The Impact of Foreign Capital Inflows on Economic Growth and Employment in Egypt: A Sectoral Empirical Analysis

Abstract

This paper traces the effect of "Greenfield Investment" disaggregated into six sectors on the one hand and the effect of external debt on the other hand on sectoral growth and employment in Egypt over the period 1983-2014. We conducted our analysis in three stages; an aggregate time series analysis (ARDL error correction model), a sectoral time series analysis and finally a panel model in conducted (pane ARDL model). Research results reveal that that in the long-run; the effect of real FDI on growth is insignificant, while that of external debt is significant and negative (the effects of both FDI and external debt were positive in the short-run). Concerning the employment model; the effect of external debt on the growth rate of employment is insignificant in the long-run while that of FDI is positive.

1. Introduction

An intense debate has emerged on the effects of foreign capital flows on developing economies; however, much of that debate has been based on limited empirical evidence, as most of these studies were either cross-country analysis or concerned with one type of capital flow. Egypt lacks studies assessing the impact of foreign capital inflows combined on economic growth and employment level.

Review of previous studies as well as an empirical analysis will be used to test the effect of foreign capital inflows on economic growth and employment level in Egypt. We test the hypothesis that "Greenfield Investment" and external debt have a positive effect on economic growth in Egypt. The second hypothesis to be tested is that Greenfield investment and external debt have a positive effect on the employment level in Egypt.

This research paper will be divided into six sections; the second will give an overview of the magnitude and trend of various sources of foreign capital inflows into Egypt. Theoretical background on the effect of foreign capital inflows on the economy is given in the third section and the fourth section will include an

overview of previous empirical studies. The econometric model will be examined in the fifth section, finally the sixth section summarizes the study results and suggests some policy recommendations.

2. The Trend of Foreign Capital Flows into Egypt:

According to the "World Bank International Debt Statistics", net capital flows can be divided into net equity inflows (net inflows of direct and portfolio equity) and net debt flows (from official or private creditors).

FDI is usually considered stable while portfolio investment is frequently depicted as the least reliable type of flow (Sula; Willett, 2009). Portfolio investors can sell their stocks or bonds more easily and quickly than FDI and these flows are often considered to be the hottest of the various major types of capital flows. Concerns about portfolio flows come mainly from the high liquidity; at the first sign of trouble investors can easily sell their stocks and bonds. Analyzing the data for portfolio inflows to Egypt during the period 1997-2012 reveals the several fluctuations; as shown in Table (1) (in Appendix I), the percentage in portfolio inflows varies severely from year to year. Therefore, this research will analyze the trend of FDI and external debt flows and its effect on the Egyptian economy.

By the late 1980s, Egypt faced chronic macroeconomic problems; inflation exceeded 20%, the current account was in deficit to the tune of 8 % of GDP. Real per capita growth of GDP averaged 0.2 % per annum during the (1986 -1993) period. That had weakened Egypt's attractiveness to foreign investors, and it became highly dependent on loans and grants to close the gap between savings and investment (Abdel-Wahed, 2003). In 1989, external debt as a percentage of GNI reached 116% according to the World Bank data. Consequently, the government signed agreements with the World Bank and the IMF in order to face these macroeconomic imbalances. Those agreements include the "Economic Reform and Structural Adjustment Program" (ERSAP) and the Structural Adjustment Loans (SAL) (Korayem, 1997).

The economic reforms introduced in the 1990s seemed to follow the preferential policy prescriptions of the "Washington Consensus" [1], which

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[1] The Washington Consensus refers to a set of broadly free market economic ideas, supported by prominent economists and international organisations, such as the IMF, the World Bank, the EU and the US.

advocated privatization and liberalization of markets and the rollback of the state in economic affairs. Therefore, acquisitions and partial acquisitions represented an easier entry path for FDI. The privatization program slowed after 1997 - with most successful firms sold -opening the way for Greenfield investment[2].

In spite of the FDI flows that Egypt received in the 1990s, it can be considered at low levels compared with other developing economies, that was mainly due to; first, in the early 1990s; the success in containing inflation was at the cost of a cumulative real appreciation limiting the ability to compete in the domestic and foreign markets, therefore, reducing Egypt's FDI attractiveness. Second, in the late 1990s; the 1997 Luxor massacre and the 1997-1998 East Asian economic crises weakened the positive effects of the ERSAP, resulting in modest FDI flows (Kamaly, 2011). Inward FDI decreased from 1.7% of GDP in 1990 to 1.2% of GDP in 2000. During this period, real external debt remained nearly stable; it decreased slightly from $ 32,960 million to $31,060 million in 1999 (World Development Indicators Database, WDI).

By 2001, there was a series of devaluations of the pound. By the end of 2002 the devaluation reached 35.3% of the fixed exchange rates of 1998/99. Despite these measures the economy was falling into recession as growth rate decreased to 2.5% and inflation started to rise, consequently, the attractiveness of the Egyptian Economy is reduced by uncertainty. Real FDI inflows decreased by more than 80% during the period (2000-2003); $1,298 million to $222 million (0.286% of GDP in 2003). Real external debt decreased to reach $ 772 million in 2003, but it increased as percentage of GDP; from 29% in 2000 to 36% in 2003 (WDI Database).

The appointment of a new cabinet in 2004, and its efforts to improve the investment climate and encourage domestic and foreign investment enhanced the attractiveness of Egypt as a business location, the ascent of FDI to Egypt started in 2004, and continued uninterruptedly until reaching the peak of US$ 209.8 million in 2007 as shown in Figure (1) (in Appendix II). In 2009, real FDI inflows dropped by about 50% compared with 2007, this is highly attributed to the Global financial crises.

External debt experienced an upward trend – increasing from $30.7 billion in 2004 to$36.5 billion in 2010 and then increased to $39.6 billion in 2014. The increase in external debt in the period 2004-2010 was highly attributed to the

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[2] Greenfield investment is a form of FDI where a parent company starts a new venture in a foreign country by constructing new operational facilities from the ground up, in addition to hiring new employees.

global shock that hit Egypt in mid 2008 (the global financial crisis), it was mostly an aggregate demand shock that reduced demand for Egyptian exports and lowered private investment due to increased uncertainty and weakened FDI[3]. Then, after the revolution in 2011, state revenues, especially tax proceeds, were negatively affected by the witnessed political and economic instability; this had a negative effect on tourism revenues, exports and FDI. However, in real terms, there was a great decrease in external debt over the period 2004 -2014 as shown in Figure (1); decreasing from $716 million in 2004 to $326 million in 2014.

Figure (2) shows that external debt reached 13% of GDP in 2014 down from 39% in 2004, while FDI exceeded 5% of GDP over the period 2005-2008, then declined to 2% of GDP in 2014.

According to the Egyptian Central Bank, total external debt increased by 6.6% in the FY 2015 to reach $48.1 billion at end June 2015. Total external debt fell from 15.6% of GDP at the end of June 2014 to 14.9% at the end of June 2015 (Central Bank, 2015).

Regarding the sectoral distribution of FDI,Oil and Gas sector has received the bulk of FDI into Egypt, although privatization and liberalization that picked up in the 1990s has prompted FDI in a range of industries, in particular cement, telecommunications and tourism. By 2002, the Government of Egypt completed the sale of the majority of the public enterprises slated for privatization, generating a large amount of revenues.

Figure (3) shows the sectoral distribution of inward FDI into Egypt during the period (2006-2010); oil and natural gas extraction accounted for 57% of total Inward FDI flows. Financial services have managed to attract sizeable amounts of Inward FDI, approximately 11% of the total over the same period. Another industry group is Information Technology (IT) and communications, which accounted for 5% of total Inward FDI.

Analyzing the sectoral composition of non-petroleum green-field investment provided by GAFI; it is apparent that Egypt became successful recently in diversifying its sectoral FDI flows. Figure (4) shows that non-petroleum green-field investment is more diversified in the year 2014 compared with 2004 where the manufacturing industry and financial services attracted sizeable amounts of FDI.

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[3] Distribution by creditor indicates that 42.9 % of Egypt's external debt is owed to four countries; namely, Japan (11.9 %), France (10.9 %), USA (10.2 %), and Germany (9.9 %).

3. Theoretical Background:

As this research is concerned with FDI and external debt, those flows and their effect on both growth and employment will be reviewed in the following subsections;

3.1. *The effect of FDI and external debt on growth:*
3.1.1. Concerning FDI:

Juma (2011) asserted that there are two major theories that explain why FDI should have a positive impact on growth; according to Solow neoclassical growth model (1956), an increase in the capital stock available in an economy leads to an increase in production, which then corresponds to an increase in the growth rate of output. Since FDI is additional capital, an increase in foreign-owned capital stock then leads to higher growth. However, assuming diminishing returns to capital, any increase in the growth rate observed after an increase in the stock of FDI is not sustained in the long run. This implies that within the neoclassical framework, FDI acts as a driver of growth in the short run.

Beyond direct capital formation, FDI can affect growth within the framework of endogenous growth theory, which emphasizes the accumulation of knowledge as the driver of long-run economic growth (Borensztein et al, 1998). The literature identifies four main channels of technological spillovers from Multinational Firms (MNFs) to local firms, namely: the imitation effect, the training effect, the competition effect and the linkages effect.

Through contact in the marketplace, local producers might copy the new technologies used by MNFs causing increased production; this diffusion mechanism is called the imitation effect (learning-by-watching effect). The second form of technology diffusion is training; foreign firms will need to train local workers to make good use of the advanced technologies that they introduce to local markets, when workers and managers employed in foreign firms move to other domestic ones; this increases productivity and causes an increase in the stock of knowledge in the host country, leading to higher output and growth in the long-run.

The competition effect occurs when this increased competition forces domestic firms to become more efficient in their production processes or to invest more resources in upgrading their technology. It is important to note that both the imitation and competition effects are likely to occur simultaneously and their impact on local competition depends on the size of the technology gap and the market size.

The final channel through which foreign affiliates can have productivity spillover on local firms is the linkages effect, also known as vertical (or forward and backward), spillovers. The forward linkage occurs when MNFs supply high quality inputs and/or at a lower price to domestic producers (Crespo and Fontoura, 2007). If these inputs are more advanced than those previously available to local firms, then they upgrade the technology available to domestic firms, leading to increased output[4] (Juma, 2012). With increasing returns to scale, foreign firms may benefit domestic suppliers if they increase the demand for local inputs; this is the case of backward linkage. This spillovers effect can benefit domestic suppliers through direct knowledge transfer and the requirement of higher quality inputs (Javorcik, 2004).

Brooks (2003) added two other channels through which host economies can benefit from FDI:

- Foreign investment gives advantage in terms of export market accessarising from economies of scale in marketing of foreign firms or from theability to gain market access abroad (Vong, 2007).
- Foreign investment may results in increased domestic investment, in this case, FDI have a beneficial crowding-in effect by increasing demand to local suppliers (complementary relationship).

While the above discussion focuses on the positive spillover of FDI, some arguments arise stating that the entry of MNFs could harm host economies if the foreign firms completely push out domestic firms from the market. The presence of the so-called "market stealing effects" - where MNFs take an increasing market share from domestic players - leads to decreasing production of domestic firms. As domestic firms cut back production, they may experience higher average cost;

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[4]It is important to note that the upgrade of production quality may lead to an increase in prices, if domestic firms do not have the capacity to benefit from this upgrade of quality, they will suffer the negative effects associated with increased costs (Javorcik, 2004b).

since fixed costs are spread over a smaller scale of production (Anh, Thang et al. 2008). Furthermore, as Nunnenkamp and Spatz (2003) explain, different types of FDI might have different impacts on growth; if a host country primarily receives resource-seeking FDI, then the extractive nature of such investment might hamper its ability to generate positive spillovers for the host economy.

3.1.2. *Concerning external debt*;

According to traditional neoclassical models, at initial stages of economic development, developing countries have limited capital stocks and investment opportunities; therefore, capital mobility increases the economic growth. As long as these borrowed resources are used for productive investment, economic growth increases and macroeconomic conditions improve.

However, a high level of accumulated debt may negatively affect investment and economic growth. The definition of debt overhang varies with Krugman (1988) defining debt overhang as "the presence of an existing inherited debt sufficiently large that creditors do not expect with confidence to be fully repaid." This gives the basis for the "Debt Overhang Hypothesis" given by the IMF which stated that "the debt overhang hypothesis does not describe a situation where foreign debt is merely large, but one in which the existence of foreign debt distorts the relevant margins considered for production and investment decisions." (Sundell, Lemdal, 2011). However, the extent to which investment is discouraged by debt overhang depends on - as Karagol (2002) asserted - the government's ability to generate resources to finance debt service obligations.

Another strand of the "debt overhang theory" emphasizes the point that large debt stocks increase expectations that debt service tends to be financed by distortionary measures such as inflation tax and cuts in public investment. Such uncertainty urges private investors to wait or invest less; another option may be capital flight which occurs when assets or money rapidly flow out of a country, due to an event of economic consequence. Such events could be subsequent distortions due to high external debt. (Loko; Mlachila, 2003).

In addition, higher debt service can raise the government's interest bill and the budget deficit, reducing public savings; this may either raise interest rates or

crowd out credit available for the private investment, dampening economic growth; this channel is known as the "crowding out" effect (Clements et al., 2003)

3.2. *The effect of FDI and external debt on employment:*

3.2.1. *Concerning FDI:*

According to trade theory; FDI inflows improve resource allocation and thereby increase labor productivity and employment in host countries. This is consistent with the results given by Caves (1996) who considered FDI as engine for growth since it would increase productivity, technology transfer and reduce unemployment. Consequently, various countries exert great efforts to attract FDI in order to reap the potential positive effects that this would have on economy (Denisia, 2010).

However, it is also possible for FDI to have very little or even negative effects on employment. In case of local companies that are privatized into hands of foreign investors, no initial increase in employment will reveal and if the foreign owner subsequently rationalizes the firm, employment is even likely to decrease (Jenkins, 2006).It is important to identify circumstances under which it has a significant positive impact, if such investment involves the creation of new "greenfield" plants, demand for labor will tend to increase. Also, if this FDI is concentrated in labour-intensive industries, this increase will be substantial.

More specifically, the effect of the FDI on employment can be expressed in four different effects of (Chen, 2012):

1- Employment Creation: in this case FDI brings new production capacity and new jobs;also, it can improve the development of relevant industries.

2- Employment Crowding-out: in this case inflow of the FDI makes the competition more intensive; consequently, some domestic enterprises have to reduce employment in order to improve their competitiveness.

3- Employment Shift: in this caseworkers transfer to local companies from foreign companies.

4- Employment Loss: in this case those who do not meet the efficiency required by the foreign-invested enterprise will lose their jobs.

The effects FDI can have on employment in host country - whether positive or negative - can be transmitted directly or indirectly. The direct effects of FDI on total employment have several channels; Greenfield investments are supposed to generate jobs, as they create new jobs which did not exist before. A reorganization of firms is expected in case of privatizations and other types of acquisitions, the effects on the employment seem to be negligible or negative.

Indirect effects appear to the extent to which FDI decides to buy local inputs where it increases local firms' demand and it has an indirect stimulating effect on employment levels. In contrast, reliance on imports or displacement of existing firms results in job loss.

3.2.2. *Concerning External Debt:*

Classical economists viewed public debt as government loan that withdraws funds from productive private employment. In contrast, the fundamental features of the Keynesian approach to the public debt and public finance includes the following argument which states that; to ensure satisfactory levels of output and employment, it can be necessary for the economy to experience public deficits permanently. Keynes considered borrowing for consumption to be as desirable as borrowing for investment in productive goods because consumption expenditure induced investment to rise; consequently, the increase in public debt through multiple effects would raise the national income.

Keynesian analysis reached its core in *Lerner's* "Functional Finance"; viewing government revenue, expenditure and debt as the tools to achieve the goal of stable employment. Lerner (1943) stated that: "Government should adjust its rates of expenditure and taxation such that total spending in the economy is neither more nor less than that which is sufficient to purchase the full employment level of output at current prices. If this means there is a deficit, greater borrowing, printing money, etc., then these things in themselves are neither good nor bad, they are simply the means to the desired ends of full employment and price stability". However, as soon as the economy reaches full-employment, there is no need for further borrowing. Consequently, the absolute size of the national debt does not

matter at all, what matters is government's ability to promote full employment and price stability; the economic effect of public debt should be analyzed in the light of the nature of the expenditures for which debt is incurred and whether it would be used to generate income effectively or not.

A.H. Hansen, the chief advocate of modern theory, also declares that, "Public debt is an essential means of increasing employment and has become an instrument of economic policy today." Harold G. Moulton maintains that, "Public debt is a national asset rather than liability and it is essential for the economic prosperity of the country"(Yadav, 2015).

However, the failure to utilize debt productively, mobilize investment and create new employment opportunities in developing economies, eventually creates a dilemma of lower revenue base which affects spending capacity and in turn higher debt servicing.

4. Empirical Literature Review:

Given the focus of our analysis in this research, we will concentrate on two capital flows FDI and external debt and their effect on the economy. The results obtained in the empirical literature concerning foreign capital flow's effect on growth in host countries will be reviewed below.

4.1. *The effect of different capital flows on economic growth and employment in Egypt:*

A number of studies analyzed the effect of different capital flows on economic growth in Egypt. Mohamed (2003) empirically examined the effect of foreign capital inflows (foreign aid and FDI) on economic growth in Egypt through savings and investment. Empirical work results - using time-series data for 26 years (1970-1995) - showed that foreign capital inflow has a significant positive effect on savings and investment and in turn on the economic growth rate. Therefore, investment, if productive, will increase the productive capacity of an economy and hence national income.

Since FDI is not an aggregate phenomenon, rather, FDI has different components: Greenfield FDI and mergers and acquisitions (M&A); these different

components have different effects, and should not be treated as a homogenous group under the title FDI (Massoud, 2008b).

Only two studies analyzed the effect of the sectoral distribution of FDI on economic growth in Egypt. They disaggregated FDI to three only sectors; agriculture, manufacturing and services; Massoud (2008a) in her research that covers the period 1974-2005 found that manufacturing FDI affects growth positively and significantly when it interacts with the stock of human capital and when it interacts with exports. FDI to the agriculture sector yielded negative impact on growth. This could explain the ambiguous effect that aggregate FDI has on growth, as its different components have contradicting effects in each country.

The second study is that held by Hanafy (2015), investigating the effect of sectoral FDI on economic growth in Egypt, using a panel dataset of 26 Egyptian governorates for the period 1992–2007. The study results showed no significant effect of aggregate FDI stock on economic growth in Egyptian governorates, which can be partly explained by the contradictory growth effects of FDI at the sectoral level. However, when he disaggregated FDI stock by sector, Hanafy found a positive effect of manufacturing FDI, a negative effect of agricultural FDI and no significant effect of services FDI on economic growth. Note that UNCTAD World Investment Report (2001) argues that "in the primary sector, the scope for linkages between foreign affiliates and local suppliers is often limited. The manufacturing sector has a broad variation of linkage intensive activities but there are large variations by industry. In the tertiary sector led by finance, trading, tourism and utilities, the scope for dividing production into discrete stages and subcontracting out large parts to independent domestic firms is also limited."

Concerning the effect of FDI on employment; Massoud (2008b) revealed that aggregate FDI had an insignificant effect on the demand for labor, except when it interacted with the size of the technology gap; aggregate FDI had a negative effect impact on the demand for labor. Concerning the different FDI modes of entry and sectoral distribution of FDI; Greenfield FDI and manufacturing FDI had a positive effect when they interacted with the level of human capital and exports, while M&A, agriculture and services FDI had negative direct effects.

Abuzaid (2011) investigated the impact of external debt on economic growth and external debt service on investment in three Arab countries (Tunisia, Egypt and Morocco) using a macro econometric model estimated for the period 1982-2005.The empirical findings reveal that external debt does not affect growth directly; however, external debt affects investment positively. Furthermore, the result also confirms that there is no sign of a crowding out effect through which external debt service is hypothesized to affect investment. This research suggests that these countries need to supplement their lack of domestic saving with external loans and other forms of foreign capital such as FDI.

4.2. Studies that analyze the effect of foreign capital flows on economic growth and employment in both developed and developing countries:

Most of the studies conducted in this regard are cross section studies analyzing the effect of foreign capital flows on the economy in several countries.

Aizenman, Jinjarak and Park (2011) investigated the relationship between economic growth and lagged international capital flows (more specifically; FDI, equity investment, and short-term debt) for about 100 countries during the period 1990-2010. Both lagged FDI inflows and lagged equity investment have a positive effect on GDP per capita, however, the association between growth and lagged equity flows is smaller than, and less stable than that with FDI flows. In contrast, the association of growth and lagged short-term debt is nil before the global financial crisis, and large negative effect during the crisis. Thus, empirical results provide some support for the popular perception that FDI is more beneficial for the country's economy than other types of inflows.

Another study carried out by Benamoun and Lehnert (2014) tried to explore the effect of remittances, FDI, and "Official Development Assistance" ODA on economic growth; they used panel data including180 countries (low-income and middle income countries) over the period 1990-2006. Results present strong evidence that the three sources of finance are conducive to economic growth especially in low-income countries. Those results contrast with that suggested by Wamboye (2012) whose empirical study covers the period 1975 to 2010. He concluded that FDI did not have any apparent meaningful effects on economic

growth of least developed countries, while external debt depresses economic growth of those countries.

Two studies investigated the effect of external debt on economic growth; First: Ejigayehu (2013) in his thesis examined whether external debt affected the economic growth (through and debt crowding out effect) of selected heavily indebted poor African countries. This was carried out by using data for eight heavily indebted poor African countries during the period 1991 to 2010. Ejigayehu distinguishes between two ways through which external debt may affect economic growth; when an accumulated debt discourages and overhangs investment, mainly private investment, this is known as the debt overhang effect; this is because private investors expect an increase in tax by government to pay the accumulated debt. The second effect is known as debt crowding out effect; when income from export is used to pay the accumulated debt, this in turn may negatively affects investment as those resources are not directed to investment and growth. The empirical analysis showed that the impact of external debt on economic growth is statistically significant in terms of debt crowding-out effect over the selected countries. In this case, indebted poor countries transfer resources, including foreign aid and foreign exchange resources to service their accumulated debt. On the other hand, the effect of external debt on economic growth is found to be statistically insignificant in terms of debt overhang effect.

The second study used data on a sample of 40 countries from Europe, MENA countries (including Egypt), Asia Pacific and Latin America over the period 1965-2010, Chudik et al (2013) investigated the long-run effects of public debt and inflation on economic growth. They found significant negative long-run effects of public debt and inflation on growth. Moreover, this research concluded that if the debt to GDP ratio is raised and this increase turns out to be permanent, then it will have negative effects on economic growth in the long run. In contrast, if the increase is temporary, then there are no long-run growth effects so long as debt to GDP is brought back to its normal level.

Concerning the effect of FDI on employment, a comparative study on employment creation in Argentina, Brazil and Mexico, undertaken by Ernst and Christoph (2005) revealed that the general assumption that high levels of FDI will lead to a strong increase in production and employment is misleading. This

research illustrated the sectoral distribution of FDI and its effect on employment; FDI favored the services sector in the 1990s, but created little employment because of the nature of the sector and because of rationalization measures, particularly in privatized companies and banks. FDI in the manufacturing sector did not create employment; it may even have reduced it in Argentina and Brazil, especially in transport equipment. Mexico experienced positive FDI and employment growth in the manufacturing, mainly due to a boom in the export sector in the 1990s, but FDI has been declining constantly and significantly since 2000, so as employment. Moreover, FDI did not go to high labor-intensive activities as suggested by neoclassical economic theories.

This study had an important conclusion that employment levels increase more through vertical Greenfield FDI - in the export sector - which creates new production plants; however, it did not have a multiplier effect on the rest of the economy. Other forms of FDI flows did not lead to the establishment of new production units; rather, they resulted in a change of ownership through privatization and M&As. In this situation FDI does not create new jobs in the short-run, in the medium term restructuring and rationalization take place resulting in job losses, in the longer run, firms may increase investment and new jobs can be created (Grazia, 2005).

It is apparent that empirical literature provides mixed results on the relationship between foreign capital flows and growth or employment; this may be due to difference in the terms of geographical or economic area covered and methods adopted during analysis. Moreover, cross-sectoral studies have the advantage that they enable analysis of the impact of the different technological and economic contexts. Since political and institutional structures vary from country to country, this paper will utilize sectoral data for Egypt which is essential in forming a better growth strategy.

5. Empirical Analysis

Massoud (2008a) estimated the effects of aggregate FDI inflows on economic growth after controlling for other growth determinants during the period

1974-2005, she concluded that FDI did not exert any positive significant effect on economic growth, the effect was either negative or insignificant; the suggested explanation for those puzzling econometric results was that FDI to different sectors has different effects.

Based on these findings we can start our analysis by concentrating on specific sectors that compose a high percentage of GDP and are also important in terms of employment and investment. The novelty of this research is that we will use a non-traditional view of GDP; excluding the petroleum sector and including only six sectors to our GDP calculation, those sectors are labor intensive and they represent 65% of GDP during the period 2006-2010, also they represent about 40% of FDI inflows during the same period. The concerned sectors include financial, manufacturing, agricultural, service, construction and tourism sectors. This research allows us to concentrate on those specified sectors whose effect on growth is highly ignored by other researches.

The empirical analysis is conducted in three stages, first; we examine the effect of aggregate FDI of the six sectors specified earlier in addition to external debt on aggregate GDP and employment of the same sectors. To get a more clear interpretation of the results; we conduct the second stage; a time series analysis which handles each sector separately. Finally; we will conduct a panel data analysis.

The basic data sources employed are the World Bank's World Development Indicators' database, the Egyptian "Central Agency for Public Mobilization and Statistics", the Egyptian Ministry of Planning and the Egyptian "General Authority for Investment and Free Zones". Data comprises six sectors and covers the period 1983-2014.

5.1. The First Stage: The Effect of Foreign Capital Inflows on Economic growth and Employment (Aggregate Analysis)

As stated earlier, we will start our analysis by examining the effect of FDI in addition to external debt on economic growth and employment (six sectors aggregate). We applied the "Autoregressive Distributive Lag approach" ARDL, The ARDL is becoming popular because of several advantages in comparison with other single equation cointegration procedures. This results from its ability to estimate the long and short-run parameters of the model, also, the ARDL approach to cointegration is a latest used econometric technique to analyze the data even stationary at level or first difference. Furthermore, the ARDL procedure is statistically much more significant approach to determine the cointegration relationship in small samples; it allows using different optimal lags of variables.

The ARDL framework includes; first; testing for the existence of any long-run relation among the variables using the bound test of cointegration, second, if we find cointegration among variables, we estimate the long-run and the short run coefficients (Pesaran et al., 2001).

We use the Augmented Dickey-Fuller (ADF) test of stationarity for all the variable used in our analysis and found that they are stationary either at level or at first difference. Utilizing Eviews 9 facilitates the ARDL estimation; the package offers built-in lag-length selection methods after specifying the maximum number of lags, in addition to conducting the bound test and specifying the long-run and short-run coefficients.

In the first model - estimating the effect of foreign capital inflows on growth - we utilized the natural log of real GDP (lnRGDP) as a dependent variable, the independent variables include real FDI (lnRFDI), real external debt (lnREXT), the growth rate for aggregated employment of the six utilized sectors (Gemp), real exchange rate (RER), enrolment ratio (ENROL) and export ratio (EXPR). The optimum lagged orders of the model based on Akaike information criterion is ARDL (2,2,2,1,2,1,2).

Table (2) reports results of the bound test for the existence of a long run relationship. The F-statistics is above the 5 % critical bounds, thus the null hypothesis of no cointegration can be rejected, i.e., there exists a long relationship among the variables of our model.

After ensuring the existence of cointegration among variables, we will calculate the error correction model and the long-run coefficients as illustrated in Table (3). It is apparent that the error correction term is negative and statistically significant at 1% level, ensuring that long-run equilibrium can be attained; deviations from the long-term inequality are corrected every 2 years.

In this estimation, although the effect of both FDI and external debt were positive in the short-run, in the long-run; the coefficient of real FDI became insignificant, while that of external debt is significant and negative (a 1% increase in external debt decreases RGDP by 0.5% in the long-run); growth in employment has a positive effect on growth in the short-run but in the long-run this effect turns to be negative. Enrolment ratio has a positive effect on growth in the long run, while EXPR and RER are insignificant. Note that the estimated model is stable as CUSUM test reveal. Also, it is free from serial correlatin (as the probability of chi-square of Breusch-Godfrey serial correlation LM test is 0.1285).

The second model to be estimated in the employment model, we will similarly use ARDL model in order to get the short and long-run relationships.The dependent variable is Gemp, the independent variables include real FDI (RFDI), real external debt (REXT), the growth rate of GDP of the six utilized sectors (GRGDP), ENROL and EXPR. The optimum model based on Akaike information criterion is ARDL (3,1,3,3,3,2).

The Result of the bound test is presented in Table (4); the F-statistics is above the 5 % critical bounds, thus there is a long relationship among the variables of our model. Therefore, we will proceed to estimate the long-run coefficients. For this model, the speed of adjustment is high; it is reached once every 8 months. This model is stable and has no serial correlation as the probability of chi-square of Breusch-Godfrey serial correlation LM test exceeds 5%.

Although, real FDI has a negative effect in the short-run, its effect turns to be positive in the long-run; this reveals that FDI needs some time to affect the growth rate of employment.   The effect of external debt on the growth rate of employment is ambiguous in the short-run but it is insignificant in the long-run, this is attributed to the utilization of external debt; most likely it is not directed to those sectors. RGDP has a positive effect on GEMP in the long-run, while the rest of the variables are insignificant (results are illustrated in Table (5)).

After conducting this aggregate analysis, we want to get deeper understanding of the results; consequently, we will repeat our analysis utilizing sectoral data. The next two sections include; time series analysis for each sector and panel data analysis conducted by pooling time-series observations across different cross-sections.

5.2. The Second Stage: The Effect of Foreign Capital Inflows on Economic growth and Employment; Individual Sector Analysis:

The Ordinary Least Square (OLS) method is based on the assumption that the means and variances of the variables being tested are constant over time. Variables whose means and variances change over time are known as non-stationary or unit root variables. Incorporating non-stationary or unit root variables in estimating the regression equations using OLS method give misleading inferences (Allaro, Kassa & Hundie, 2011).

However, Perron (1989) showed that failure to allow for an existing break leads to a bias that reduces the ability to reject a false unit root null hypothesis. To

overcome this, Perron proposed allowing for a known or exogenous structural break in the Augmented Dickey-Fuller (ADF) tests. Following this development, many authors including, Zivot and Andrews (1992) and Perron (1997) proposed determining the break point 'endogenously' from the data.

Given the breaks were absent under the null hypothesis of unit root there may be tendency for this test to suggest evidence of stationarity with break (Lee and Strazicich, 2003). In this case we can use OLS estimation method using the stationary variables whether containing structural break or not in addition to dummy variables to account for the break; the dummy variable takes the value one only for one observation in the year of the structural break specified by Zivot and Andrews tests.

The first step is to conduct unit root tests using ADF unit root test. However, the traditional ADF unit root test is not consistent in the presence of structural breaks (Glynn et al., 2007). To overcome this limitation; we conduct Zivot and Andrews test whose null hypothesis is that the variable has unit root without an exogenous structural break, and view the selection of the break as the outcome of an estimation procedure designed to fit that variable to a certain trend stationary representation; they assume the alternative hypothesis stipulates that the variable can be represented by a trend stationary process with a single break in trend occurring at an unknown point in time. Their approach is to choose the break point k which minimizes the DF unit root test statistic (Zivot and Andrews, 1992).

5.2.1. Unit Root Test:

We test the stationarity of variables by using ADF and Zivot-Andrews (Z&A) unit-root tests with one structural break. We divide variables into two groups; one that are common across sectors and the other group of variables that vary by sector. Common variables[5] include: Population growth (GPOP), Education as a percentage of GDP (EDUGDP) and EXPR, those variables were stationary according to ADF unit root test, RER was non-stationary at level[6]. To check whether the time series become stationary when taking into account the existence of a structural break, the Z&A test was conducted revealing that RER became stationary after including a structural break in the year 1999, this break coincides with the ending period of the Egyptian Reform Program that greatly affected RER.

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[5] Common variables are variables that do not differ by economic sector e.g. real exchange rate.
[6] RER is stationary at first difference, also, real external debt is stationary at first difference as those variables will be used in the ARDL model.

Variables that vary by sector include; real GDP, real FDI, real wage, and employment; for employment the break was in the year 2008 in almost all sectors revealing that employment was greatly affected by the Global financial crisis. The breaks specified for sectoral output (OUTPUT) differ according to sector; however, it is apparent that it coincides with the end of the reform program in 1998 and the devaluation of the Egyptian pound in 2003. Results of ADF (for stationary series) and Z&A tests (for the non-stationary series) are illustrated in Table (6).

5.2.2. OLS Regression Results:

After conducting Z&A test, it is apparent that all series are stationary at levels; therefore, we can now conduct OLS regression by adding a dummy variable which captures the break for the variables that need one.

The first model to be estimated is to capture the effect of RFDI on sectoral output growth in each sector. The conducted regression includes "OUTPUT" as a dependent variable to account for economic growth and RFDI and employment (lnEMP) as independent variables in addition to a set of other sector-related independent variables.

Regression results reveal that RFDI has a positive effect on growth in four sectors, namely; financial, construction, agriculture and tourism, with tourism having the highest coefficient (a LE 100 increase in RFDI leads to 0.64% increase in this sector's output) and agricultural sector having the lowest coefficient (a LE 100 increase in RFDI leads to 0.13% increase in this sector's output). RFDI has an insignificant effect on growth in the service sector; this may be acceptable due to its components (public facilities, water and electricity output) which depend mainly on the government sector not FDI. The shocking result concerns the manufacturing sector in which RFDI has a negative effect on output growth but this effect was weak (LE 100 increase in RFDI leads to 0.15 % decrease in OUTPUT). This may be attributed to the crowding-out effect that derive domestic firms out of the market.

Employment seems to have a positive effect on economic growth in all sectors except the service and tourism sectors where the effect was significant negative and insignificant respectively. Although education was expected to have a positive effect on growth as it represents investment in human capital, it was apparent that it has an insignificant effect; this has an important implication in our

study where the FDI inflows seek natural resources and large local market[7] but not the availability of skilled labor.

The summary of the results from the individual sectors' regression are presented in Table (7), the R^2 for all models exceed 80% and the Durbin Watson statistic exceeds 1.4 in almost all of them[8]. The P-value for the F-test of overall significance test is less than 1% for all sectors denoting that the coefficients are jointly not all equal to zero.

The second model to be estimated is to capture the effect of FDI on growth in employment in each sector. This regression model includes ln EMP as a dependent varia3qble to account for growth in employment in each sector and lnRFDI, lnRGDP and lnRwages as independent variables in addition to a set of other sector-related independent variables presented in Table (8).

The effect of change in RFDI on employment growth differs greatly from that on economic growth; RFDI has a positive effect on employment in financial, service and the manufacturing sectors while in the rest of the sectors, it does not affect employment. This may be attributed to labor substitutability between domestic and foreign companies. Sectoral growth has a positive effect on employment in all sectors, while wages has no effect in almost all sectors. The explanatory power of all models exceeds 88%.

5.3. The Third Stage: The Effect of Foreign Capital Inflows on Economic growth and Employment; Panel Data Analysis:

Since the capital inflows show their effect on the macro and micro variables in a delay of a specific time period, therefore in this section, panel ARDL method, introduced by Pesaran, Shin and Smith was used to analyze the lagged values. Another advantage of this model is that it can be used even with variables with different order of integration irrespective of whether the variables under study are I(0) or I (1) (Pesaran, 1997).

The Pooled Mean Group (PMG) approach appears to be the appropriate choice for our models as we conduct sectoral analysis where different sectors have access to the common technologies and have common economic conditions. So, we can assume common long-run parameters across sectors. However, the speed of adjustment to the long-run steady state and the short-run parameters, which are determined by sectoral specific factors, are more likely to be different across

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[7] The effect of export ratio on growth is insignificant in both the manufacturing and agricultural sectors.

[8] Only the service and financial sectors whose value of Durbin Watson is 1.1 in both sectors

sectors. The validity of this restriction can be investigated using the Hausman test[9] (Tan, 2006).

Consequently, the novelty of this model is that short-run adjustment is allowed to be sector-specific; utilizing sectoral data for each of the FDI, GDP, employment and average wages, giving a clear picture of the effect in each sector, in addition to the interaction effect among sectors whose effect will appear in the homogeneous coefficients in the long-run.

However, there are several requirements for the validity, consistency and efficiency of this methodology, those include; the existence of a long-run relationship among the variables of interest which requires the coefficient of the error correction term to be negative. Also, an important assumption for the consistency of the model is that the resulting residual of the error-correction model be serially uncorrelated. Such conditions can be fulfilled by including the ARDL (p,q) lags for the dependent (p) and independent variables (q) in error-correction form.

The following subsection includes the panel unit root tests conducted for variables used in the two models that follow; the economic growth and the employment models analyzed in the later section.

5.3.1. Panel Unit Root Test

Though testing for the order of integration of variables is not important when applying the ARDL model as long as the variables of interest are I(0) and I(1), we carry out these tests just to make sure that no series exceeds I(1) order of integration.

For this study we utililize the Im, Pesaran and Shin (IPS) unit root test - which is based on the well-known Dickey-Fuller procedure - to analyze long-run relationships in panel data. This test combines information from the time series dimension with that from the cross section dimension. The IPS test controls for cross-sectional dependence by using demeaned data. This approach assumes the existence of one common factor with the same effect on all the sectors (Trapani, 2004). The results of the unit root test for sectoral variables for the raw variable

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[9] The Hausman test evaluates the consistency of an estimator when compared to an alternative; it can be used to select between the MG and PMG models under the null hypothesis that the poolability restrictions imposed by the PMG are valid. The calculated p-value is greater than 5%, we cannot reject the null hypothesis and we conclude that the PMG is consistent in this model and more efficient than the MG estimator.

and its demeaned version is given in Table (9). It is apparent that all variables are stationary at level except lnrgdp which are stationary at first difference.

5.3.2. Panel ARDL Model

After making sure that all variables are stationary either at level or at first difference, we will estimate the PMG model. We also estimate a mean group (MG)[10] alternative, which allows the long-run parameters to vary, and then test the PMG's poolability assumption through a Hausman test.

Based on Pesaran et al. (1999), the dynamic heterogeneous panel regression can be incorporated into the error correction model using the autoregressive distributed lag ARDL (p,q) technique and stated as follows (Loayza and Ranciere, 2006):

$$\Delta(y_i)_t = \sum_{j=i}^{p-1} \alpha_j^i \, \Delta(y_i)_{t-j} + \sum_{j=0}^{q-1} \alpha_j^i \, \Delta(x_i)_{t-j} + \varphi^i[(y_i)_{t-1} - \{\beta_0^i + \beta 1i(xi)t-1\}] + \epsilon it$$

Equation (1)

For the growth model; **y** is the GOUTPUT, **X** is a set of independent variables including RFDI in addition to real external debt (REXT), growth rate of employment (gemp), RER and EDUGDP, α_j^i and α_j^i represent the short-run coefficients of lagged dependent and independent variables respectively, **β** are the long-run coefficients, and φ^i is the coefficient of speed of adjustment to the long run- equilibrium. The subscripts **i** and **t** represent sector and time, respectively and ϵ_{it} is a time-varying disturbance. The term in the square brackets contains the long-run growth regression. The parameter φ^i is expected to be significantly negative under the prior assumption that the variables show a return to a long-run equilibrium.

This model examines the effect of FDI on ssectoral output growth and uses panel data for 6 sectors during the period 1983-2014. ARDL (1, 2, 2, 2, 2, 2) has been chosen by Akaike information criterion using maximum lag 2.

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[10] The Mean Group (MG) estimator estimates separate equations for each sector and averages the resulting long-run coefficients. This estimator always produces consistent estimates but it does not take into consideration that parameters may be identical across sectors in the long run.

To test the validity of the pooling assumption, we undertake a Hausman test; the test assesses whether the differences in long-run coefficients are not systematic (null hypothesis). The calculated Hausman statistic is 4.16 (*p*-value is 0.24); hence the test does not reject the null hypothesis supporting long-run homogeneity.

Since, the PMG assumes cross-sectional independence of the regression residuals across sectors; we can test the assumption of cross-sectional independence with the Breusch-Pagan LM test statistic. The LM test requires T>N (T: time, N: sectors) where T=33 and N=6. , the results from the LM statistic (15.17, Pr = 0.4387) could not reject the hypothesis of cross-sectional independence.

The results of the ARDL model are illustrated in Table (10); it is apparent that the estimated model is statistically significant and the speed of adjustment is negative, so a long-run relationship exists between RFDI and economic growth. About 98% of the disequilibrium in the short run will be corrected annually; therefore long-run equilibrium will exist yearly.

In this estimation, the long-run coefficients of real external debt and growth rate of employment are significant at the 1% level; growth in employment have a positive effect while external debt affect growth negatively(an increase in external debt by LE 100 will lead to a decrease in economic growth rate by 0.00159%). FDI have no effect on growth in the long-run, however, in the short-run; the effect of FDI on economic growth is significant and positive (a LE100 increase in RFDI increases growth rate by 0.09%). This may highlight the inability of domestic firms to compete with foreign affiliates which derive some domestic firms out of the market causing the effect of FDI to vanish in the long-run. Education has a positive effect on growth both in the short and long-run but real exchange rate is insignificant both in the short and long-run.

Since the PMG estimator restricts the long-run slope coefficients to be the same across countries but allows the short-run coefficients (including the speed of adjustment) and the regression intercept to be sector specific, we can analyze cross section results which reveal that the speed of adjustment is high in all sectors; it is higher in the manufacturing, construction and agriculture sectors where long-run equilibrium is reached annually. In contrast, the speed is lower in the rest of the sectors whose adjustment would take about 18 months.

Comparing the short run coefficients of RFDI in different sectors; it is apparent that the effect on output growth is significant and positive in all sectors

except for the manufacturing sector (RFDI has negative effect on growth). External debt had a negative significant effect in all sectors.

The second model to be estimated is the employment model, analyzing the effect of RFDI on the growth in employment[11], utilizing sectoral data. We will estimate equation (1) for the employment model and the variables used are; **y** is the growth rate of employment in each sector (gemp), **X** is a set of independent variables including RFDI in addition to economic growth represented by natural log of real output (LnOUTPUT), average real wage in each sector (lnRwage), RER, Expr and edugdp.

ARDL (1, 2, 2, 2, 2, 2, 2) in differences has been chosen by Akaike information criterion using maximum lag 2 for independent variables and maximum lag 1 for the dependent variable. Then, we undertake a Hausman test, the calculated Hausman statistic is 1.63 (*p*-value is 0.65); hence, the PMG is more efficient. After that, the results from the Breusch Pagan LM test for cross-section dependence (the LM statistic = 16.09, Pr = 0.376) reveals that this model is free from cross section-dependence. The results of the employment model are presented in Table (11).

For the employment model, the speed of adjustment is high as equilibrium will exist after about 8 months. The long-run coefficient for RFDI is positive and significant; an increase by LE 100 in RFDI increases the growth rate of employment by 0.08%. However, increase in economic growth rate leads to a decrease in the growth rate of employment; most likely this is attributed to the capital intensive economic growth that limits the increase in employment. Education has no effect on growth of employment; this highlights the mismatch of education and job requirements. The short run coefficients are insignificant as these variables need time in order to have a significant impact on employment growth.

The speed of adjustment for employment in each cross section is high as it exceeds 1 in all sectors except agriculture whose adjustment is reached once every 3 years. The short-run coefficient for RFDI is positive for the financial, agricultural and service sectors, while it is negative for the rest of the sectors.

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[11] Note that the researcher tried to include external debt in this model, but it results in insignificant model, so it was excluded.

5.4.   Summary of Empirical Results

We have undertaken the empirical study in three stages; first examining the effect of foreign capital inflows on economic growth and employment (six sectors aggregate). We utilized aggregate FDI of the six sectors specified in addition to external debt and aggregate output (non-traditional GDP) and employment of the same sectors. The findings reveal that in the long-run; the effect of real FDI on growth is insignificant, while that of external debt is significant and negative (the effects of both FDI and external debt were positive in the short-run). Concerning the employment model; the effect of external debt on the growth rate of employment is insignificant in the long-run while that of FDI is positive.

The second stage is concerned with individual sectoral analysis using OLS model supported by dummy variables to account for structural breaks. The studied models reveal that FDI has a positive effect on output growth in the financial, construction, agriculture and tourism sectors; however, it has a negative effect in the manufacturing sector. FDI has a positive effect on employment in the financial service and manufacturing sectors but has no effect in other sectors; this may be attributed to labor transfer to foreign affiliates that offer higher wages to skilled labor, so the net effect would be a decrease in sectoral employment.

In the third stage, we conducted a panel ARDL model; the growth model reveals that FDI has a positive effect on sectoral output growth rate only in the short-run, but in the long run it has no effect. This may be attributed to the competition between domestic and foreign firms that may derive some of domestic firms out of the market. External debt has a negative effect on growth that appears in the long-run, this is caused by the uses of external debt that may not be directed to productive uses. The effect of FDI on employment is positive in the long-run although it is insignificant in the short-run, revealing the time needed for this effect to appear.

It is important to note that the results of the aggregate time series ARDL model and the panel ARDL sectoral model coincide in the long run concerning the effect of FDI on growth and employment, also concerning the effect of external debt on growth.

Finally, we have to reveal the limitations of this study concerning the use of non-traditional GDP (including six main sectors only), in addition, we do not take into account the interactions that take place between different sectors (this is

consist with the assumptions of panel ARDL model that we use in our research), this may be examined in future studies.

6. Conclusion

After analyzing the Egyptian GDP and determining the share of the six main sectors (financial, manufacturing, agricultural, service, construction and tourism sectors) in the economy, we found that those sectors represent 65% of GDP during the period 2006-2010. The share of FDI directed to the same sectors is only near 40%, the rest 60% is directed to the petroleum and gas sectors; this mismatch encouraged us to deeply analyze those sectors. To the best of our knowledge, our paper is the first to examine the impact of FDI (Greenfield) and external debt on output and employment levels using sectoral perspective - for each of FDI, output growth and employment - in Egypt during the period 1983-2014.

The findings suggest that in the long-run; the effect of FDI on output growth is insignificant (although it was positive in the short-run), while the effect of external debt is significant and negative. The impact of FDI on employment growth rate is positive in the long-run but external debt effect was found to be insignificant.

Concerning the sectoral analysis; FDI has a positive effect on sectoral output in all sectors except the manufacturing sector. This negative effect is highly attributed to the crowding out effect where domestic firms are unable to compete with foreign ones; consequently they are derived out of the market and the final effect of FDI on manufacturing output is negative. The effect of FDI on growth of employment in the construction and tourism sectors is either insignificant (according to the individual sector time series analysis) or negative (according to the panel data model), the same reasoning of crowding-out can explain these results.

Therefore, the government has to face the crowding-out problem that hamper the positive effect of FDI to continue in the long-run. This can be either by offering fiscal incentives to domestic firms in order to be able to compete with foreign firms or by restricting FDI entry to specific stages of production that are expected to have positive spillover effects on domestic firms. Also, as the study results reveal that external debt has negative effect on output growth in the long-run, it is important not to depend on external debt as an easy way to get capital inflows, however, concentration should be directed to investment. Since the bulk of FDI coming to Egypt is directed to petroleum and gas sectors, more incentives

must be given to foreign investors to direct their investments into other important sectors, in addition to improving infrastructure and institutional framework.

This research presents a step forward in literature that concentrates on basic economic sectors in Egypt; future work may include all economic sectors in addition to taking into account inter-relationship between sectors.

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APPENDIX I

Table (1): portfolio flows to Egypt 1998-2012

	Portfolio inflows(US$)	percent change
1998	-160000000	-131.10%
1999	657800000	-511.13%
2000	269000000	-59.11%
2001	39200000	-85.43%
2002	-216900000	-653.32%
2003	36800000	-116.97%
2004	26100000	-29.08%
2005	729400000	2694.64%
2006	501900000	-31.19%
2007	-3198900000	-737.36%
2008	-673600000	-78.94%
2009	393000000	-158.34%
2010	1724400000	338.78%
2011	-711300000	-141.25%
2012	-983400000	38.25%

Source: *World Bank, World Development Indicators Database.*

Table (2): Bounds Tests for the Existence of Cointegration:

F-statistics	5% Critical values	
	I(0)	I(1)
5.0734	2.27	3.28

Table(3):ARDL Cointegrating and Long-run Form (lnRGDP is the dependept variable):

	ARDL (2,2,2,1,2,1,2).
Long-run Coefficients	
Gemp	-2.3*
lnRFDI	-0.0068
lnREXT	-0.545**
RER	0.0177
ENROL	0.012***
EXPR	-0.0.013
Constant Term	
C	12.45 ***
Speed of Adjustment	
φ	-0.51***
Short-run Coefficients	
ΔlnRGDP	-0.3 **
ΔGemp	0.6**
ΔGemp$_{t-1}$	0.14***
ΔlnREXT	-0.05
Δ lnREXT$_{t-1}$	0.08*
ΔlnRFDI	0.032***
ΔRER	0.017***
ΔRER$_{t-1}$	0.008**
ΔENROL	-0.0016
ΔEXPR	-0.005**

***significance level 1%, **significance level 5%, *significance level 10%

Table (4): Bounds Tests for the Existence of Cointegration:

F-statistics	5% Critical values	
	I(0)	I(1)
30.69	2.39	3.38

Table(5):ARDL Cointegrating and Long-run Form (Gemp is the dependept variable):

	ARDL(3,1,3,3,3,2)
Long-run Coefficients	
RFDI	0.00006**
REXT	0.000008
GRGDP	0.279**
ENROL	0.00023
EXPR	-0.00011
Constant Term	
C	0.0008
Speed of Adjustment	
φ	-1.45***
Short-run Coefficients	
ΔGEMP	0.44***
ΔGEMP$_{t-1}$	0.78***
ΔRFDI$_t$	-0.0001***
ΔGRGDP$_t$	0.117***
ΔGRGDP$_{t-1}$	-0.042
ΔGRGDP$_{t-2}$	-0.16***
ΔENROL	-0.002***
Δ ENROL$_{t-1}$	0.0004
Δ ENROL$_{t-2}$	-0.0022***
ΔREXT	-0.000003
Δ REXT$_{t-1}$	0.000001
Δ REXT$_{t-2}$	-0.000006***
Δ EXPR	0.0039***
Δ EXPR$_{t-1}$	-0.0017***

***significance level 1%, **significance level 5%, *significance level 10%

Table (6): ADF and Zivot and Andrews Test Results:

	Financial	**Construct-ion**	**Agriculture**	**Manufact-uring**	**Services**	**Tourism**
OUTPUT	1997	2007	1998	1998	2003	2004
Ln EMP	2008	2008	2008	2009	Stationary at level	1997
RFDI	2005	2007	Stationary at level	2009	Stationary at level	Stationary at level
LnRFDI	Stationary at level	1995	Stationary at level	Stationary at level	2009	Stationary at level

Source: Authors' calculations using Eviews software. Since there is no consensus on which version (intercept only or intercept and trend) is preferable for Z&A test, we used the one with the lowest p-value.

Table (7): Effect of FDI on Sectoral Output Growth (Dependent Variable : Sectoral Output):

	Financial	Construct-ion	Services	Manufact-uring	Agriculture	Tourism
Real FDI	0.0026**	0.0024**	insig	-0.0015***	0.0013*	+0.0064*
LnEMP	1.32***	+0.55***	-2.8***	+1.5***	+1.3 *	insig
RER	0.09**			insig	0.062***	
INF		insig	-0.022***			0.024*
EXPR				insig	insig	
GPOP		insig				
lnpop			4.1***			
edugdp	insig			insig		insig
Durbin Watson	1.115	1.4	1.1	1.9	1.54	1.62
R2	91.6%	98.5%	80%	97.3%	94.5%	89%

Source: Authors' calculations using Eviews software, ***significance level 1%, **significance level 5%, *significance level 10%, "insig" accounts for insignificant.

Table (8): Effect of FDI on Sectoral Employment (Dependent Variable: lnEMP):

	Financial	Construct-ion	Services	Manufact-uring	Agriculture	Tourism
Ln Real FDI	0.04***	insig	+0.08*	+0.032**	insig	insig
lnrgdp	+0.111*	+0.68***	+0.318***	+0.69*	+0.66***	+0.07***
RER	-0.016***			insig	-0.036*	
lnrwage	+0.46***	insig	insig	insig	insig	insig
lnpop		+2.17***				
edugdp	-3.05**		insig			-3.8*
INF	-0.009***					insig
Durbin Watson	1.66	1.5	1.74	1.7	1.46	1.66
R2	99%	98.5%	89%	98%	93%	85%

***significance level 1%, **significance level 5%, *significance level 10%

Table(9): Panel Unit Root IPS Test:

	Raw variable T-bar	Demeaned variable T-bar
lnrgdp	-0.8421	-1.6759
ΔLnrgdp (first defference)	-5.1382***	-6.0706 ***
RFDI	-3.8388 ***	-5.5989***
gemp	-8.2940 ***	-5.9791 ***
gRGDP	-12.2453 ***	-9.3746***
lnRwage	-2.4088 **	-2.8673***

Source: Authors' calculations using Stata software, ***significance level 1%, **significance level 5%, *significance level 10%

Table(10):Panel ARDL Results (Dependent variable : GOUTPUT):

	ARDL(1,2,2,2,2,2)
Long-run Coefficients	
RFDI	-0.0000607
Gemp	0.355***
REXT_LE	-0.0000159***
EDUGDP	1.266**
RER	-0.00237
Speed of Adjustment	
φ	-0.9866***
Short-run Coefficients	
ΔRFDI	0.00087**
ΔRFDI$_{t-1}$	0.00081**
ΔGemp	-0.257***
ΔGemp$_{t-1}$	-0.0344
ΔREXT_LE	-0.0000512
Δ REXT_LE$_{t-1}$	0.000037
ΔEDUGDP	-0.134
ΔEDUGDP$_{t-1}$	1.2***
ΔRER$_{t-1}$	-0.00035
ΔRER$_{t-2}$	0.003
Constant Term	
C	0.0444***

Source: Author's calculations using Eviews. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively.

Table(11):Panel ARDL Results (Dependent variable : Gemp):

	ARDL(1,2,2,2,2, 2, 2)
Long-run Coefficients	
RFDI	0.0008***
LnOUTPUT	-0.092***
lnRWage	-0.0026
EXPR	0.0022***
RER	0.00233
EDUGDP	0.0103
Speed of Adjustment	
φ	-1.69***
Short-run Coefficients	
ΔRFDI	-0.0019
ΔRFDI$_{t-1}$	-0.0036
ΔlnRGDP$_t$	-1.01
ΔlnRGDP$_{t-1}$	-0.28
ΔlnRWage$_t$	-0.338
ΔlnRWage$_{t-1}$	-0.175
ΔEXPR	0.026
ΔEXPR$_{t-1}$	-0.025
ΔRER$_t$	-0.06
ΔRER$_{t-1}$	-0.03
ΔEDUGDP$_{t-1}$	-2.2
ΔEDUGDP$_{t-2}$	0.499
Constant Term	
C	1.4***

Source: Author's own calculations using Eviews. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively.

APPENDIX II

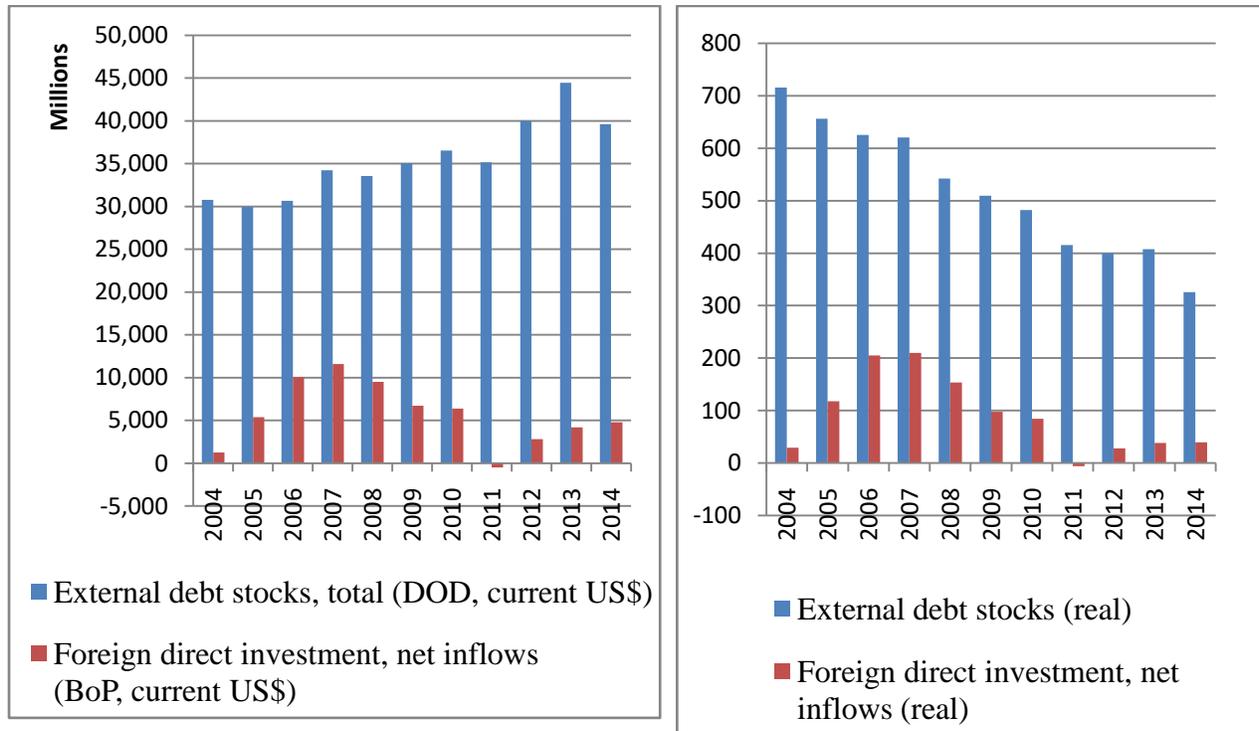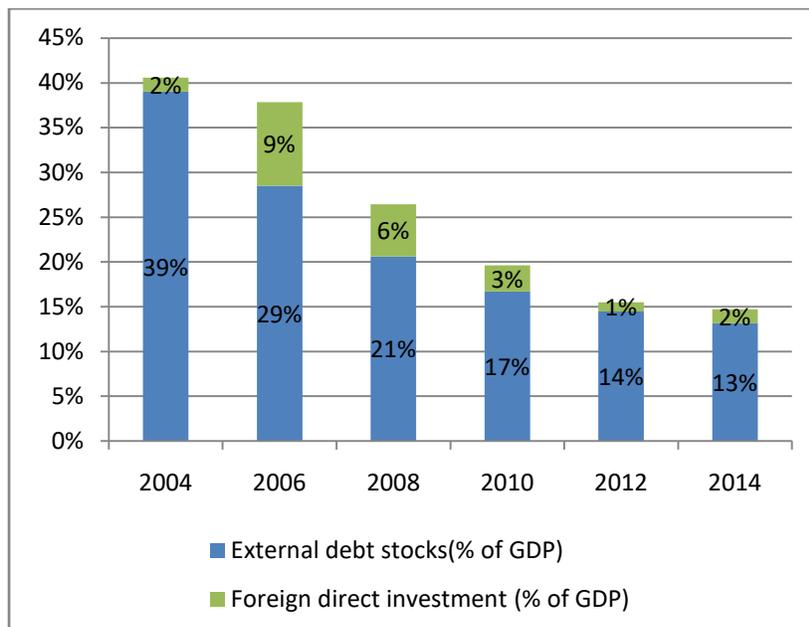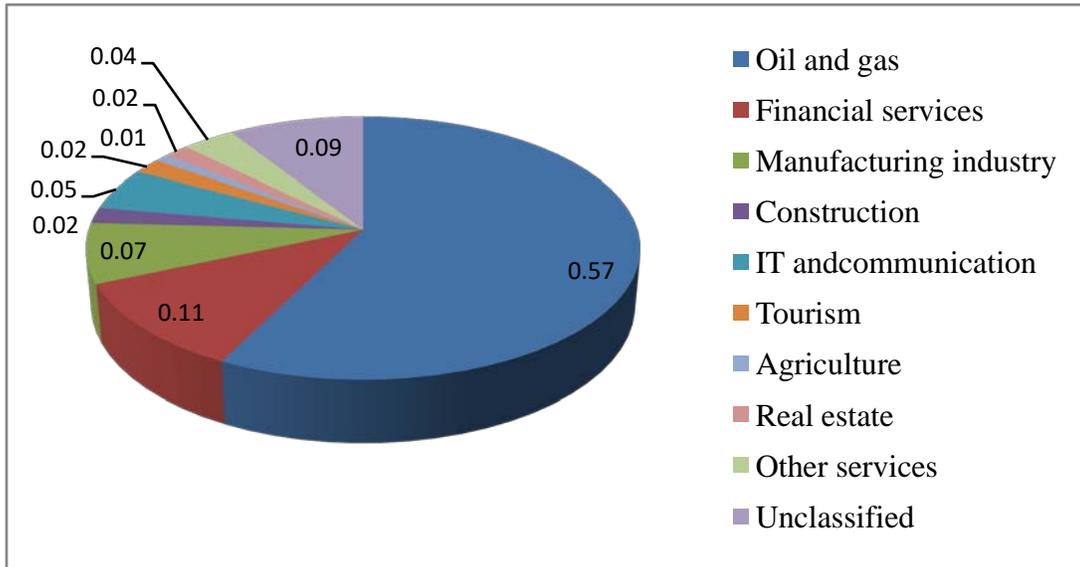*Figure (1): FDI and Total External Debt (2004-2014):*

Figure (2): FDI and Total External Debt as Percentage of GDP (2004-2014):
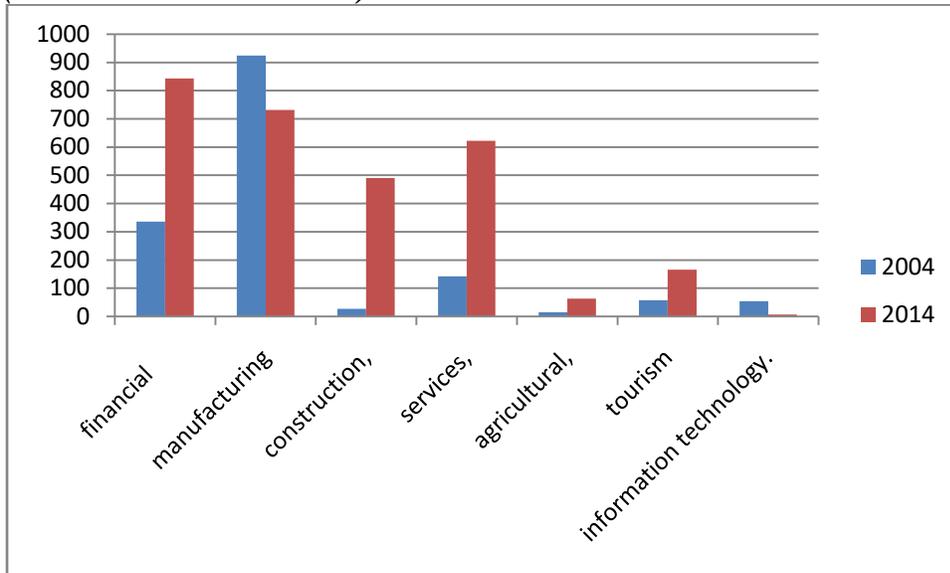

Source: World Bank, World Development Indicators Database.

Figure(3): Sectoral Distribution of Inward FDI into Egypt (2006-2010):

Source: Central Bank of Egypt (CBE)

Figure (4): The Sectoral Composition of Non-petroleum Green-field Investment (value in million dollar):

Source: General Authority for Investment and Free Zones (GAFI)