E-05) [3.53927]	8.51E-06 (7.0E-06) [1.21346]	-6.92E-06 (1.2E-05) [-0.55595]	-9.38E-06 (4.8E-06) [-2.10001]	0.348891 (0.13011) [2.68150]	-7.59E-07 (2.1E-05) [-0.03536]	4.86E-06 (1.7E-05) [0.28707]	1.25E-05 (1.6E-05) [0.76863]	0.000126 (9.3E-05) [1.35076]
D(INF (-1))	1.141563 (0.32974) [3.46196]	-5.305477 (2.48450) [-2.13543]	-0.254471 (0.27739) [-0.91737]	-0.869954 (0.49226) [-1.76725]	-0.096518 (0.18887) [-0.51103]	2452.746 (5149.14) [0.47634]	1.458084 (0.84968) [1.71605]	-0.853384 (0.66966) [-1.27436]	1.162184 (0.64399) [1.80467]	-0.501944 (3.69532) [-0.13583]
D(IR (-1))	1.105760 (0.37459) [2.95190]	-4.438802 (2.82241) [-1.57270]	-0.339466 (0.31512) [-1.07726]	-1.053515 (0.55922) [-1.88391]	-0.091689 (0.21456) [-0.42734]	2815.794 (5849.46) [0.48138]	1.975665 (0.96524) [2.04681]	-1.241569 (0.76073) [-1.63207]	1.293169 (0.73157) [1.76766]	-0.815328 (4.19792) [-0.19422]
D(OP (-1))	-0.414870 (0.12703) [-3.26603]	0.847391 (0.95709) [0.88538]	-0.168395 (0.10686) [-1.57588]	0.211757 (0.18963) [1.11667]	0.031504 (0.07276) [0.43300]	1348.855 (1983.57) [0.68001]	-0.224251 (0.32732) [-0.68512]	0.137481 (0.25797) [0.53294]	0.007814 (0.24808) [0.03150]	0.934329 (1.42353) [0.65635]
D(REVDUM (-1))	0.044340 (0.01750) [2.53426]	-0.052230 (0.13183) [-0.39613]	0.030061 (0.01472) [2.04241]	0.018223 (0.02612) [0.69767]	0.007807 (0.01002) [0.77906]	-243.9286 (273.211) [-0.89282]	0.033264 (0.04508) [0.73783]	-0.020235 (0.03553) [-0.56950]	0.013550 (0.03417) [0.39655]	-0.152797 (0.19607) [-0.77929]
C	-0.008797 (0.00596) [-1.47608]	-0.108419 (0.04490) [-2.41455]	-0.007126 (0.00501) [-1.42139]	0.003282 (0.00890) [0.36890]	0.004868 (0.00341) [1.42610]	389.7124 (93.0602) [4.18775]	-0.000360 (0.01536) [-0.02342]	-0.003854 (0.01210) [-0.31840]	-0.005080 (0.01164) [-0.43651]	-0.064703 (0.06679) [-0.96882]
R-squared	0.541181	0.660074	0.486488	0.229274	0.442997	0.663787	0.326998	0.321012	0.405701	0.248011
Adj R-squared	0.360931	0.526531	0.284751	-0.073512	0.224174	0.531703	0.062604	0.054266	0.172226	-0.047414
Sum sq. residuals	0.011975	0.679853	0.008475	0.026689	0.003929	2920152.	0.079514	0.049390	0.045676	1.503979
S.E. equation	0.020681	0.155822	0.017397	0.030874	0.011845	322.9414	0.063290	0.041999	0.040389	0.231762
F-statistic	3.002392	4.942799	2.411493	0.757215	2.024455	5.025500	1.236783	1.203439	1.737666	0.839507
Log likelihood	105.5180	24.73763	112.4335	89.49004	127.8085	-280.7229	67.65646	77.18015	78.74363	8.857768
Akaike AIC	-4.675898	-0.636882	-5.021673	-3.874502	-5.790425	14.63614	-2.782823	-3.259007	-3.337182	0.157112
Schwarz SC	-4.169235	-1.130218	-4.515009	-3.367838	-5.283761	15.14281	-2.276159	-2.752343	-2.830518	0.663775
Mean dependent	0.000780	0.000000	-0.003022	0.000944	0.000334	526.5466	-0.003383	0.002661	0.003441	0.000000
S.D. dependent	0.025870	0.226455	0.020571	0.029798	0.013448	471.9143	0.055040	0.043187	0.044393	0.226455
Determinant resid covariance (dof=adj)		2.93E-23								
Determinant resid covariance		8.28E-25								
Log likelihood		541.4339								
Akaike information criterion		-20.57170								
Schwarz criterion		-15.08284								
Number of coefficients		130								

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تأثير الاستثمار الأجنبي المباشر على النمو الاقتصادي:
دراسة تطبيقية على الحالة المصرية خلال الفترة (1980-2022)

أ. مي محمد عبد الرحمن أبو عيطة

د. تغريد عبد العزيز حسوبة

ملخص البحث باللغة العربية

إن تأثير الاستثمار الأجنبي المباشر على النمو الاقتصادي ما زال من الموضوعات المهمة التي تحتل أولوية في دراسات الباحثين، وذلك لما للاستثمار الأجنبي المباشر من دور - عضدته التجارب الدولية - في دفع عجلة التنمية، إذ أن هناك عديد من الدراسات السابقة التي تؤكد دور الاستثمار الأجنبي المباشر الإيجابي على النمو. في حين جاء البعض بنتائج غير معنوية أو ضعيفة في هذا الصدد. وبنا عليه، تعيد هذه الورقة البحثية فحص هذه الأدبيات وتحليل قنوات النقل غير المباشرة لأثر الاستثمار الأجنبي المباشر والتي تتحكم في التأثير الصافي على النمو. كما اهتمت بالقياس التطبيقي لأثر الاستثمار الأجنبي المباشر على النمو الاقتصادي في الحالة المصرية باستخدام بيانات السلاسل الزمنية تلك التي تغطي الفترة الزمنية 1980-2022 اعتماداً على منهجية قياسية بتقدير نموذج جوهانسن للتكامل المشترك ونموذج تصحيح الخطأ متعدد المعادلات (VECM). وقد أظهرت النتائج القياسية بشكل قاطع أن الاستثمار الأجنبي المباشر يؤثر بشكل إيجابي على النمو الاقتصادي في الحالة المصرية على المدى الطويل لاسيما إذا تم تدعيم قنوات نقل الأثر على الاقتصاد. **الكلمات الدالة:** النمو الاقتصادي، الاستثمار الأجنبي المباشر، آثار الاستثمار الأجنبي المباشر، التكامل المشترك، نموذج تصحيح الخطأ متعدد المعادلات (VECM).

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