

The Impact of Exchange Rate on Foreign Direct investment 1980-2016: An Applied Study

Gehad Sherif Sabry¹

الملخص

شهدت مصر مجموعة من أنظمة أسعار الصرف على مدار الخمسة وعشرين عامًا الماضية، مما يدل على أن أسعار الصرف تلعب دورًا مهمًا في تحديد نجاح الاقتصاد الكلي لأي اقتصاد ناشئ.

كان مصر تهدف لنظام سعر صرف المرن يساعد في جذب التدفقات الرأس المال ويسمح للاقتصاد بامتصاص أي صدمات خارجية ويساهم في زيادة الصادرات. ولقد قامت مصر بتحرير الجنيه المصري مرتين خلال الخمسة وعشرون عامًا الماضية كانت المرة الأولى في 28 يناير 2003، والثانية في 3 نوفمبر 2016. تهدف هذه الورقة لمعرفة تأثير تحرير الجنيه المصري على الاستثمار الأجنبي المباشر في مصر.

لذا قمنا في هذه الدراسة بفحص الارتباط بين مجموعة من المتغيرات والاستثمار الأجنبي المباشر (FDI) واكتشفنا أن الاستثمار الأجنبي المباشر (FDI) والنتائج المحلي الإجمالي وأسعار الفائدة وأسعار الصرف والتضخم جميعها لها ارتباط إيجابي مع الاستثمار الأجنبي المباشر. وبذلك تحققت فرضية البحث وهي أن سعر الصرف يؤثر على الاستثمار الأجنبي المباشر بشكل إيجابي (FDI).

¹ CIC- School of Business at Sheikh Zayed Campus.

**The Impact of Exchange Rate on The Foreign Direct investment (FDI)
(1980 – 2016)**

**The Impact of Exchange Rate on Foreign Direct investment
(1980 – 2016): An Applied Study**

Gehad Sheriff Sabry²

I. Abstract

Egypt has experienced a range of exchange rate regimes over the last 25 years, demonstrating that exchange rates play a critical role in determining the macroeconomic success of any emerging economy.

Egypt's goal with a flexible currency rate regime was to attract capital inflows while also allowing the economy to absorb genuine external shocks and increase exports. Egypt has used liberalization of the Egyptian pound twice since January 28, 2003, on November 3, 2016.

The goal of this research is to see how the Egyptian pound's liberalization effects foreign direct investment in Egypt.

In this study, we examined the association between a set of variables and foreign direct investment (FDI). We discovered that foreign direct investment (FDI), GDP, interest rates, exchange rates, and inflation all had a positive association. It also fulfilled the research's hypothesis: "The exchange rate affects foreign direct investment in a positive way" (FDI).

Keywords: Foreign Exchange Rate –Impact –FDI.

² CIC- School of Business at Sheikh Zayed Campus.

II. Introduction:

The Egyptian government announced the floating of the Egyptian pound on November 2016, as part of an economic reform programmer and with international support, with the goal of addressing structural imbalances weighing on the economy.

Some analysts considered that floating the Egyptian pound was the finest technique for refreshing the economy and a wise option to enhance Foreign Direct Investment and Exports, as suggested by some economic theories.

Economists and policymakers pay attention to a country's exchange rate because investors prefer to invest in countries where there are no volatility or uncertainty in the exchange rate. Where the exchange rate is a major component, it has a direct impact on macroeconomic variables such as FDI and GDP.

There are two schools of thought on FDI: classical and neoclassical.

The classical school believes that an increase in the exchange rate creates competitive advantages in international trade. When a country's exchange rate rises, local export items become less expensive, and demand for export rises as well. This means that international demand for commodities rises, while imports fall. All of these factors have an impact on FDI and GDP. (Khan et al. 2011).

The neoclassical school believes that moving from a fixed to a flexible exchange rate indicates that the exchange rate is unstable. According to several theories, as currency rate volatility rises, it has a direct impact on export and investment, causing uncertainty about future profits. In addition, the

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volatility in the exchange rate makes investors are wary about investing in this country, thus they are reducing their investments.

In reality, many emerging market economies over the last decade, exchange rate depreciation has been linked to financial hardship and output declines. As a result, recent research has reexamined the stabilizing qualities of exchange rate regime when exchange rate movements affect financial circumstances, which then affect economic activity.

III. The problem

One of the most important factors on FDI is the currency rate, in terms of both their levels and volatility. Because exchange rate volatility has a direct impact on foreign direct investment and causes investors to be concerned about future profits.

As a result, we attempt to analyses the relationship between the floating Egyptian pound and foreign direct investment in this study

IV. Objective

The primary goal of this study is to look at the impact of the Egyptian pound's liberalization effects foreign direct investment in Egypt (FDI).

V. Research Methodology

This study uses time series data to examine the impact of the US Dollar exchange rate on FDI in Egypt. We used data from the exchange rate and foreign direct investment during a 37-year period, from 1980 to 2016. The data for our study came from the World Bank's website.

We will use an inductive method, and we will use software to test Correlation and Regression to see if there is a relationship "between" the US Dollar exchange rate and FDI. Because we are interested in identifying the significant variables related with the problem, the goal of our study would be descriptive, and the sort of examination would be correlational.

VI. The hypothesis of this research

The research hypothesis is that there was a positive association between the exchange rate and foreign direct investment (FDI) in Egypt during the period under consideration (1980-2016).

VII. Literature Review

This part presents the relevant theoretical literature on the effect of foreign exchange rate on foreign direct Investment and the linkages between exchange rate and FDI.

There are several theories about the currency rate volatility and direct impact on investment. We will showing some studies were conducted to investigate the effects of Foreign exchange rate on FDI.

- (Dharmendra Dhakal, Raja Nag 2010): This article examines the impact of exchange rate uncertainty on foreign direct investment in China, Indonesia, Malaysia, the Philippines, South Korea, and Thailand, using panel data. These countries have continued to attract significant FDI inflows despite high exchange rate volatility. Following the establishment of the data series' stationery, a panel co-integration test was performed, followed by the development and estimation of an error correction model utilizing two sets of panel data. Overall, the findings of the estimation are in line with theoretical predictions. In

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our sample countries, exchange rate volatility has a positive impact on foreign direct investment

- **(Muhammad Bilawal, Muhammad Ibrahim 2014)**, Exchange rates play a significant effect in the macroeconomic success of any major economy. The goal of this study was to see if exchange rate uncertainty or swings have an impact on Pakistan's macroeconomics. Secondary and time series data were used in this study. For this purpose, 32-year-old data on exchange rates and foreign direct investment (FDI) for the years 1982 to 2013 was acquired from the State Bank of Pakistan's website. To examine the relationship between the exchange rate and FDI, SPSS software was used to run correlation and regression tests. The correlation results revealed a positive significant relationship between the exchange rate and foreign direct investment
- **(Omankhanlen, A. E 2011)**, The impact of exchange rates and inflation on foreign direct investment, as well as their relationship with economic growth, is the subject of this research. Its main goal is to determine the impact of inflation and currency rates, as well as the bidirectional effects of FDI on economic growth in Nigeria. The research covered a thirty-year period. On the thirty-year data, a linear regression analysis was conducted to establish the link between inflation, exchange rate, FDI inflows, and economic growth. The study finds that FDI follows economic growth, which is fueled by trade openness, but inflation has no bearing on FDI. The exchange rate, on the other hand, has an impact on FDI.

- Alex Ehimare OMANKHANLEN
- **(H Kim, WG Kim, J.A An 2003)**, Some theories suggest that exchange rates tend to migrate to a level where the cost of goods in any country in the deferent currencies is the same. Therefore, Consumers transfer their demand to where prices are lowest, so that the prices of a similar basket of products in two different nations should be identical when measured in the same currency.
- **(Mungami, S.E. 2012)**, Currency exchange fluctuations have a spiral effect on the value of a company through changing commodities prices, which is an important observation for every investor, foreign or domestic. That foreign exchange has an impact on a company's worth as well as its worldwide competitiveness. Where, as global commerce and money flows continue to grow, exchange rates have become one of the most important factors of business profitability and stock prices.

VIII. The development of exchange rate:

From the 1960s until 2003, Egypt maintained a fixed adjustable peg of its currency to the US dollar for more than 40 years. Foreign exchange controls and different exchange rates followed this approach. The Egyptian government implemented a macroeconomic reform programmer by the end of the decade in order to address foreign and internal imbalances. The overvaluation of the currency has had a severe impact on exports, particularly non-oil exports. The exchange rate multiplier was reduced from five to three. A progressive depreciation of the currency rate was also introduced. These were seen as critical stages in removing distinctions between

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diverse export-oriented operations and reducing anti-export bias. However, in order to reap the benefits of depreciation, Egypt's economy and exports must be adjusted to meet the new demand, notably in the oil sector.

The CBE has two alternatives for pursuing an aggressive monetary policy. The first option was to keep the peg system in place while restricting the capital market. The other alternative was to switch to a liberal exchange rate regime with no limits on capital markets.

The multiple exchange rate system was replaced by two exchange markets "a primary restricted market and a secondary free market" which were eventually united with the passage of the Economic Reform and Structural Adjustment Program in the early 1990s. The currency rate then stabilized, remaining within an implied band of roughly US\$1 = EGP 3.33.

Between 1991 and 2000, The CBE intervention was successful, and the nominal exchange rate stayed steady. The exchange rate was devalued in three stages beginning in January 2001, and a new central exchange rate was set to stabilize the market and shift to a crawling peg.

The government announced the end of the currency rate peg in January 2003. Expectations led in an instant drop in the value of the Egyptian pound because the exchange rate was still far from its market equilibrium. Beginning in December 2005, the development of a foreign exchange interbank market abolished the parallel foreign exchange market and stabilized the nominal exchange rate.

Following these steps, the nominal currency rate began to appreciate in December 2004 and remained stable until June 2006, at roughly EGP 5.7/US\$1.

Strong capital inflows from The CBE helped to enhance the pound's value against the US currency even more.

The upward tendency was minor at initially, but it became more pronounced as capital inflows rose.

As a result, the IMF classed Egypt's currency rate system as a "controlled float" and Egypt's exports increased dramatically during this time due to changes in the exchange rate system.

In the aftermath of political unrest in 2011, international reserves plummeted from US\$36 billion in December 2010 to US\$26.4 billion in June 2011, and then to equivalent to 2.8 months of projected imports of goods and services

The CBE's efforts to develop a new mechanism for buying and selling foreign money were reflected, which are intended to let the Egyptian pound float more freely, with its price more closely reflecting supply and demand. The goal was to preserve the country's foreign reserves, which had dwindled to dangerously low levels. The Egyptian pound fell to an 8-year low against the US dollar after these auctions, reaching EGP6.70/US\$1 in early 2015, when the CBE claimed that the currency's value had increased to EGP7.61. This approach resulted in the emergence of black-market behaviors, with the parallel market reaching EGP18.00.

In order to alleviate any distortions in the domestic foreign currency market, the CBE announced its decision to switch to a liberalized exchange rate regime with immediate effect.

The Egyptian pound was floated against the US dollar at EGP13.00 per US\$ November 2016. By early 2017, the exchange rate had reached EGP18.00/US\$, resulting in rising inflation rates.

This is the first time the Egyptian pound was liberalized as part of a comprehensive reform programmer, where Egypt did so

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without putting any controls in place by the central bank, resulting in a considerable drop in the value of the pound versus international currencies, particularly the dollar.

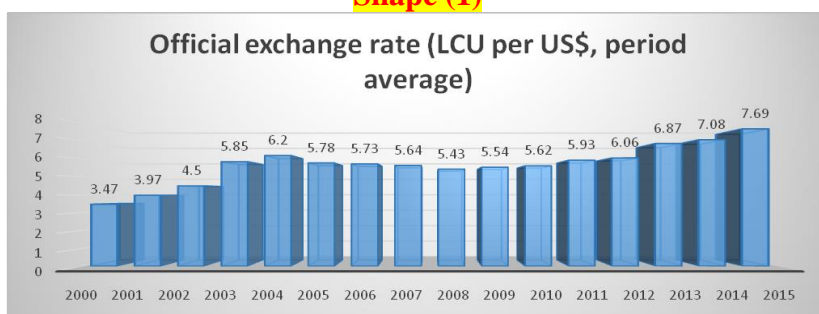
The administration anticipated that by making this move, the economy's ability to attract capital inflows would improve, allowing it to absorb actual external shocks and simulate exports. Look at the following table that shows the development of exchange rate of the dollar from (1980-2015).

Table (1) The Official exchange rate through (1980-2015)

Year	Official exchange rate (LCU per US\$, period average)
1980	0.70
1985	0.70
1990	1.55
1995	3.39
1999	3.40
2000	3.47
2001	3.97
2002	4.5
2003	5.85
2004	6.2
2005	5.78
2010	5.62
2011	5.93
2012	6.06
2013	6.87
2014	7.08
2015	7.69

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Shape (1)



Prepared by researcher

Table (2) Historical Rates for the USD/EGP currency conversion monthly from 2016/11 - 2017/3

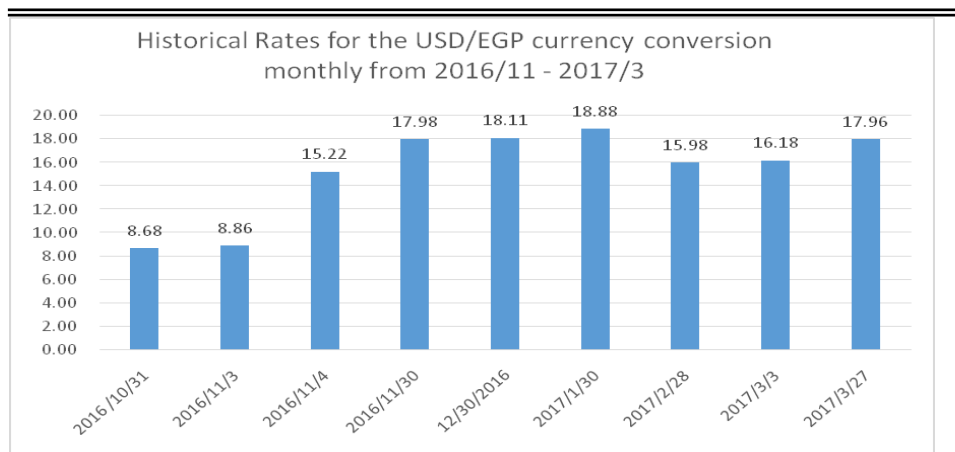
Currency floatation and exchange rate forecasting. The official value of the pound depreciated by 30% from LE4.50/US\$ on

Item	Open: 1 USD=	Open: 1 USD=
On the 31st October 2016	8.6849 EGP	8.8361 EGP
3rd November 2016	8.8618 EGP	8.8632 EGP
On the 4th November 2016	15.2171 EGP	15.2814 EGP
On the 30th November 2016	17.9832 EGP	17.8427 EGP
On the 30th December 2016	18.1055 EGP	18.7032 EGP
On the 31st January 2017	18.8843 EGP	18.7032 EGP
On the 28th February 2017	15.9766 EGP	15.8327 EGP
On the 3rd March 2017	16.1824 EGP	16.0846 EGP
On 27 March 2017	17.9634 EGP	18.1583 EGP

January 28, 2003 to LE5.85/US\$ on February 25, 2003. Egypt's minor devaluation can be attributed in part to the float banks' ability to charge a commission, bringing their LE/US\$ rate closer to that of the parallel market.(For nominal and real exchange rate changes in Egypt from 2000 to 2015, see Figure 1.)

Shape (2)

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Prepared by researcher

IX. The Inflation development

One of the operational frameworks for monetary policy aiming at achieving price stability is inflation targeting.

Unlike other techniques, such as money or exchange rate targeting, which aim to produce low and steady inflation by focusing on intermediate factors, inflation targeting is a long-term strategy.

One of the most serious problems confronting developing countries is excessive and persistent inflation. In many emerging market economies, low inflation is the primary goal of macroeconomic policy.

Inflation in emerging market and developing economies has been low and consistent since the mid-1990s, while taking longer to decline. Inflation has decreased in part because of improved monetary policy, as well as the developing country's official adoption of inflation targeting. It has been argued that the shift to a flexible exchange rate regime could cause

inflation, leading to contraction of output, and negatively affect certain groups of society where Available According to the available research, nations with flexible exchange rate regimes have higher inflation than countries with fixed exchange rate regimes.

The rate of inflation has a significant impact on foreign investment inflows. High inflation rates, they argue, distort economic activity, resulting in less capital influx. On the other side, a high inflation rate indicates that the central bank is unable to establish acceptable inflation rates. Inflationary pressures indicate economic instability caused by ineffective government actions, particularly the monetary-fiscal policy combination. Inflation that is low and constant is an indicator of internal economic stability. This is because it lowers uncertainty and increases people and businesses' confidence in making investment decisions.

The float occurred during a period of economic contraction, with economic growth hovering around 4% in 2015, compared to an average of 7% in 2008. As a result, the float system is unlikely to have any impact on shifting demand from imported commodities to locally produced ones.

The exchange rate influences inflation through affecting local pricing in comparison to international commodities, which in turn influences domestic and foreign demand for domestic goods, and hence aggregate demand.

In addition, the effect of the exchange rate on the pricing of imported goods has a direct impact on the consumer price index (CPI).

Many empirical models in the money and growth literature examine the impact of inflation on macroeconomic variables over time, particularly foreign direct investment.

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Inflation has no long-run actual consequences on consumption, investment, or the current account, according to studies that look at the impact of inflation uncertainty on output growth. Even at relatively low rates of inflation, whether caused by policy or other sources, the real impacts of such inflationary shocks on foreign direct investment inflation are still negative.

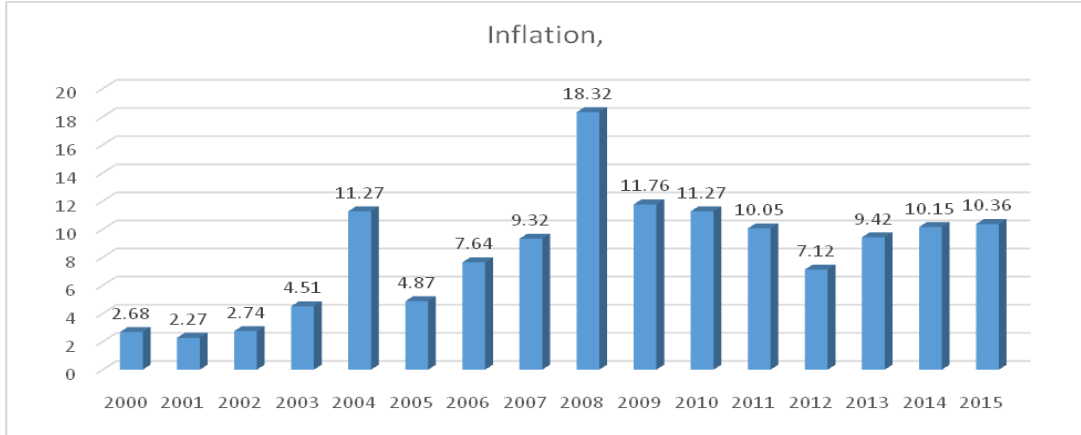
The following table shows the development of inflation from 1980 to 2015.

Table (4) Consumers prices (annual %) & Consumer price index (2010 = 100)

year	Inflation, Consumer prices (annual %)	Consumer price index (2010 = 100)
1980	20.8	0.70
1985	12.1	0.70
1990	16.8	1.55
1995	15.7	3.39
2000	2.68	45.08
2003	4.51	49.50
2004	11.27	55.08
2005	4.87	57.76
2006	7.64	62.17
2007	9.32	67.97
2008	18.32	80.42
2009	11.76	89.88
2010	11.27	100.00
2011	10.05	110.05
2012	7.12	117.89
2013	9.42	128.99
2014	10.15	142.08
2015	10.36	156.80

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Shape (3) Inflation (annual %)



Prepared by researcher

Given the increase in core goods, the core CPI calculated by the Central Bank of Egypt accelerated to 4.35 percent in December 2016 from 5.33 percent in November 2016, and the annual rate jumped to 25.86 percent in December from 20.73 percent in November. Higher prices of basic food products due to cost-push effects, as well as persistent supply disruptions relating to rice and sugar, drove the monthly increase.

The remaining rises were centered in healthcare, café and restaurant services, and retail products, which had made a substantial contribution in the previous month, narrowed.

Furthermore, Egypt's consumer prices increased by 30.2 percent year on year in February 2017, up from 28.1 percent the previous month. It is the biggest rate of inflation since November 1986, thanks to a 41.7 percent spike in food and beverage prices (37.2 percent in January). After the central bank boosted rates and floated the currency, allowing it to roughly halve in value in November, inflation rose for the fourth month. Annual core inflation, which includes food and fuel, increased by 33.1 percent from 30.86 percent the previous

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month, reaching its highest level since at least 2008, when it was 18.32 percent.

Egypt's average inflation rate was 9.10 percent from 1958 to February 2016, with an all-time high of 35.10 percent in June 1986 and a second all-time high of 30.2 percent in February 2017. As a result, the Central Bank has proclaimed that the goal of monetary policy is henceforth to control inflation.

Look at the following table that show the developed of inflation from Jan 2016 to Feb 2017. **Table (5) inflation from Jan 2016 to Feb 2017.**

Month	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-2017
the inflation rates (CPI) monthly	10.1	9.13	9.02	10.27	12.3	13.97	14	15.47	14.09	13.56	19.43	23.27	28.14	30.2

Central agency for public mobilization and statistic (CEPMAS) & CBE

Look at the following shape that shows the development of inflation from April 2016 to February 2017.

Shape (4) The Development of inflation from April 2016 to February 2017.



X. Investment

Foreign direct investment is regarded to be more valuable in a country than equity investments in its companies, because

equity investments might be "hot money" that leaves at the first hint of difficulties, whereas FDI is long-term and useful regardless of how things go.

Foreign direct investment is a source of knowledge transfer and inventive talents from developed to developing countries, as well as a source of capital formation in underdeveloped countries. Foreign direct investment (FDI) refers to the placement of foreign assets in domestic structures, equipment, and businesses. It does not include overseas stock market investments. In order to attract more International Direct Investments, which is a component of a country's national financial accounts, the least developed countries offer incentives to foreign investors.

Egypt experienced a considerable surge in FDI inflow during the last few years, followed by a significant decline. According to UNCTAD estimates, FDI inflows to Egypt's economy ranged between hundreds of millions of dollars and thousands of millions of dollars until 2003, when they began to rise to 12 billion dollars in 2007. After that, FDI inflows declined to be negative in 2011.

Although Egypt has made numerous efforts to attract FDI since the 1990s, low FDI flows in the 1990s were primarily due to two factors:

First: a lack of professionalism in FDI promotion due to a lack of political and economic vision, resulting in a lack of a secure environment for FDI, resulting in a decrease in FDI flow to Egypt, especially in light of global competition to attract FDI.

Second: due to the Economic Reform and Structural Adjustment Program, which began in 1991, reduce government spending. In the second half of the 1990s, unpleasant shocks

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such as the Luxor massacre in 1997 and the East Asian economic crisis in 1997-1998 resulted in lowest FDI flows.

From 2000 to 2010, FDI inflows to Egypt fluctuated, eventually falling to US\$ 237.4 million, the lowest level since the 1970s.

If we dig deeper, we can see that the growth in FDI to Egypt began in 2004 and remained unabated until 2007, not just as a result of improved investment climate, but also as a result of massive privatizations and public-sector mergers and acquisitions.

The situation changed in 2008, when FDI inflows to Egypt fell steadily to US\$ 6.38 billion, with the largest decline in 2009, when FDI fell to US\$ 6 billion, because of the global financial crisis' negative effects. In 2011, political uncertainty, unprecedented security challenges, that accompanied the January 25 Revolution disrupted the trend of FDI inflows to Egypt, resulting in a negative impact.

Table (7) Foreign direct investment, net inflows from 1980-2015

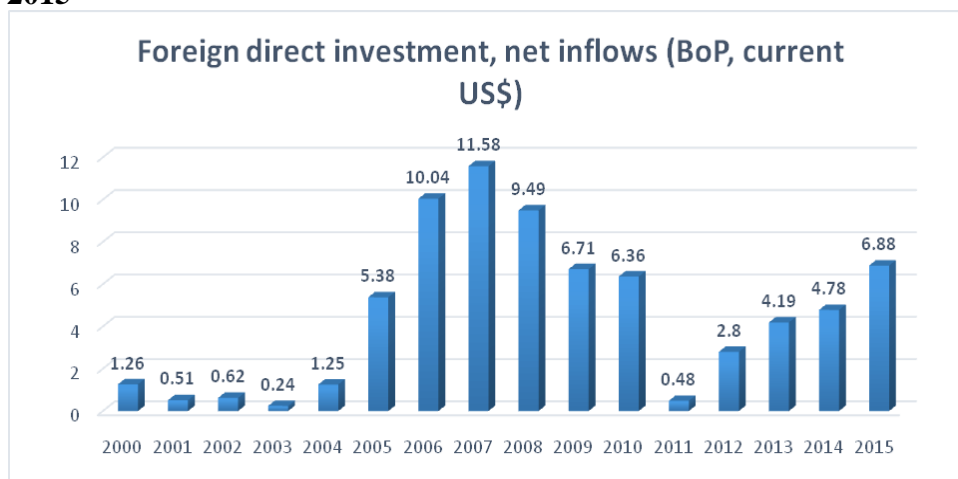
year	Foreign direct investment, net inflows (BoP, current Billion US\$)
1980	548
1985	1,178
1990	734
1995	598
2000	1,235
2005	5,376
2006	10,043
2007	11,578
2008	9,495
2009	6,712
2010	6,386
2011	483
2012	2,798

2013	4,192
2014	4,783
2015	6,885

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When reading this table, it is clear that net FDI inflows in 2006, 2007 and 2008 were the highest years in the period from 2000 to 2015. After that, the net inflow volatility between rise and fall reached 6.88 in 2015.

Shape (7) foreign direct investment, net inflows from 2000-2015



Source: Done by the researcher

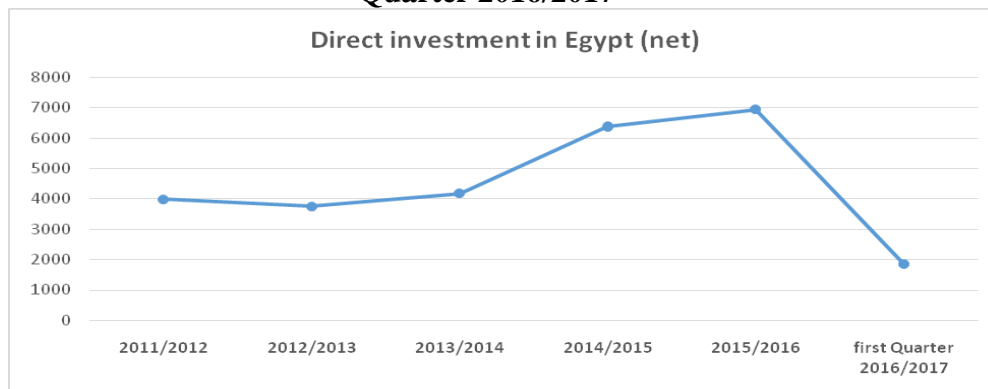
Table (8) direct investment in Egypt (net) from 2011/2012- first Quarter 2016/2017

year	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	first Quarter 2016/2017
Direct investment in Egypt (net)	3982.2	3753.3	4178.2	6379.8	6932.6	1872.2

External Position of the Egyptian Economy, July/September 2016/17 Volume

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Shape (7) foreign direct investment, net inflows from 2011/2012- first Quarter 2016/2017



Source: Done by researcher

In the first quarter of 2017, net inflows of foreign direct investment into Egypt increased from around US \$ 1.4 billion to US \$ 1.9 billion. The increase in net inflows for oil sector investments to US \$ 495.5 million (against US \$ 154.1 million) and net inflows for Greenfield investments to US \$ 1.4 billion (versus US \$ 1.1 billion) contributed to the increase in FDI in Egypt.

When we look at the sectoral breakdown of overall FDI Inflows, we see that the oil industry has the most share (52.9%). In terms of other sectors, other services sectors received the majority of FDI, with 10.9 percent distributed as follows: financial sector (4.3 percent), real estate sector (0.7 percent), and other services sectors (5.9 percent). Manufacturing had a 1.5 percent share, while construction had a 1.0 percent share. Undistributed Sectors obtain the remaining Portion.

XI. The literature about the impact of currency rates on foreign direct investment

Some studies see Exchange rate variations have an impact on FDI values because they affect not only the amount of cash inflows received from investments, but also the amount of cash outflows required to keep these investments operational.

According to market conditions, currencies appreciate and devalue. The fluctuations in the exchange rate have an impact on inflation and interest rates, which can stifle economic growth in developing countries and restrict FDI inflows. Aside from the effect of the exchange rate on inflation, there are certain indicators that imply the transition to a flexible exchange rate system will result in severe contraction.

The float of the exchange rate can push enterprises with dollar liabilities into bankruptcy, resulting in a drop in output. Additionally, decreasing export elasticity prevents firms from taking advantage of a more competitive exchange rate. Which discourages investment and leads to lower growth

In addition, rising costs erode the improved profitability from increased exports and limit firms' ability to lower their export prices, leading to a reduction in exports to avoid significant depreciation, so interest rates must be raised.

According to several research, the most significant aspect in an open economy is the exchange rate that has a direct impact on macroeconomic variables like FDI and GDP. Some analysts see that currency depreciation provides international trade with competitive benefits, which lowers the cost of domestic commodities and raises export and international demand for goods, affecting FDI and, eventually, GDP. so, Investors and policymakers pay close attention to the exchange rate of the country in which they invest.

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If currency devaluation does not result in cheaper exports because higher inflation and does not attract FDI, so this country does not has a competitive edge. As a result, foreign capital flows are more likely to travel to nations with strong governments, active economy, and stable currencies.

To attract foreign investment money, the country must have a generally stable currency, political environment, and economic growth. Otherwise, the threat of currency depreciation-induced exchange losses may dissuade foreign investors.

XII. Data Analysis

Correlation Analysis

Correlation analysis depicts the relationship between several variables that the correlation is between -1 and +1. Between 0.01 and 0.05, there is a substantial link between multiple factors. The insignificant link between the variables is shown by a significance value greater than 0.05. Also, mathematical indicators such as + and - indicate the direction of a relationship. The +1 value represents the ideal positive relationship, whereas the -1 value represents the ideal negative relationship. The 0 value indicates that the variables have no relationship.

Regression Analysis

Multiple Linear Regression analysis used to show the accuracy and appropriateness of model and how much independent variable influence on the dependent variable. we will making in our study by calculating the correlation between the exchange rate of the Egyptian pound against the U.S. dollar, the inflation

rate, which was calculated from the consumer price index and foreign direct investment during the period from 1980-2015.

To build a model we must first determine the variables:

$$\text{Log}(FDI_i) = \beta_0 + \beta_1 \log(\text{EXrate}_i) + \beta_2 \log(\text{Interest}_i) + \beta_3 \log(\text{CPI}_i) + \beta_4 \log(\text{GDP}_i) + \varepsilon_i$$

Where:

Log FDI : log foreign direct investment

Log interest : log Lending interest rate

Log GDP : log Gross domestic product

Log EX rate : log Exchange rate per US\$

Log CPI : log Consumer price index

The model is based on the study of the interactions between the foreign Direct Investment and group of variables “Exchange rate of the Egyptian pound against U.S dollar, general price level by using the consumer price index, Lending interest rate and Gross Domestic Product”. We applied Regression between Foreign Direct investment (FDI) and the exchange rate.

Table No (I) represents the method of the regression used where it has shown that the program has entered all the independent variables in the linear regression equation:

Variables Entered/ Removed^b

Model	Variables Entered	Variables Removed	Method
1	Log CPI, log GDP, log Interest R, log Exchange R ^a		Enter

a. All requested variables entered

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Variables Entered/ Removed^b

Model	Variables Entered	Variables Removed	Method
1	Log CPI, log GDP, log Interest R, log Exchange R ^a		Enter

b. Dependent Variable: log FDI

Table No(2) shows the four correlation coefficients, namely the simple correlation coefficient R, with **0.86** and R², which is **0.74**, and finally the corrected parameter adjusted R², which is 0.69, which means that the independent variables were able to explain **0.74** of the changes in Foreign Direct investment (FDI) and the rest (**0.26**) due to other factors

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.861^a	.742	.690	.29549

a. Predictors: (Constant), log CPI, log GDP, log EX rate, log interest

In ANOVA: mostly F-value considered on significant level. If significant value is less than 0.05, then it said the model is good. The group of independent variables has the ability to reliably predict the dependent variable, otherwise the group of independent variables fails to show a significant relationship with the dependent variable, or in other words, the group of independent variables does not reliably predict the dependent variable. Note that this test is used to test overall significance with the group of independent variables used together to

reliably predict the dependent variable and is not used for single independent variable to predict the dependent variable.

Table No (2) ANOVA, presents variance analysis, in which the explanatory power of the model as a whole can be defined by F statistic. As seen from the high variance analysis table for significance of f test is zero, it confirms the high explanatory power and shows the high level of significance, and this group of independent variables "Exchange Rate and INFLATION and GDP and interest rate" can be used reliably to predict the foreign direct investment (the dependent variable). Therefore, this result proved that the model is very good and fit for research, the group of independent variables can predict the dependent variable:

ANOVA ^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	5.426	4	1.356	17.723	.000 ^a
Residual	1.607	21	.077		
Total	7.033	25			

a. Predictors: (Constant), log CPI, log GDP, log Interest

R, Exchange R

Table No (3), represents the values of the regression coefficients and the statistical significance tests for these transactions. Where this table represents Standardized Coefficients in a four Different models, where we excluding some variables in every model to get the best explanatory model.

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Table No (3) Coefficients ^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.190	.273		8.020	.000
Log Exchange R	.212	.055	.619	3.863	.001
2 (Constant)	1.243	.267		4.654	.000
Log Exchange R	.247	.039	.722	6.326	.000
Log GDP	.185	.036	.581	5.090	.000
3 (Constant)	1.443	.257		5.604	.000
Log Exchange R	.101	.071	.294	1.418	.017
Log GDP	.197	.034	.618	5.875	.000
Log CPI	.007	.003	.499	2.383	.026
4 (Constant)	1.684	.198		8.509	.000
Log GDP	.199	.034	.624	5.811	.000
Log CPI	.010	.001	.756	7.046	.000

Table No (4) ANOVA ^e

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	2.696	1	2.696	14.922	.001 ^a
	Residual	4.337	24	.181		
	Total	7.033	25			
2	Regression	4.994	2	2.497	28.158	.000 ^b
	Residual	2.039	23	.089		
	Total	7.033	25			
3	Regression	5.412	3	1.804	24.482	.000 ^c
	Residual	1.621	22	.074		
	Total	7.033	25			
4	Regression	5.264	2	2.632	34.214	.000 ^d
	Residual	1.769	23	.077		
	Total	7.033	25			

a. Predictors: (Constant), Exchange R

b. Predictors: (Constant), Exchange R, GDP

c. Predictors: (Constant), Exchange R, GDP, CPI

d. Predictors: (Constant), GDP, CPI

e. Dependent Variable : log FDI

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Table No (5) Coefficients ^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.453	3.099		1.114	.002
Log interest	1.379	1.855	.195	.744	.466
Log GDP	1.217	.351	.450	3.470	.002
Log EX rate	1.212	.055	.619	3.863	.001
Log CPI	1.961	.702	.916	2.792	.011

a. Dependent Variable: log Fdi

We analyzed the effect of changes in the Exchange Rate, GDP, CPI, and Interest Rate on Foreign direct investment (FDI) in Egypt in the long run through the period from 1980 to 2015. We observed the positive significant influence in all variables, especially in the level of prices, growth Rate and Interest Rate. Where, the Coefficients of growth Rate represent 1.217 that means increasing in GDP lead to increase in the FDI. The Coefficients of level of prices 1.961 that is mean the change 1% in the level of prices lead to change in the FDI. Also observed that the stability of exchange rate has the weak effect on the movement foreign direct investments where the Coefficients of Exchange Rate represent 1.212. We detected a stable relationship between exchange rate and inflation rate in the research period, because authorities sought the stability of exchange rate and inflation.

XIII. Conclusion

We examined the association between a set of variables and foreign direct investment in this study (FDI). We discovered that foreign direct investment (FDI), GDP, interest rates, exchange rates, and inflation all had a positive association.

It also fulfilled the research's hypothesis: "The exchange rate affects foreign direct investment in a positive way" (FDI).

According to this study. The R square value in regression analysis is 86 percent, indicating that the research model is adequate and that exchange rate and inflation stability have an impact on FDI. Because 0.002 0.05 is significant in the ANOVA model, this result also indicates that the independent variable (FDI) effects the dependent variable.

We discovered in prior analyses in this research that exchange rate and inflation stability had a long-term favorable effect on FDI.

Because investors seek price stability in order to achieve a return, they invest their money in nations where there are no volatility or uncertainty in the exchange rate. In addition, the depreciation of the Egyptian pound causes an increase in inflation, reducing their real income. Furthermore, there are implications for importers who must pay higher prices for imports and whether or not they are able to pass the price increases on to consumers.

The overall effect on the government's budget is obvious. It is determined by the estimated rise in expenditures to pay external debt commitments, as well as the additional cost of basic goods imports, in comparison to the expected increase in revenues

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from higher import taxes, dividends/transfers from the Suez Canal, and oil and gas exports.

We conclude from the preceding analyses that enterprises with dollar liabilities, as well as fixed-income earners, particularly civil servants and retirees, are some of the prospective losers from the Egyptian pound's liberalization.

XIV. Recommendation

As the results mentioned earlier suggest that, the policy makers in Egypt must take into consideration the effect of exchange rate on macroeconomic variable. Therefore we can offer some suggestions regarding the conduct of monetary policy in both the short and medium runs. In addition, there are challenges still to be tackled.

- 1- The government must absorb price increases in imported basic products (such as wheat, sugar, and edible oil) and strive to mitigate the detrimental impact on fixed-income earners. In addition, because the situation has deteriorated, the government should consider raising the salary.
- 2- The exchange rate has an impact on total demand because it has a direct impact on the consumer price index (CPI), which influences export pricing. As a result, most central banks intervene to regulate the situation using monetary policy instruments, and the government must implement policies to target inflation.
- 3- The central bank must raise the nominal interest rate by more than 1% to achieve inflation targeting. This is often referred to as the (Taylor principle.)

The output gap, or the difference between actual and potential GDP, could be taken into account when setting interest rates

under this theory. As a result, the inflation objective does not have to be a single number or an annual CPI, but instead it be a range for several years.

- 4- Because there is a relationship between inflation and exchange rate volatility, it is impossible to avoid long-term capital inflow volatility as a result of exchange rate volatility. To resolve this problem, we must minimize further misalignment by focusing on centralization around the equilibrium exchange rate and intervening tactically if the circumstance requires it.
- 5- Dealing with expectations correctly is critical to success and avoiding major problems in the future. We should proclaim a coherent macro framework with defined objectives, put in place certain market-based exchange norms, and rely on international institutions for help. The sooner such steps are implemented, the sooner the benefits of the pound's floating can be realized.
- 6- Firms with dollar liabilities, those with revenues in local currency but debt commitments to banks in foreign currency, will experience difficulty. As a result, they must work with their creditors to develop a plan to pay off their debt in order to move through this stage.
- 7- Small industries must be encouraged to export with a plan in place to boost industrial exports.

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