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**The American University in Cairo**

**School of Global Affairs and Public Policy**

**IMPACT OF INCOME AND CORPORATE TAXES ON ECONOMIC  
DEVELOPMENT IN EGYPT**

**A Thesis Submitted to the**

**Public Policy and Administration Department**

**in partial fulfillment of the requirements for the degree of  
Master of Public Policy**

**By**

**Khaled Hany Abo-Ahmed**

**Supervised By**

**Dr Rana Hendy**

**Spring 2021**

## ACKNOWLEDGEMENT

I would like to take this opportunity to thank a number of people who have joined me over the last few years on my Master's degree and thesis journey until I have reached this point.

First, I am grateful to thank Allah Almighty, who during these days allowed me to study on such a major topic and with his blessing I was able to carry out such research that would be of benefit to various people.

I would like to express my gratitude and appreciation to my supervisor, Dr. Rana Hendy, who continuous encouragement, unconditional assistance and knowledge made it possible for me to choose this topic even before writing the thesis, when I took with her the Quantitative Method course. Without her support, I could not be able to finish my research successfully. It is been a pleasure to work with her.

My heartfelt thanks go to my thesis advisory committee readers; Dr. Ahmed Elsafty and Dr. Hamid Ali for providing part of their precious time and busy schedule for reading and inspiring me to enhance my thesis.

My special appreciation goes to the professors; whom I had the opportunity to attend their lectures and learn from their knowledge and experience.

I would love to thank my family for inspiring me all the time. I owe my parents all the values they have taught me, the persistence and dedication that have driven me to make all the effort I can.

I am very grateful to my sister, Salma, and my beautiful wife, Hadeer, for believing in me all the time. You have always got my back. Many thanks to my son, Adam, for being there for me all the time, and I hope I will make you proud.

Finally, for their support and being a constant source of inspiration, I would like to thank my cousins and friends with love.

Allah bless all of you

# Impact of Income and Corporate Taxes on Economic Development in Egypt

## Abstract

The purpose of this study is to examine how do corporate and income taxes impact economic development in Egypt. This study uses the analytical quantitative method, and the approach of this study is based on using annual time series data for the period 1980 to 2018 to estimate two models by using Autoregressive distributed lag (ARDL) model. First estimation is between direct taxes (corporate and income taxes) and Growth domestic product (GDP) growth as dependent variable, and the second one by using human development index (HDI) instead of GDP growth. The second objective is to investigate the difference, if any, with the result obtained by using HDI and GDP in estimating the impact of the corporate and income taxes on the economic development of Egypt. Findings show a positively and significantly relationship between direct tax (Income and Corporate taxes) and economic growth in Egypt, and negative relationship between direct tax (Income and Corporate taxes) and economic development. The researcher, therefore, conclude that the implication of tax revenue is not making as much impact on economic development as on gross domestic product of Egypt. Thus, the Egyptian government should work more on encouraging its people to create trust in it through tax transparency, ensuring high fulfillment of the promises made to the public. This study provides a useful insight for the policy makers, stakeholders and government into the importance of tax revenue for economic development as a result; revenue derived from tax should be wisely used to encourage people to continue to pay tax.

**Keywords:** Tax revenue, Economic development, Economic growth, Gross domestic product, Human development index.

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## **Chapter I: Introduction & Literature Review**

### **1.1: Introduction**

If social justice is the secret of the stability of states and nations, then tax justice is the cornerstone of that justice and the creation of civilizations. As some people rightly see that tax is the price that they pay to create civilizations. Therefore, the stability of Egyptian society in this critical period especially after two revolutions that took place under the slogan livelihood, freedom, social justice. It has become an urgent matter to review the tax system with the aim of achieving social justice and redistributing incomes.

According to Bird & Wikie (2012), any tax policy aims to achieve the following objectives. First, financing public expenditures, and we can see this reflected in the financial dimension of the tax that states rely on, especially those that do not have resources or natural wealth to financing public services and social benefits that they commit to their citizens. In fact, the essential responsibility of every government all over the world is to ensure freedom, security, and welfare of its citizen. The most important function of any government especially in developing countries such as Egypt is the provision of public services like providing an efficient health care system, good number of schools and good level of education, build new roads and as well as ensure a rise in per capita income, reduce unemployment and poverty rates to mention a few. For all these services to be provided, government needs a sustainable source of funding. The task of financing these number of the responsibilities is one of the main problems that face the government, because of the limited resources as well as the sharp increase in the population rate. Hence the imposition of tax on all taxable individuals and companies to increase government's revenues, which represents the golden solution for any government. Esteban & Max (2020) said that

“Taxation is the most important source in nearly all countries. According to the most recent estimates from the International Centre for Tax and Development, total tax revenues account for more than 80% of total government revenue in about half of the countries in the world – and more than 50% in almost every country.”

Second, the economic dimension of the tax, which is based on maintaining the continuity and stability of economic activity and enhancing it by contributing in facing the country’s economic fluctuations such as inflation and deflation, eliminating or reducing the budget deficit to the lowest possible rate. Taking into account that the optimum tax according to fiscal economics means a tax that does not affect the optimal use and distribution of the elements of production (Celikay, 2020).

Third, the social dimension, which is done by working to redistribute the national income in order for all citizens to achieve their share of the increase in wealth and national product. This is done through some mechanisms such as imposing taxes on incomes at progressive rates, and choosing the appropriate structure of income tax and consumption tax (general sales tax or value added tax) in light of society's conditions. The social dimension also appears through the optimal distribution of tax revenues in financing public projects that address limited or no-income groups, as is the case with unemployment benefits (Celikay, 2020).

Although tax justice is important at this stage, it cannot be viewed in isolation from the economic dimension of the tax. Therefore, the success of a good tax system requires achieving a balance between social justice and economic growth, and providing financial sustainability to achieve economic and social development. Therefore, correcting the tax policy requires linking long-term economic growth with improving or distributing



economic benefits for all sectors and for different segments of society in order to maintain economic growth to the best possible degree (Rastegar et al., 2017).

To this end, government have always legislated various tax laws and reformed existing ones. They include: Personal Income Tax (PIT), Corporate Income Tax (CIT), Value Added Tax (VAT) etc. The aim of them is to ensure the commitment to tax payment and discouraging tax evasion and avoidance. Thus, the first objective of this study is to examine to what extent do corporate and income taxes impact economic development in Egypt. This study uses the analytical quantitative method, and the approach of this study is based on using annual time series data for the period 1980 to 2018 to estimate two models by using Autoregressive distributed lag (ARDL) model. First estimation is between direct taxes (corporate and income taxes) and GDP growth as dependent variable, and the second one by using human development index (HDI) instead of GDP growth. The second objective is to investigate the difference, if any, with the result obtained by using HDI and GDP in estimating the impact of the corporate and income taxes on the economic development of Egypt.

## **1.2: Literature Review**

In this section, we will review the literature to the subject matter. There is an extensive literature examining the relationship between taxes and economic growth. Several studies tend to find a negative relation between taxes and economic growth, and most of them focused on examining the effect of corporate and personal income taxes on economic growth. These studies generated different findings and most of them used a multiple regression model.

Probably the most discussed question within the empirical studies is the link between economic growth, income tax, corporate tax, and investment. Djankov et al. (2008) and Ferede & Dahlby (2012), measured the quantity effects of corporate taxation on the foreign direct investment (FDI) and higher economic growth rates. They concluded that higher FDI, private investment and economic growth rates are correlated with lower corporate taxes. Steiner (2014), constructed similar result, which is the reduction in the corporate income tax in Colombia has a positive impact on the investment, labor formalization, and reduction of unemployment rates. The idea of examining the relationship between tax rates and long-term economic growth were engaged by Baranová & Janíčková (2012) and Dackehag & Hansson (2012). In their work, they concluded that there is an inverse relation between the tax rates and long-term economic growth as well as both taxation of corporate and personal income negatively affect economic growth.

Analysis by Ferede & Dahlby (2012) and Abdel-Rahman (1998) showed and mentioned the importance of transforming from sales tax (ST) to the value added tax (VAT), and how it influences the economic growth. Both studies recommended the idea of shifting from sales tax system (ST) to the value added tax system (VAT), because it

increases efficiency and revenue productivity. Then, it is also necessary to mention approaches concerning the overall relationship between the structure of taxation and the impact of the governmental reforms on economic growth. Gale & Samwick (2014) examined the effect of personal income taxes' change on economic growth in the long term, and how the structure of financing a tax change has an impact on economic growth. The results showed that the reduction in the income tax rate may encourage people to work, save, and invest but that will lead to budget deficit, reduce national saving, and raise interest rates in the long term. This led the government to create several structural reforms to avoid any financial deficit such as reducing subsidies, provide incentives to investors. Such reforms will have more effects on the size of the economy in the long run, which can also contribute in creating tradeoffs between efficiency and equity. Thus, both changes in the taxes' revenue level as well as change in the taxes' structure can influence economic activity, but not all tax changes have an economic positive effect on the long run.

On the other hand, some studies have analyzed the impact of tax revenue on economic development by assuring if there is any difference in using GDP and HDI in establishing this relationship. For example, Ofoegbu & Akwu & Oliver (2016), they examined the effect of tax revenue on the Nigerian economic development by using time series data from 2005 to 2014. Differently from the other studies, the results showed that there is a positive relationship between tax revenue and economic development. It also indicated that measuring the effect of tax revenue on economic development using HDI gives lower relationship than measuring the relationship with GDP. Thus, development of any tax policy on tax revenue for economic development should better be based on HDI rather than GDP.

Egypt throughout the years suffers from social and economic problems like increase in the rate of unemployment, increase in the poverty rates, income inequality, budget deficit, corruption etc. Consequently, youth protested against Mubark's regime in 2011, and Morsi's regime in 2013. Thus, political instability played an important role in influencing economic policies which in turn negatively impacted economic growth. Abdellatif & Tran-Nam (2016) focused on determining the tax policy challenges that face the Egyptian government after 2011 revolution, because it led to change in the political and economic system in Egypt. After the revolution, the economic policy makers formulated a combination of expansionary (countercyclical) government expenditure policy and contractionary (pro-cyclical) tax policy, but the main problem is related to the tax evasion. They measured the impact of these policies on the Egyptian economy since 2011, and they showed that these policies were contradicted for several reasons. First, in this period Egypt has political instability, which negatively affect the FDI and domestic investment. Second, the rate of unemployment was high, which needs a specific taxation policy to encourage the investors to work and let the unemployment rate to go down. Third, the Egyptian government used the taxation policy as a tool to solve the problem of budget deficit, reduce income inequality, and raising the GDP growth, so the Egyptian government needs to redevelop the process of its tax administration in order to avoid the problem of evasion, and to be able to increase the taxes' revenues. Also, (Abdel-Rahman, 1998), (Ali, Taghreed et al. 2017), illustrated that the current taxation policy and structure in Egypt must be changed, therefore having an efficient and well-prepared tax system leads to economic development by stimulating economic growth.

### **1.3: Policy relevance**

The primary aim of tax is to collect revenue to meet government spending and to redistribute income and economic management. In addition, there are three core taxation objectives, which are about raising government revenue, regulating the economy and business activities, and controlling income and jobs. In general, taxes have several functions of allocation, distribution, and stabilization. The allocation function of taxes involves determining the production pattern, the goods that should be produced, who produces them, the relationship between the private and public sectors and the social equilibrium point between the two sectors. The distribution feature of taxes is related to how effective demand is divided among individuals in the society over economic goods (Bird & Wikie, 2012).

In fact, any country's political, economic, and social development depends on the amount of revenue generated for infrastructure provision in that country. Thus, the tax policies and well-structured system give government an ability to collect additional revenue needed to discharge its pressing obligations. In Egypt, taxes are used as fiscal policy instrument to solve micro impacts on income distribution and resources efficiency, as well as macro impact on capacity output, employment, prices, and growth (Abdellatif & Tran-Nam, 2016). Hence, I outlined five possible mechanisms by which taxes could impact economic growth and development, and to illustrate why the policy makers should focus on such a topic. First, taxes could decrease investment rate through taxes such as corporate and personal income, and taxes on capital gains. Second, taxes delay growth in the supply of labor by making labor leisure choices available for leisure. Furthermore, tax policy has a negative impact on research and development expenditure. Moreover, taxes may

contribute to capital flows to other sectors which may have lower productivity. Finally, high labor supply taxes hinder the efficient use of high tax burdens on human resources even though they have high social productivity.

#### **1.4: Conceptual Framework**

The notion that there is a relationship between taxes and economic growth is founded upon some theoretical postulations put forward by some scholars. Most of the hypothesis that I tested in this literature are referring to the inverse relationship between the taxes and economic growth or economic development. According to (Dackehag & Hansson, 2012), (Baranová & Janíčková, 2012), both corporate and personal income taxation impact economic growth negatively. Another hypothesis made by (Ferede & Dahlby, 2012), (Djankov et al. 2008), (Steiner, 2014), which is the reduction in corporate taxes has a positive impact on investment and economic growth. The same hypothesis constructed by Gale & Samwick (2014), which is tax rate cuts will ultimately lead to a larger economy. On the other hand, Ofoegbu & Akwu & Oliver (2016), argued to a different hypothesis, which is tax revenue has no significant positive impact on economic development of Nigeria by using (HDI). In addition, the effect of tax revenue on the economic development of Nigeria is not significantly different from its impact on economic growth by using GDP as a measure. Regarding the Egyptian case (Abdel-Rahman, 1998), (Ali, Taghreed et al. 2017), showed that the current taxation policy and structure in Egypt must be changed, therefore having an efficient and well-prepared tax system leads to economic development by stimulating economic growth. Respecting my hypothesis, I see that Laffer curve theory is explaining my hypothesis, which is both corporate and income taxes do impact economic development in Egypt. The basic concept

underpinning the Laffer Curve is that lower tax rates provide incentives for further economic growth which higher tax rates in effect discourage. Tax revenues (at lower tax rates) will rise as growth occurs will increase. For this reason, the Laffer Curve can be used more generally to depict the relationship between taxes and economic growth: higher taxes, other things equal, tend to discourage additional growth while lower taxes offer an incentive for growth because private entities can reap higher rewards for their economic activities (Monissen, 1999).

### **1.5: Theoretical Framework**

There are three forms of economic development theories, which are the traditional economic measures of economic development, the new economic view of development, and the classic theories for economic development (Todaro & Smith, 2012).

#### **1.5.1: The traditional economic measures of economic development theory**

According to the traditional economic measures of economic development theory, development means achieving sustained per capita income growth rates to enable a country to increase its production at a rate faster than its population growth rate. Therefore, using real per capita gross national income (GNI) growth rates to measure the economic well-being of the population. The expected change in the structure of employment and production reflected the concept of the economic development as the share of the agricultural sector declined and the manufacturing sector industries increased. Thus, in this theory, development generally at the expense of rural development and agriculture used to concentrate on industrialization, and using gross domestic product (GDP) for measuring the increase in the output.

### **1.5.2: The new economic view of development theory**

According to the new economic view of development theory, the different cases of the nations has shown that many developing countries have achieved their economic growth goal, but the living conditions of the vast percentage of the population have remained almost unchanged, which shows that the traditional concept of economic development is incorrect. Thus, in this theory, the meaning of development is changed to be focused on reducing the poverty rate, unemployment, inequality, and the tax structure tend to have a crucial role in promoting economic growth. A tax system that relies on progressive taxation strategy contributes in decreasing the burden on people with lower incomes, reduces inequality, and achieves a redistribution of wealth.

### **1.5.3: The classic theories for economic development**

The classic theories for economic development after the second world war were based on four main approaches, which are the linear stages of growth model, theories and patterns of structural change, the international dependence revolution, the neoclassical and free-market counter-revolution.

In the linear stages of growth model, the development process has been shown as a sequence of phases of economic growth, and it was necessary to have the right quantity and mix of investment, foreign trade aid, and savings to make the developing countries able to continue along an economic growth trajectory. Therefore, development is based on strong and sustainable economic growth.

The theories and patterns of structural change were focusing on the importance of using modern statistical analysis and techniques in the developing countries in order to



make several internal structure changes to help in produce and maintain the rapid economic growth.

The international dependence revolution was related to politics, so underdevelopment terms were viewed within and between the countries as foreign and domestic power relationships, resulting in a wave of fencing economics and fencing societies, and systemic and institutional economic strength.

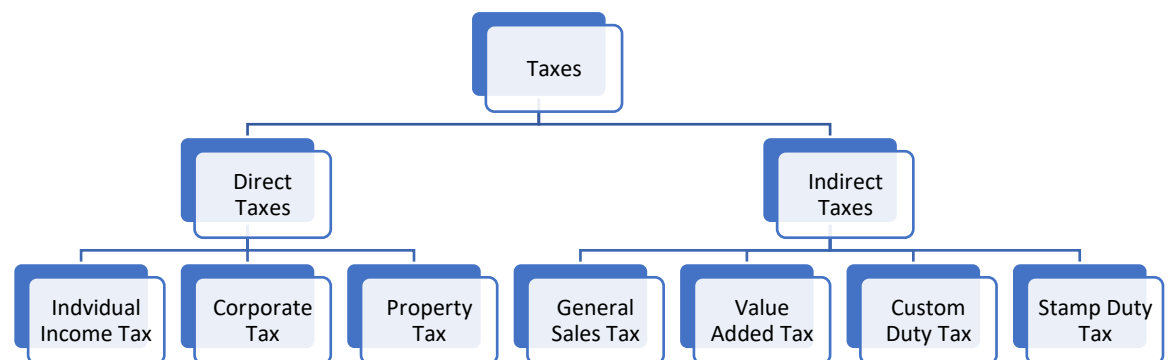
The neoclassical and free-market counter-revolution existed between the 1980s and 1990s, and it was focusing on the beneficial position of free markets, inefficient privatization of public enterprises, and the importance of having competitive economies. Moreover, the lack of growth and development in this period is due to too much government interference and economic control.

## Chapter II: Overview of Taxes

### 2.1: Definition and types of Taxes

There is no doubt that taxes are an essential element in the economic policy of any country, as the tax policy is a mirror of the state's economic and political orientations. Thus, this chapter is concentrating on defining taxation in general, its types, and objectives. In fact, taxes have been categorized in different ways on all the literature of public finance, but mainly it is according to who pays, or who carries the burden, and various other factors. In general, taxes are categorized as either direct or indirect, and we can clearly see the difference throughout the below chart (Moheeth, 2019).

**Chart 1: Types of Taxes**



Hyman (2010) defined the term of taxes as they are unintended fees imposed on individuals or companies by the government in order to fund its operations and activities as well as redistribute the spending power between people, whether local, national or regional.

Other authors defined taxes as it is a monetary amount (mandatory fee) imposed by the state on individuals and companies, with the aim of financing the expenditures that the state must commit to provide social services, and the payment of salaries of employees in government agencies, to support and develop the infrastructure, and to support basic commodities. Thus, all kinds of taxes are the most important sources of government revenue (McLure et al., 2019).

Also, we have to understand the difference between the types of taxes, which are direct and indirect. According to McLure and his co-authors (2019), direct tax is a fee that are paid directedly to the government in full by the citizen, and it is known as a direct tax in which the responsibility and the burden of payment resides on the same person, and it cannot be shifted to anyone else. Furthermore, this type of tax is based on the principle of ability to pay as that whoever owns more resources (higher salary or more profits) is charged a higher percentage of taxes. For example, it is imposed on individuals' income (under the name of Income tax), commercial and industrial profits of companies (under the name of Corporate tax), and on real estate and property assets (under the name of Property tax).

**Direct tax** contains three main different types of taxes, which are income tax, corporate tax, property tax.

Income tax is a type of tax that governments implement on income generated by individuals (Vazquez et al., 2019).

Corporate Tax is a fee that imposed by the government on the profit of a corporation. The money gathered from corporate taxes is used as the source of income for a country. The operating earnings of a company are determined by deducting costs,

including the cost of products sold and sales depreciation (packman, Howlett, & Kerr, 2012).

Property tax is a fee that charged on properties belonging to a person or a legal entity, such as a company. It is most generally an ad-valorem property tax, which ca be called a regressive tax, and it is determined by the local authority where the property is situated, and it paid by the property owner (Bird & Slack, 2002).

According to Vazquez and his co-authors (2019), **indirect tax** is imposed on the goods and services, and it obtained and paid to the government by one agency in the supply chain (usually a supplier or service provider). It passed on as part of the purchasing price of a product or service to the customer, which means that ultimately the user pays the tax by paying more for the commodity. Moreover, this type of tax is imposed on goods and services consumed by the rich and the poor, therefore it not based on the principle of capacity to pay.

Indirect tax contains four main different types of taxes, which are general sales tax, value added tax (VAT), custom duty tax, and stamp duty tax.

General Sales Tax (GST) is a fee that the consumer pays it when purchasing the goods. It is imposed on different types of goods in varying rates. This means that the tax rate on taxes on clothes differs from the tax on cars, but this tax is not paid on intermediate goods in production, such as a tire of cars for example, but it is imposed on final goods (Hyman, 2010).

Value Added Tax is essentially a multi-stage sales tax, which exempt from the tax base the purchasing of intermediate products and services. This type of tax differs from sales tax in that it is payable at all stages of production. For example, in the case of a car

industry, the tire manufacturer sells the tire at a price that adds the tax rate, and the owner of the factory sells the car to the owners of car showrooms after calculating the tax rate, and in the end the owner of the showroom sells the cars with adding the VAT amount to the sales invoice (Abdel-Rahman, 1998).

Custom Duty Tax refers to the taxes imposed by the state on the goods imported from abroad and are paid while these goods cross the borders, and they may be various or fixed. A various duty is a fixed rate deducted from the total value of the goods, and a fixed duty (specific duty) is a fixed or specific amount of money deducted from the goods. Although these fees serve the interests of local producers, they directly affect the purchasing power of consumers and reduce their chances of consumption, which negatively affects the welfare of society and the standard of living (Vazquez et al., 2019).

Stamp Duty Tax It refers to the taxes imposed by the state on a broad variety of documents like the legal documents, certificates, advertising ads, commercial invoices, utility bills, and all forms of contracts, etc. This type of duty differs according to the document at issue, but it has a fixed amount of money. Also, it could be imposed on some sort of transactions such as deposits, loans, financial transactions, travel services, etc. In these cases, it is calculated as a percentage from the total value of the transaction (Vazquez et al., 2019).

## **2.2: Taxes in Egypt**

### **2.2.1: Historical Evolution of Taxes in Egypt**

The ministry of finance manages the tax system in Egypt, and the main responsibilities are under the control of the Egyptian tax authority. Taxation system in Egypt is like all the countries can be split into two groups, which are direct taxation of persons and legal entities on their wages or benefits, and indirect taxation of products and services. Thus, this chapter aims to illustrate the historical evolution of the tax system, with an overview of income and corporate tax structure in Egypt.

The historical evolution of Egyptian tax system started in 1939 by introducing the first tax law, which levied on the corporate and labor taxes (i.e. Law No. 14 of 1939) and on the agricultural lands (i.e. Law No. 113 of 1939) (Mesalam, 2007).

Then, moving to the Nasser's era and the socialist economy. With the succession of Egyptian governments during this period, the tax system of Egypt changed radically, as it responded to historical events such as the 1952 revolution. This period of time was marked by the adoption of tax exemptions to encourage the use of national and foreign funds and the advancement of industries and economic development projects such as land reclamation and mining, as well as the exemption of foreign experts from the general tax on revenue (Nagarajan, 2013). Under the socialist climate, the economic entity of the public economy companies stabilized, which led to the application of a progressive tax (whose percentage increases as income increases), but this escalation continued in theory only, as the tax did not actually extend to include people with high incomes and wealth. In fact, the tax system was relatively stable until 1967 war had existed, so consequently Egypt had lost two main sources of foreign exchange, which are the revenues of the Suez Canal,

and the oil revenues in the Sinai region after its occupation, with the increase in military expenditures. Therefore, new additional taxes started to appear, such as the national security tax, which was aiming to achieve the military and security purposes. Hence, taxes became one of the main sources of financing (Alissa, 2007).

Moving to another period of time, which we can name it “After Nasser and the policy of market-based economy (economic openness) under Sadat’s supervision.” In fact, the 1967 and 1973 wars heavily relied on the economy, and the country has not been able to maintain strong economic growth rates (Nagarajan, 2013). According to World Bank Statistics, average economic growth was 7.52 percent during the period from 1959 to 1964, and it declined to 2.85 percent during the period from 1964 to 1973. Therefore, after the October 1973 war, the government found the need to bring several fundamental economic changes, and that was by applying the policy of economic openness, which was the tax policy one of its most important tools. Thus, this period of time included several laws that include several tax incentives, represented in exemptions for new investment projects for a period ranging between five and fifteen years. In addition to removing some import duties for the purpose of production. Also, the state passed a law to pave the way for a uniform tax on total income, including four specific taxes, which are the movable capital tax, the commercial and industrial profits tax, the salary tax, and the non-commercial professions tax, with the abolition of all additional taxes that were imposed in previous periods for specific purposes such as the defense and national security tax (Mesalam, 2007).

According to Nagarajan (2013), during Mubarak’s era, the country was in need to increase state resources with the increasing deficit of the state budget as a result of the sharp decline in foreign exchange earnings, the collapse of oil prices, the increase in the

size of the external debt, and the high rates of government spending. Thus, in 1984, the government imposed a new type of taxes on the imports that exceed eighteen thousand Egyptian pounds per year, and it applied on the Egyptian and foreigners under the name of financial resources development fees. According to Butter (2013), the 1990s witnessed amendments to direct taxes (amending the income tax law in what is known as the unified tax system), indirect taxes and the amendment to the consumption tax law that was issued in 1981, which replaced many taxes and royalties such as production and consumption fees, and others. In addition to the introduction of many tax incentives to encourage investments and the issuance of the Sales Tax Law (1991) to replace the consumption tax in order to contribute to reducing the state's public budget deficit during the first period of the economic reform phase. In addition to increasing fees and tariffs on government services, as well as raising the price of oil and electricity, while reducing the volume of subsidies granted by the government for many goods and services. Although these measures have been taken; the situation did not improve, and the level of the Egyptian economy deteriorated due to many factors that include the economic pressures that Egypt was subjected to after the events of September 11, 2001, which led to a decrease in foreign exchange reserves and an increased need to impose taxes. Then, the results of the first steps of the Egyptian tax reform appeared, which were represented in the improvement of the performance of the Egyptian economy following the new income tax law that began to be implemented in June 2005, which reduced the tax rate by fifty percent. Despite this decrease, the income tax revenues increased significantly until 2008 (Mesalam, 2007).

According to Butter (2013), the governments after the January 2011 revolution, their goal was to increase tax revenues, reduce public spending, broaden the tax base, and



strengthen fairness in the tax system. As a result of the low growth rates since 2011, tax revenues have decreased at a time when the government needs to expand social spending. Thus, the government decided to reform and focus more on the Built Real Estate Tax Law in September 2011. In recent years, the government aimed to raise the tax revenue by amending the Law 147 of 1984, which aims to impose a fee for the development of the state's financial resources. Consequently, there were various increases in vehicle licenses, mobile services, passports and foreigners' residency, and raising the prices of garbage fees and electricity bills. All these increases in fees with constant incomes led to an increase in the recession, a decrease in investment rates, the consequent increase in unemployment rates, and then a decrease in tax revenues, which exacerbates the budget deficit. In 2016, Egypt started the implementation of the economic reform program, which included the reform of the public financial policy, so the application of the value-added tax system instead of the sales tax was to conclude a long path for a variable tax system (Adly, 2017).

## **2.2.2: Overview of Income and Corporate Tax Structure in Egypt**

As I mentioned above, there are several types of taxes, but in this chapter will focus only on illustrating the income and corporate tax structure in Egypt and how they changed throughout the years.

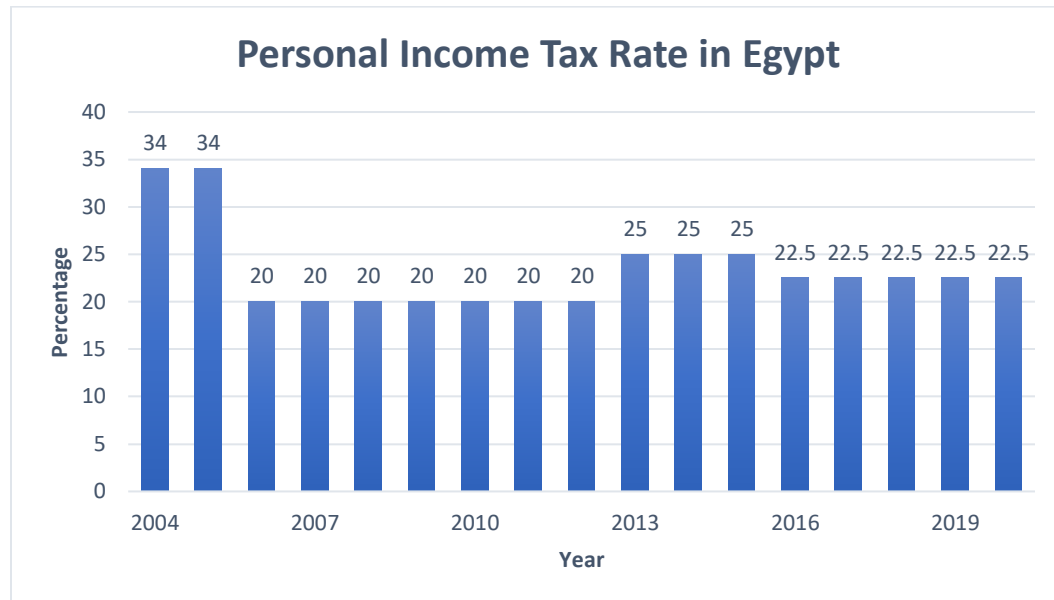
### **Income tax in Egypt**

The general tax on income is one of the most important sources of tax revenue in Egypt, and it includes many taxes that are imposed on renewable income resulting from various sources. The most important of which are: salaries, commercial or industrial activity, professional or non-commercial activity, and real estate wealth (Abdel-Baki & Dorasamy, 2012).

According to PWC, Egypt (Individual Residence), In general, it is important to know that the tax is levied on salaries and wages paid by the government or private sector companies (excluding pensions and end of service benefits). Furthermore, the tax is imposed on commercial and industrial activity on the profits of craftsmen and owners of small activities such as land reclamation, poultry and livestock breeding projects, and so on. Moreover, the tax is levied on professional or non-commercial activity on the profits of professions that are based primarily on mental activity, such as law, medicine, engineering, and accounting. As for the tax on real estate, it includes revenues from agricultural lands, built real estate, and revenues from furnished units.

Through the below chart, we can see the extent of the changes and fluctuations in the tax rates, which imposed in the income tax system in Egypt during the last 15 years.

**Chart 2: Egypt's Personal Income Tax Rate (2004-2020)**



**Source:** Trading Economics

According to Abdel-Baki & Dorasamy (2012), the story started at the end of 2004, when the Egyptian government realized the inefficiency of the Egyptian tax system in the field of income tax, so it began to reform the income tax by issuing Law No. 91 of 2005 instead of the Law No. 157 of 1981. In fact, the new law made a huge difference in that field, because it contributed in increase the tax revenue by reducing the tax rate and expanding the tax base. As we can see throughout the above chart, the income tax rate was reduced to 22.5% (currently) instead of 34%. Moreover, this law determined a new tax base, tax rate and the restructured the exempted categories from paying taxes. Thus, the income tax is characterized as a progressive tax.

#### A- Tax base

According to the recent amendments to Law 91, “Individuals are considered resident for taxation purposes if they are present in Egypt for more than 183 days in a fiscal year; are deemed to have a permanent abode in Egypt; or are Egyptian nationals performing their work in a foreign country but being paid from an Egyptian source. Non-residents are subject to tax on income earned or realised in Egypt only, at the same rates as residents” (PWC, Egypt – Individual Residence).

#### B- Tax Rate

According to the recent amendments to Law 91, which were approved by the parliament in June 2017, the income tax is calculated progressively as follows:

**Table 1 - An illustrative table of income tax brackets and their application rates in the Egyptian law**

Income Tax (Annually)	Tax Rate (Annually)
First bracket: Up to 8,000 (\$449)	Exempted
Second bracket: More than 8,000 (\$449), up to 30,000 (\$1,682)	10%
Third bracket: More than 30,000 (\$1,682), up to 45,000 (\$2,523)	15%
Fourth bracket: More than 45,000 (\$2,523), up to 200,000 (\$11,213)	20%
Fifth bracket: More than 200,000 (\$11,213)	22.5%

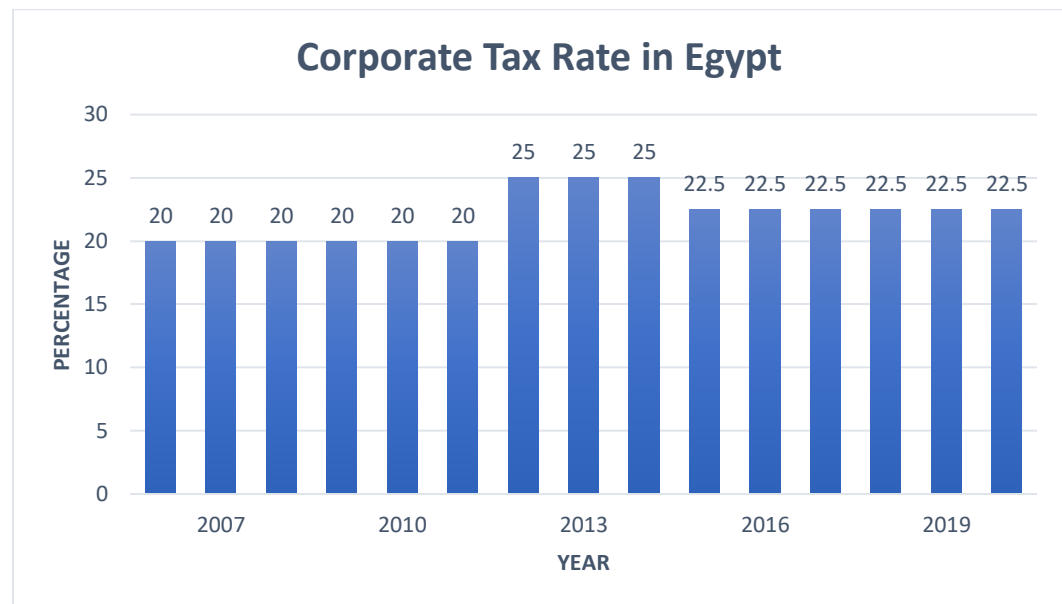
**Source:** PWC, 2019

The funny thing is that the tax-exemption is only applied on those who take an income equal to around 600 Egyptian pounds (half of the minimum salary), which in practice means that no one is exempt from paying tax, and that the first bracket remains only a theoretical slide.

### **Corporate tax in Egypt**

The story of corporate tax is somehow having some similarities with the income tax one, it also started at the end of 2004 by reforming the tax law by issuing Law No. 91 of 2005 instead of the Law No. 157 of 1981. Through the below chart, we can see the extent of the changes and fluctuations in the tax rates, which imposed in the corporate tax system in Egypt during the last 15 years. We can easily see that the government until 2011 fixed the maximum rate at 20% in order to attract a lot of companies to pay, but this strategy did not succeed especially after 2011 revolution. The Egyptian economy started to deteriorate, and all the financial resources from tourism, investment, Suez Canal had negatively affected because of the unstable condition in Egypt during this period. Therefore, in 2012, the government decided to increase the rate of taxes to reach 25% on the maximum level, but this strategy did not stay for long time. In 2015, the government decided to make a balance in the maximum rate of corporate tax to reach to 22.5%, which is still currently applied (Talaat et al., 2016).

**Chart 3: Egypt's Corporate Tax Rate (2006-2020)**



**Source:** Trading economics

An annual tax of 22.5% is levied on the total net profits of legal institutions, regardless of their purpose (companies, banks, and public bodies). The tax applies to all profits earned by these institutions, whether from Egypt or abroad, with the exception of the National Service Projects Organization at the Ministry of Defense. This tax increases to 40% on the profits of the Suez Canal Authority, the Egyptian General Petroleum Corporation, and the Central Bank (Elgeballi, 2013).

It is important to know that “Foreign corporations and partnerships are classified as residents of Egypt if: the corporate is established consistent with the Egyptian law; either the govt. or a public authority owns over 1/2 the capital of the company; or the effective place of management is in Egypt. The effective place of management is deemed to be in Egypt if two of the subsequent conditions are met: daily managerial decisions happen in

Egypt; the key shareholders (owners of quite 50% of the shares or voting rights) reside within the country; a minimum of 1/2 the board members or managers reside within the country; the board of directors' meetings are held in Egypt” (PWC, Egypt – Corporate Residence). Therefore, it's important to understand this time, because it differs on the rate for foreign companies; “Resident companies are taxed on worldwide income. Non-resident corporations and partnerships pay tax on income derived from their permanent establishment in Egypt” (PWC, Egypt – Corporate Residence).

**Table 2 - An illustrative table of Corporate tax brackets and their application rates in the Egyptian law**

Corporate Income Tax (Annually)	Tax Rate (Annually)
Corporate Income Tax	22.5%
Tax on the profits of Suez Canal Company, Egyptian General Petroleum Company and the Central Bank of Egypt	40%
Tax on the profits of oil prospecting and production companies	40.55%

**Source:** PWC, 2019

### **Chapter III: Research Methodology**

In this section, I discuss the methodological issues in the study. In precise term, this section deals with the sources of data, estimation technique, and models specification.

#### **3.1: Data**

The analysis is based on the use of annual time series, and the data used from 1980 till 2018. But my analysis focuses on the period between 2002 to 2018. The statistical data is collected from the World Bank, the Egyptian Ministry of Finance, and the UNDP.

Important to note that there is no data for Human Development Index (HDI) from 1980, so data was imputed using time series analysis (i.e. HDI is imputed using AR(1) model, the other variables that have missing data are imputed using the average of the variable).

#### **3.2: Descriptive statistics**

Table (3) presents the descriptive statistics for the research variables. The results show that the mean and the median of the GDP Growth are 5.2% and 4.9% respectively. The minimum value of GDP Growth equals -1.6%, and the maximum value is 13.27%. From the Jarque-Bera test, we can see that GDP growth is normally distributed with confident 95%, as the p-value of the test greater than 5%. On the other hand, the mean and the median of the HDI are 0.58 and 0.55, respectively. The minimum value of HDI equals 0.54%, and the maximum value is 0.7%. From the Jarque-Bera test, we can see that HDI is not normally distributed with confident 95%, as the p-value of the test less than 5%.

Also, we can realize that the mean and the median of the FDI are 1.95% and 1.13% respectively. The minimum value of FDI equals -0.2%, and the maximum value is 9.3%. From the Jarque-Bera test, we can see that FDI is not normally distributed with confident 95%, as the p-value of the test less than 5%.



Regarding the exports indicator, the results show that the mean and the median of the Exports are 19.806% and 18.316% respectively. The minimum value of Exports equals 10.345%, and the maximum value is 33.04%. From the Jarque-Bera test, we can see that Exports are normally distributed with confident 95%, as the p-value of the test larger than 5%.

Concerning the GCF, the results show that the mean and the median of the GCF are 20.396% and 18.888% respectively. The minimum value of GCF equals 10.345%, and the maximum value is 33.04%. From the Jarque-Bera test, we can see that GCF is normally distributed with confident 95%, as the p-value of the test larger than 5%.

For the mean and the median of the Inflation are 10.02% and 10.02% respectively. The minimum value of inflation equals -3%, and the maximum value is 29.5%. From the Jarque-Bera test, we can see that Inflation is normally distributed with confident 95%, as the p-value of the test larger than 5%.

With regard to the mean and the median of the Tax revenue are 17.5% and 17.3% respectively. The minimum value of Tax revenue equals 12.2%, and the maximum value is 26.24%. From the Jarque-Bera test, we can see that Tax revenue is normally distributed with confident 95%, as the p-value of the test larger than 5%.

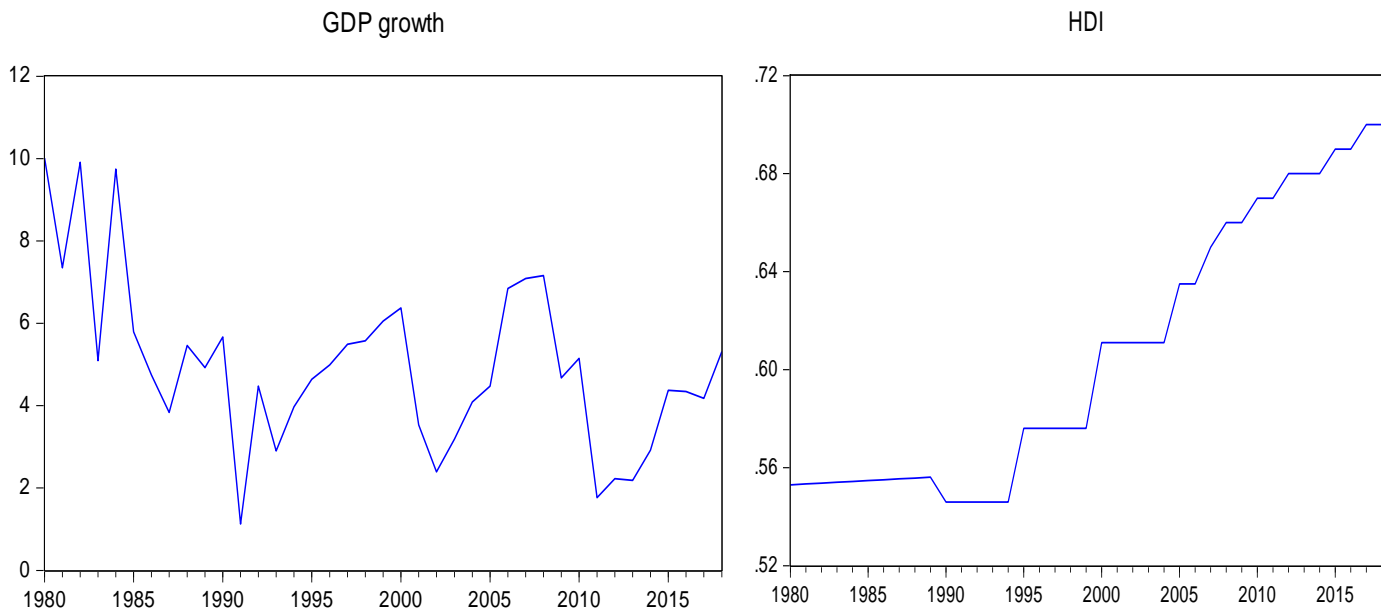
In the matter of the mean and the median of the Unemployment growth rate are 9.8% and 9.38% respectively. The minimum value of Unemployment growth rate equals 7.9%, and the maximum value is 13.15%. From the Jarque-Bera test, we can see that Unemployment growth rate is not normally distributed with confident 95%, as the p-value of the test less than 5%.

**Table (3): Descriptive Statistics**

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Probability	N
GDP GROWTH	5.200936	4.920869	13.27969	-1.606792	2.716189	0.052643	39
HDI	0.586447	0.554389	0.700000	0.546000	0.051918	0.003298	39
FDI	1.950122	1.135376	9.343527	-0.204532	1.943016	0.000000	39
EXPORTS	19.80675	18.31618	33.04299	10.34546	5.621226	0.099282	39
GCF	20.39684	18.88831	33.11688	10.74742	5.990397	0.077166	39
INFLATION	10.02893	10.02432	29.50193	-3.003077	7.256952	0.170476	39
CORPORATE TAX	4.99E-06	5.34E-06	6.82E-06	3.38E-06	8.62E-07	0.692645	39
TAX REVENUE	17.59176	17.33138	26.24430	12.22014	3.674280	0.321964	39
INCOME TAX	2.06E-06	2.08E-06	3.15E-06	1.28E-06	4.99E-07	0.339018	39
UNEMPLOYMENT GROWTH	9.849509	9.380000	13.15400	7.950000	1.225646	0.000039	39

**Source:** constructed by the author using data from 1980 to 2018.

**Graph (1): Line plot for GDP Growth and HDI**

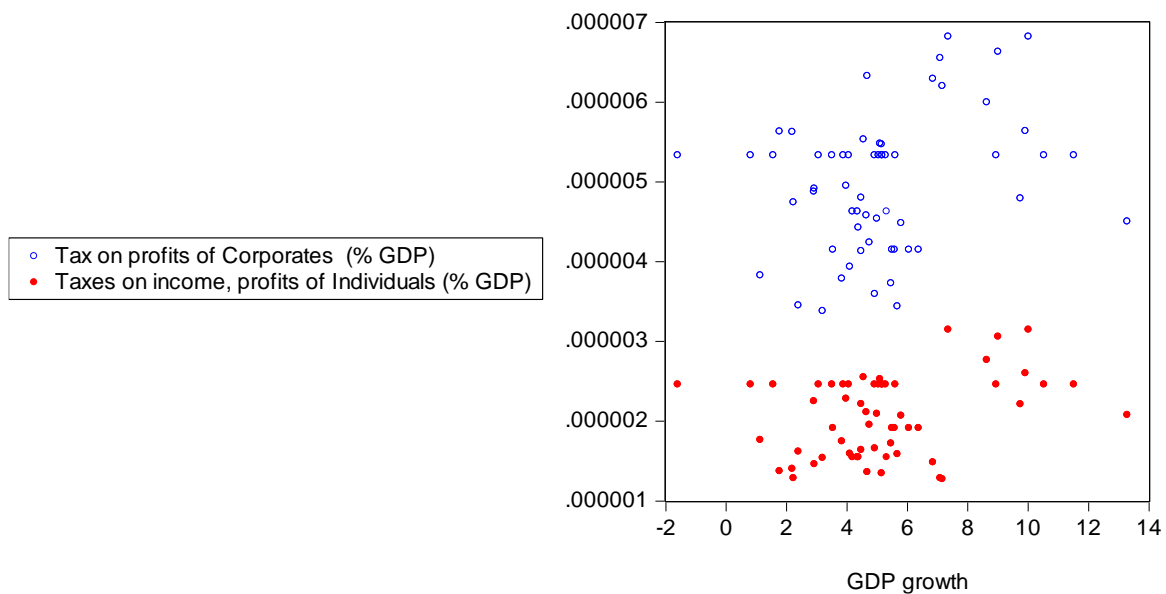


**Source:** constructed by the author using data from 1980 to 2018.

From the graph (1), we can see clearly that GDP growth suffers from high volatility, and after 85 it almost decreases, while HDI increase over the years. From graph (2), we can see clearly that

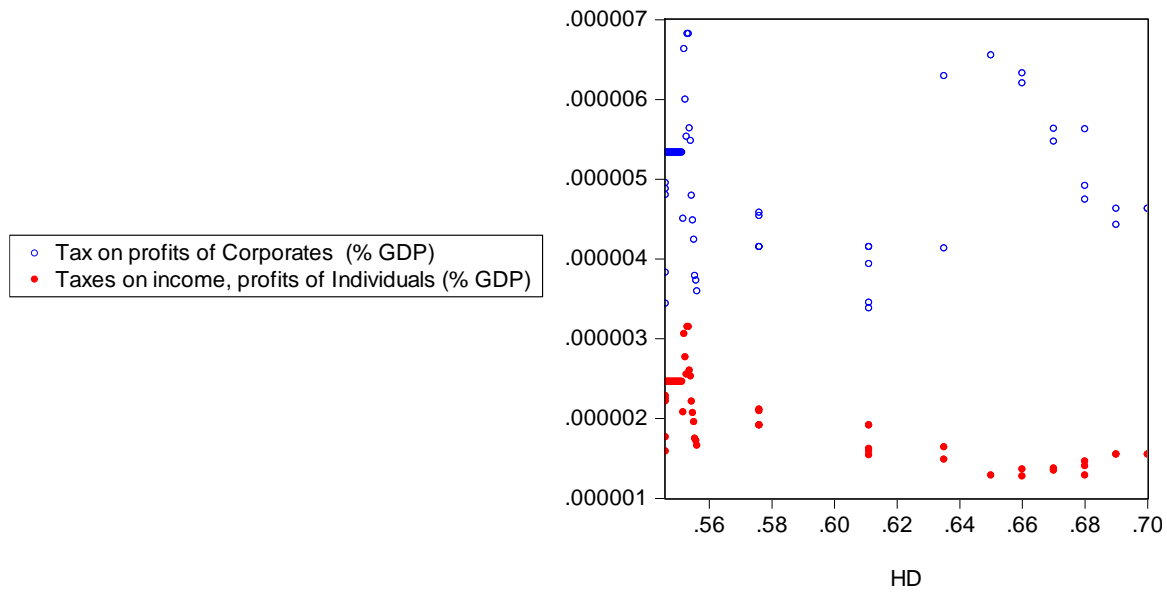
there is positive relation between each of GDP and corporates and income taxes. While from graph (3), there is a weak relation between corporate taxes and HDI, and a weak negative relation between HDI and income taxes. Also, these relationships will be detected also using the correlation analysis later.

**Graph (2): Relationship between GDP Growth and each of Income and Corporate taxes**



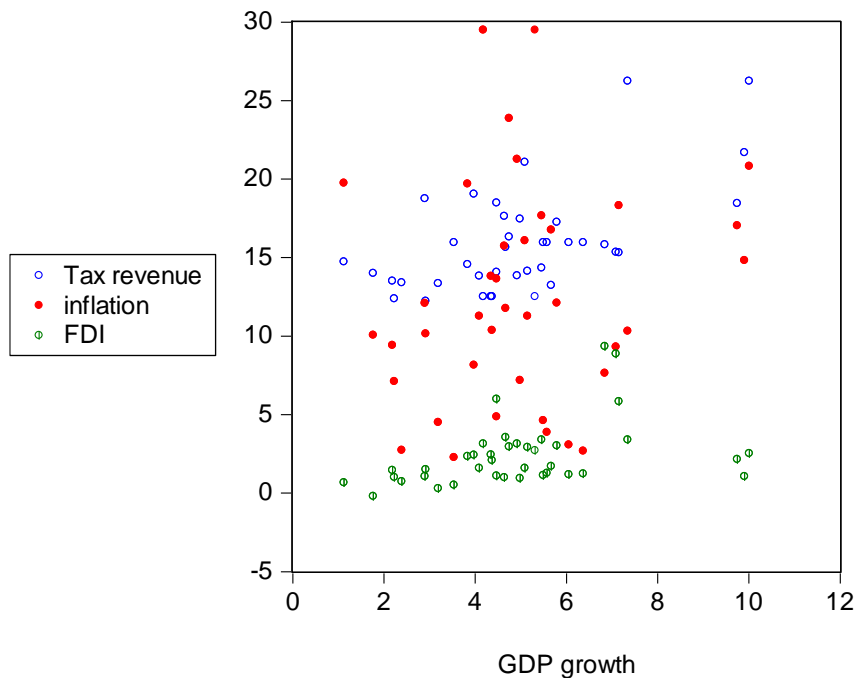
**Source:** constructed by the author using data from 1980 to 2018.

**Graph (3): Relationship between HDI and each of Income and Corporate taxes**



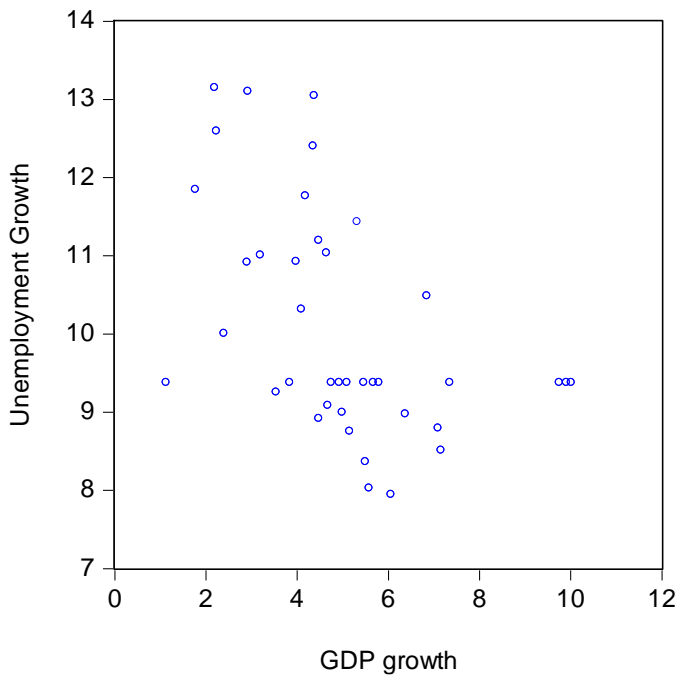
**Source:** constructed by the author using data from 1980 to 2018.

**Graph (4): Relationship between GDP Growth and each of Tax Revenue, Inflation, and FDI**

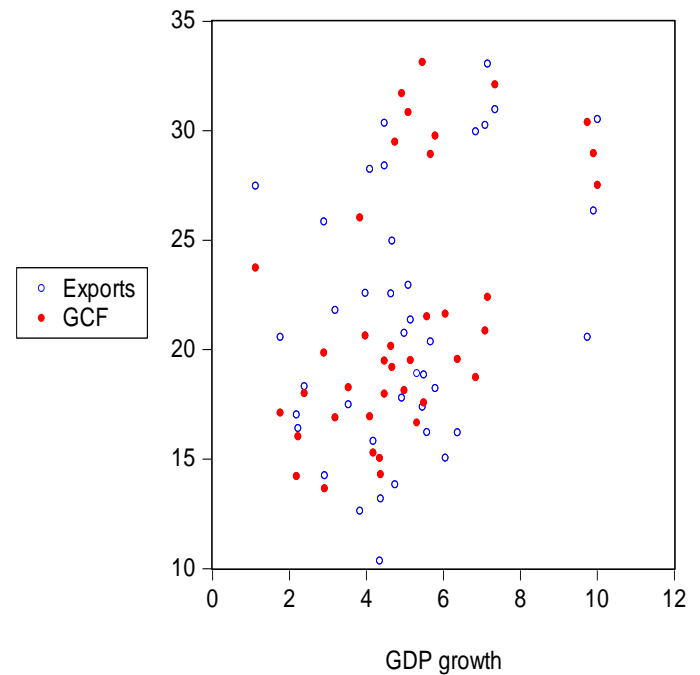


**Source:** constructed by the author using data from 1980 to 2018.

**Graph (5): Relationship between GDP Growth and Unemployment**



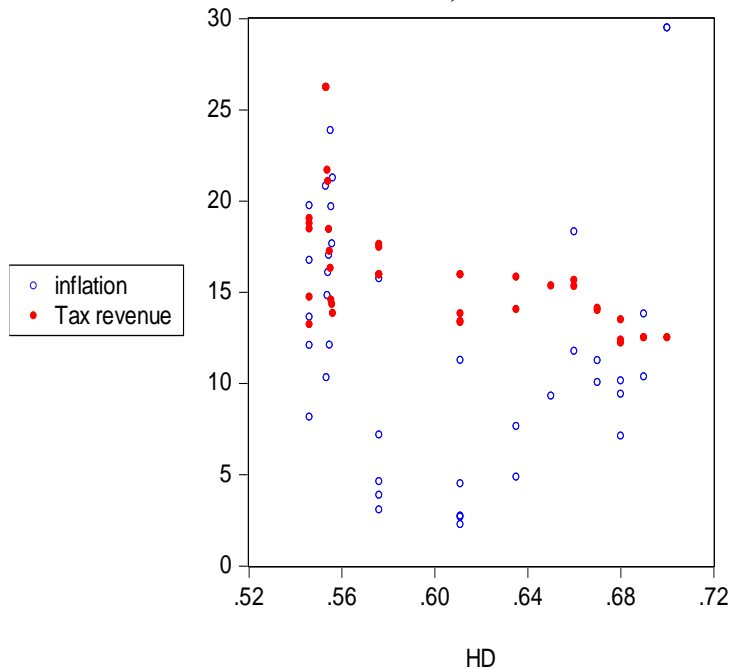
**Graph (6): Relationship between GDP Growth and each of Exports, and GCF**



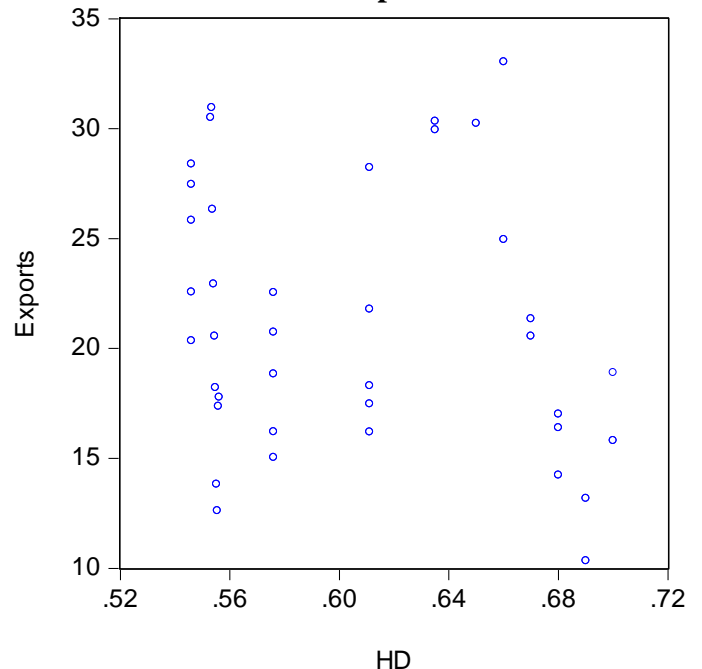
**Source:** constructed by the author using data from 1980 to 2018.

From the above graphs, we can see positive relations between GDP growth and each of the independent variables except for unemployment growth rate, the relation is expected to be negative.

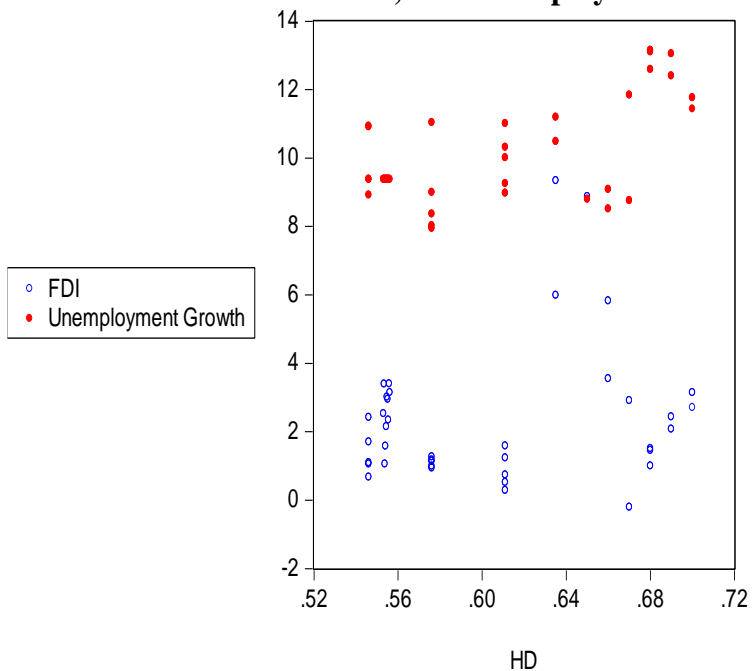
**Graph (7): Relationship between HDI and each of Inflation, and Tax Revenue.**



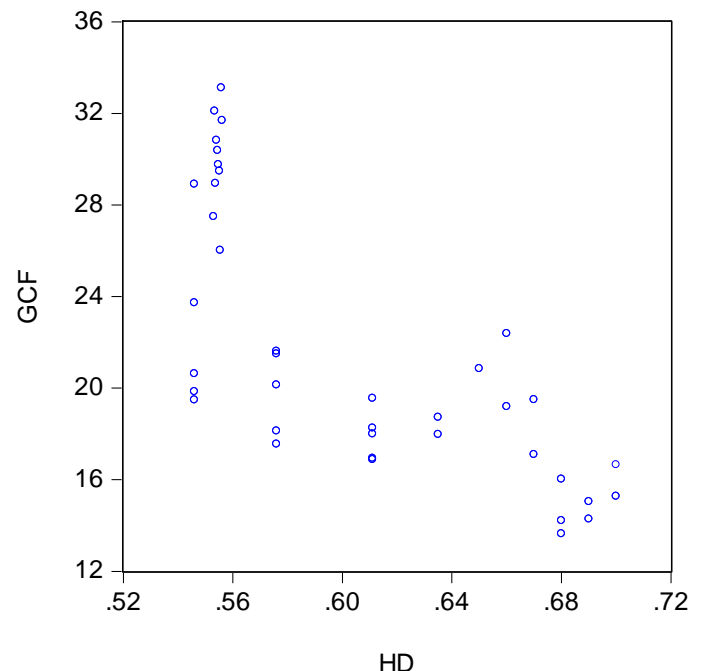
**Graph (8): Relationship between HDI and Exports**



**Graph (9): Relationship between HDI and each of FDI, and Unemployment.**



**Graph (10): Relationship between HDI and GCF**



**Source:** constructed by the author using data from 1980 to 2018.

From the above graphs, we can see a negative significant relation between HDI and GCF, and positive correlation with FDI, unemployment growth, tax revenue, and exports.

### 3.3: Estimation Technique

The main aim is to investigate the long run and short run relationships between each of GDP and HDI and other determinants. This can be done using cointegration analysis and error correction model, but in this research cointegration test and error correction model are used within an ARDL framework not Johanssen Cointegration. This because Johansen Cointegration test cannot be applied directly for mixed order of integration with some of the variables of interest or all of them are not non-stationary. So, an alternative method is needed if the variables are of mixed orders, or some of them are stationary, this method is ARDL model.

According to Shrestha & Bhatta (2018), an Autoregressive distributed lag (ARDL) model is an ordinary least square (OLS) based model, which can be used if the variables have mixed orders or some of them are stationary. This model takes sufficient numbers of lags to capture the data generating process in a general-to-specific modeling framework. “Using a simple linear transformation, a dynamic error correction model (ECM) can be derived from ARDL. Also, the ECM integrates the short-run dynamics with the long-run equilibrium without losing long-run information and avoids problems such as spurious relationship resulting from non-stationary time series data.

To illustrate the ARDL modeling approach, the following simple model can be considered:

$$y_t = \alpha + \beta x_t + \delta z_t + e_t$$

The error correction version of the ARDL model is given by:

$$\Delta y_t = \alpha_0 + \sum_{i=1}^p \beta_i \Delta y_{t-i} + \sum_{i=1}^p \delta_i \Delta x_{t-i} + \sum_{i=1}^p \gamma_i \Delta z_{t-i} + \lambda_1 y_{t-1} + \lambda_2 x_{t-1} + \lambda_3 z_{t-1} + u_t$$

The first part of the equation with  $\beta$ ,  $\delta$  and  $\delta$  represents short run dynamics of the model.

The second part with  $\lambda_s$  represents long run relationship. The null hypothesis in the

equation is  $\lambda_1 + \lambda_2 + \lambda_3 = 0$  , which means non-existence of long run relationship” (Shrestha & Bhatta, 2018).

### **3.4: Models Specification**

I estimate the impact of direct taxes (corporate and income taxes) on the economic development in Egypt by using two models.

#### **3.4.1: GDP as a Proxy for Economic Development**

This model shows the impact of the direct taxes (corporate, income taxes) on the economic growth in Egypt. The dependent variable is GDP growth rate (annual %). And, a set of independent variables is controlled for. (1) Corporate and Income taxes (% of GDP) is to have negative impact on GDP growth (Baranová & Janíčková, 2012 and Dackehag & Hansson, 2012). (2) Unemployment (% of total labor force). According to Steiner (2014), this variable is expected to have a negative relationship with GDP growth. (3) Inflation (consumer prices annual %) has an inverse relationship with GDP growth (Abdellatif & Tran-Nam, 2016). (4) Tax revenues (% of GDP). According to Laffer curve theory, this variable has an inverse relationship with GDP growth. (5) FDI (net inflows % of GDP) has an inverse relationship with GDP growth (Djankov et al. (2008) and Ferede & Dahlby). (6) Gross capital formation (% of GDP), and (7) Exports of goods and services (% of GDP). According to (Ali, Taghreed et al. 2017), both of them is expected to have negative relationships with GDP growth. Additionally, dummy variable takes 0 before 2002 and takes 1 after 2002.



### **3.4.2: HDI as a Proxy for Economic Development**

This model shows the impact of the direct taxes (corporate, income taxes) on the economic development in Egypt. The dependent variable is HDI (annual %). And, a set of independent variables is controlled for. (1) Corporate and Income taxes (% of GDP), (2) Unemployment (% of total labor force), (3) Inflation (consumer prices annual %). According to my opinion, all these variables are expected to have negative relationships with HDI. On the other hand, I expect positive relationships between HDI with each of (4) FDI (net inflows % of GDP), (5) Gross capital formation (% of GDP), and (6) Exports of goods and services (% of GDP). (7) Tax revenues (% of GDP). According to Ofoegbu & Akwu & Oliver (2016), this variable is expected to have a positive relationship with HDI. As well, dummy variable takes 0 before 2002 and takes 1 after 2002.

## **Chapter IV: Analysis and Discussion**

### **4.1: Empirical Results**

As an initial step of the time series analysis is to validate the stationarity assumption. Stationarity assumption is tested using the Augmented Dickey-Fuller (ADF) test, which is applied to determine whether the data series is stationary (has no unit root) or not by calculating the respective statistics and p-values in the main level.

Table (4) displays the results of ADF test. From the results, it can be concluded that each of GDP, exports, and FDI are stationary at their levels with confident 95% as p-value for them at their level less than 5%. While other variables are not stationary at their level but become different when taking the first difference except HDI is stationary after the second difference with confident 95%.

**Table (4): Augmented Dickey-Fuller (ADF) Test for Unit Root Variable**

Variable	ADF	p-value
GDP growth	-4.549750***	0.0005
HD	0.174700	0.9684
$\Delta$ HD	-1.68337	0.4337
$\Delta^2$ HD	-10.577***	0.0000
Tax on income	-1.569	0.4916
$\Delta$ Tax on income	-8.86273***	0.0000
Tax on profit	-2.718028	0.0771
$\Delta$ Tax on profit	-8.56933***	0.000
Tax revenue	-1.706484	0.4227
$\Delta$ tax revenue	-9.193022***	0.0000
Exports	-4.01077***	0.0027
FDI	-2.984959**	0.0422
GCF	-1.783484	0.384
$\Delta$ GCF	7.685259***	0.0000
Inflation	-2.3710	0.1543
$\Delta$ inflation	-9.7145***	0.000
Unemployment growth	-2.04699	0.2666
$\Delta$ unemployment growth	-5.835041***	0.000

\*10%, \*\*5%, \*\*\*1% significance. ADF t-statistic reported.

Note: The ADF tests include an intercept. The appropriate lag lengths were selected according to the Schwartz Bayesian criterion, also p-value are calculated using MacKinnon (1996) one-sided p-values.

**Source:** constructed by the author using data from 1980 to 2018.

#### **4.2: Correlation Analysis**

Before running the ARDL model, we have checked the correlation between the dependent and independent variables to exclude the non-significant variables from the final model. From the following table we can conclude that:

1. There is positive significant correlation between GDP growth and each of GCF, Corporates taxes, Income taxes, Tax revenue. And negative correlation with unemployment growth with confident 95% as their p-value less than 5%. While there is no significant correlation

between GDP growth and each of Exports, FDI, and Inflation with confident 95%, as their p-value greater than 5%. So, Exports, FDI, and Inflation will be excluded from GDP growth model.

2. There are negative significant relations between HDI and each of GCF, Income taxes, Corporate taxes. And significant positive correlation with FDI, Unemployment growth with confident 95% as their p-value less than 5%. While there is no significant correlation between HDI and each of Exports, FDI, and Inflation with confident 95%, as their p-value greater than 5%. So, Exports, and Inflation will be excluded from HDI model.

**Table (5): Pearson Correlation Coefficient for the Dependent and Independent Variables**

Probability		GDP_GROWTH	HDI
GCF	Pearson correlation	0.42701	-0.34316
	p-value	0.0007	0.0078
EXPORTS	Pearson correlation	0.233287	0.035338
	p-value	0.0754	0.7905
FDI	Pearson correlation	0.156737	0.323902
	p-value	0.2358	0.0123
INFLATION	Pearson correlation	0.142807	0.2254
	p-value	0.2806	0.0861
CORPORATE TAX	Pearson correlation	0.27913	-0.49901
	p-value	0.0323	0.00407
INCOME TAX	Pearson correlation	0.303223	-0.77035
	p-value	0.0196	0.0000
TAX REVENUE	Pearson correlation	0.345646	-0.71238
	p-value	0.0073	0.0000
UNEMPLOYMENT GROWTH	Pearson correlation	-0.32217	0.639802
	p-value	0.0128	0.0000

\*10%, \*\*5%, \*\*\*1% significance.

**Source:** constructed by the author using data from 1980 to 2018.

### 4.3: Results for GDP Growth Model

#### Cointegration Results

Results of the bounds test procedure for cointegration analysis between GDP growth and its determinants are presented in the table below.

**Table 6: Bounds Test for Cointegration Relationship**

	<i>Critical Value Bounds of the F-Statistic: intercept and no trend (Case II)</i>					
K	90% level		95% level		99% level	
5	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.26	3.35	2.62	3.79	3.41	4.68
	<i>Calculated F-Statistic:</i>					3.627***

**Source:** constructed by the author using data from 1980 to 2018.

As we can see from the above table, F-calculated is between 2.62 and 3.79. Moreover, it is between 3.41, and 4.68 which mean that at 95% confident level the null hypothesis “no long run relationship exists” is rejected. This means that there is a unique cointegration relationship (i.e. long run relation) exists between GDP growth and its determinants, which means that all the determinants of GDP growth can be treated as the “long-run and short-run forcing” variables for the explanation of GDP growth in Egypt.

#### A. Results of the Long Run ARDL Model of GDP growth in Egypt

Since GDP growth and its determinants are cointegrated, the long-run parameters of the ARDL model are estimated and the results presented in the table below. The long-run ARDL model was estimated based on the Akaike Information Criterion (AIC) using a lag of 1 given the yearly nature and lag 1 for regressors to avoid the relatively short sample properties of the data.

**Table 7: Estimated Long-run Coefficients Using the ARDL Approach**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GCF	0.108388	0.031376	3.454509	0.0017
Corporate Tax	0.1764919	0.0402237	4.387757	0.0001
Tax Revenue	-0.949765	0.221787	-4.282339	0.0002
Income Tax	0.7070353	0.139061	5.084326	0.0000
Unemployment	-0.840585	0.132036	-6.366311	0.0000
D1	1.115924	0.838691	1.330555	0.1934
C	4.304692	1.915076	2.247793	0.0321

**Source:** constructed by the author using data from 1980 to 2018.

From table (7) we can conclude the following:

1. Tax on corporates has a positive significant coefficient, at 1% significance level confirming, a possible positive effect of tax on corporates in the long run on the GDP growth. This means that every increase in the tax on corporates by 1% will increase the GDP growth in the long run by 0.176%, fixing all other factors.
2. Tax on income has a positive significant coefficient, at 1% significance level confirming, a possible positive effect of tax on income in the long run on the GDP growth. This means that every increase in the tax on income by 1% will increase the GDP growth in the long run by 0.7%, fixing all other factors.
3. GCF has a positive significant coefficient, at 1% significance level confirming, a possible positive effect of GCF in the long run on the GDP growth. This means that every increase in the GCF by 1% will increase the GDP growth in the long run by 0.1%, fixing all other factors.
4. Tax revenue has a negative significant coefficient, at 1% significance level confirming, a possible negative effect of tax revenue in the long run on the GDP growth. This means that

every increase in the tax revenue by 1% will decrease the GDP growth in the long run by 0.9%, fixing all other factors.

5. Unemployment growth rate has a negative significant coefficient, at 1% significance level confirming, a possible negative effect of unemployment growth rate in the long run on the GDP growth. This means that every increase in the unemployment growth rate by 1% will decrease the GDP growth in the long run by 0.84%, fixing all other factors.

B. Results of the short Run ARDL Model of GDP growth in Egypt

Once the long-run cointegrating model has been estimated, the second step is to model the short-run dynamic parameters within the ARDL framework. Thus, the lagged values of all level variables (a linear combination is denoted by the error-correction term,  $ECMt-1$ ) is retained in the ARDL model. The table below presents the results of the estimated error-correction model of GDP growth in Egypt using the ARDL technique. The model is selected based on the AIC.

**Table 8: Estimated Short-Run Error Correction Model Using the ARDL Approach**

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GCF)	0.150154	0.049305	3.045399	0.0048
D(Corporate Tax)	0.2445006	0.0602341	4.059171	0.0003
D(Tax Revenue)	-1.315743	0.328813	-4.001489	0.0004
D(Income Tax)	0.6181627	0.1522869	4.591701	0.0000
D(Unemployment)	-1.164493	0.241244	-4.827023	0.0000
D(D1)	1.545929	1.196010	1.292572	0.2060
CointEq(-1)	-1.385336	0.179393	-7.722344	0.0000

Cointeq = GDP\_GROWTH - (0.1084\*GCF + 0.1764919  
 \*TAX\_ON\_PROFITS\_OF\_CORPOR -0.9498\*TAX\_REVENUE +  
 0.7070353\*TAXES\_ON\_INCOME\_\_PROFITS -0.8406  
 \*UNEMPLOYMENT\_GROWTH + 1.1159\*D1 + 4.3047 )

**Source:** constructed by the author using data from 1980 to 2018.

From table (8) we can conclude the following:

1. Tax on corporates has a positive significant coefficient, at 1% significance level confirming, a possible positive effect of tax on corporates in the short run on the GDP growth. This means that every increase in the tax on corporates by 1% will increase the GDP growth in the short run by 0.244%, fixing all other factors. This is the same conclusion as the long run, but the coefficient in the long run is less than that in the short run. Thus, tax on corporates has higher effect on GDP growth on the short run.
2. Tax on income has a positive significant coefficient, at 1% significance level confirming, a possible positive effect of tax on income in the short run on the GDP growth. This means that every increase in the tax on income by 1% will increase the GDP growth in the short run by 0.618%, fixing all other factors. This is the same conclusion as the long run, but the

coefficient in the long run is larger than that in the short run. Thus, tax on income has lower effect on GDP growth on the short run.

3. GCF has a positive significant coefficient, at 1% significance level confirming, a possible positive effect of GCF in the short run on the GDP growth. This means that every increase in the GCF by 1% will increase the GDP growth in the short run by 0.15%, fixing all other factors. This is the same conclusion as the long run, but the coefficient in the long run is less than in the short run. Thus, GCF has higher effect on GDP growth on the short run.
4. Tax revenue has a negative significant coefficient, at 1% significance level confirming, a possible negative effect of tax revenue in the short run on the GDP growth. This means that every increase in the tax revenue by 1% will decrease the GDP growth in the Short run by 1.315%, fixing all other factors. This is the same conclusion as the long run but the coefficient in the long run is less than that in the short run. Thus, tax revenue has higher effect on GDP growth on the short run.
5. Unemployment growth rate has a negative significant coefficient, at 1% significance level confirming, a possible negative effect of unemployment growth rate in the short run on the GDP growth. This means that every increase in the unemployment growth rate by 1% will decrease the GDP growth in the short run by 1.16%, fixing all other factors.
6. The coefficient of the dummy variable is insignificant, which means that there is no significant difference between the GDP growth before 2002 and after 2002. This at significance level 5%.



From tables 9 & 10, we can see that there is no serial correlation as Durbin Watson value is near to 2. Furthermore, from Q-statistics probabilities, there is no serial correlation as p-value is greater than 0.05, which is also supported by graph (11) as the residuals is scattered randomly. In addition, the fitted values are almost the same as the actual values, and from the value of adjusted R-square we can say that the model is good fit.

**Table 9: Model Criteria/Goodness of Fit**

R-squared	0.695473	Mean dependent var	4.974810
Adjusted R-squared	0.614266	S.D. dependent var	2.066341
S.E. of regression	1.283352	Akaike info criterion	3.536002
Sum squared resid	49.40977	Schwarz criterion	3.919901
Log likelihood	-59.95204	Hannan-Quinn criter.	3.673742
F-statistic	8.564197	Durbin-Watson stat	1.957462
Prob(F-statistic)	0.000005		

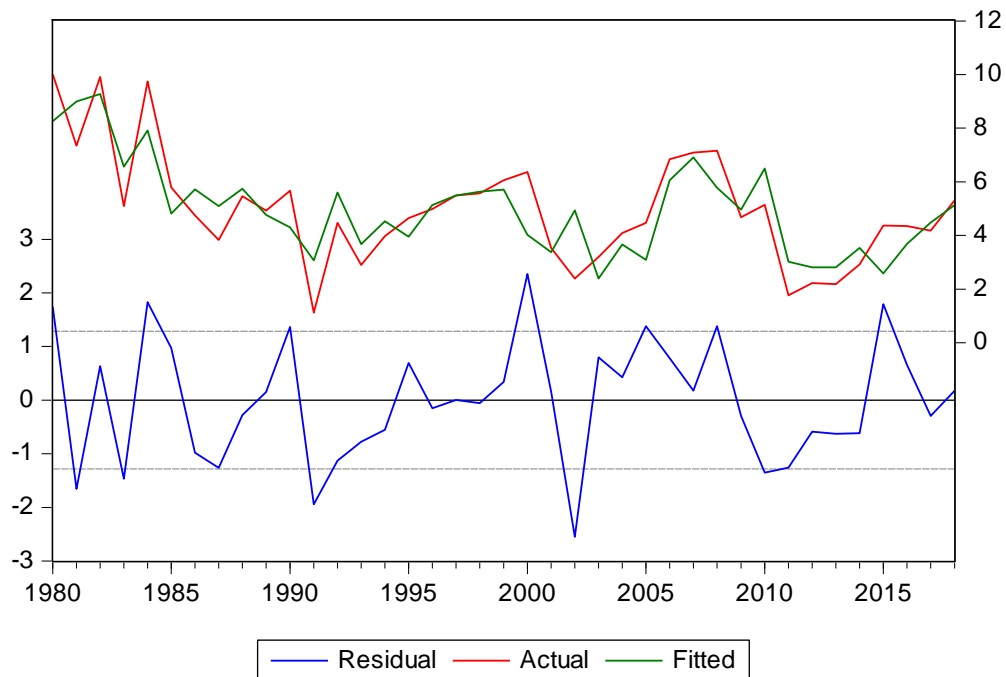
**Source:** constructed by the author using data from 1980 to 2018.

**Table 10: Q-statistic Probabilities Adjusted for 4 Dynamic Regressors**

	AC	PAC	Q-Stat	Prob*
1	-0.116	-0.116	0.5634	0.453
2	0.097	0.084	0.9675	0.616
3	-0.028	-0.008	1.0021	0.801
4	-0.140	-0.155	1.8938	0.755
5	-0.100	-0.133	2.3605	0.797
6	-0.083	-0.087	2.6906	0.847
7	-0.111	-0.126	3.3106	0.855
8	0.025	-0.023	3.3419	0.911
9	0.049	0.030	3.4701	0.943
10	0.106	0.076	4.0909	0.943
11	0.127	0.100	5.0141	0.930
12	-0.130	-0.156	6.0149	0.915

**Source:** constructed by the author using data from 1980 to 2018.

**Graph (11): Actual, Fitted, Residual Plot**



**Source:** constructed by the author using data from 1980 to 2018.

#### 4.4: Results for HDI Model

##### Cointegration Results

Results of the bounds test procedure for cointegration analysis between HDI and its determinants are presented in the table below.

**Table 11: Bounds Test for Cointegration Relationship**

<i>Critical Value Bounds of the F-Statistic: intercept and no trend (Case II)</i>						
<i>Critical Value Bounds of the F-Statistic: intercept and no trend (Case II)</i>						
K	90% level		95% level		99% level	
5	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.12	3.23	2.45	3.61	3.15	4.43
	<i>Calculated F-Statistic:</i>					0.99596

**Source:** constructed by the author using data from 1980 to 2018.

From the above table, we can see that the F-calculated is lower than the critical value for  $I(0)$  for all confidence levels, which means that at any confident level the null hypothesis “ no long run relationship exist “ is not rejected. This means that there is no cointegration relationship (i.e. no long run relation) exists between HDI and its determinants, and all the determinants of HDI can be treated as the “short-run forcing” variables for the explanation of HDI in Egypt. Then results for short-run analysis only will be discussed.

Note that, there is no enough data for HDI from 1980 until 2018, so data was imputed by using time series analysis in order to fix the data structure issue. And this could be one of the reasons that led to not find a long run relation between HDI and its determinants.

#### A. Results of the short Run ARDL Model of HDI in Egypt

The table below presents the results of the estimated ARDL Model. The short-run ARDL model was estimated based on the SIC by using a lag of 2 given the HDI is stationary after 2 lags and lag 1 for regressors to avoid the relatively short sample properties of the data.

**Table 12: Estimated Short-Run Error Correction Model Using the ARDL Approach**

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
HD(-1)	0.726526	0.128981	5.632802	0.0000
HD(-2)	0.606969	0.248258	2.444910	0.0208
GCF	-0.000979	0.000492	-1.991479	0.0559
CORPORATE_TAX	-0.220567	0.096435	-2.287215	0.0297
TAX_REVENUE	0.015363	0.006397	2.401525	0.0230
INCOME_TAX	-0.781708	0.327076	-2.389983	0.0236
UNEMPLOYMENT_GROWTH	0.003517	0.002045	1.719972	0.0961
FDI	0.003316	0.001133	2.926610	0.0066
D1	0.027057	0.013612	2.987713	0.0056
C	-0.201348	0.088678	-2.270553	0.0308

**Source:** constructed by the author using data from 1980 to 2018.

From table (12) we can conclude the following:

1. Tax on corporates has negative significant coefficient, at 5% significance level confirming, a possible negative effect of tax on corporates in the short run on the HDI. This means that every increase in the tax on corporates by 1% will decrease the HDI in the short run by 0.22%, fixing all other factors.
2. Tax on income has a negative significant coefficient, at 5% significance level confirming, a possible negative effect of tax on income in the short run on the HDI. This means that every increase in the tax on income by 1% will decrease the HDI in the short run by 0.78%, fixing all other factors.
3. Tax revenue has a positive significant coefficient, at 5% significance level confirming, a possible positive effect of tax revenue in the short run on the HDI. This means that every increase in the tax revenue by 1% will increase the HDI in the Short run by 0.015%, fixing all other factors.

4. FDI has a positive significant coefficient, at 5% significance level confirming, a possible positive effect of FDI in the short run on the HDI. This means that every increase in the FDI by 1% will increase the HDI in the Short run by 0.0033%, fixing all other factors.
5. The coefficient of the dummy variable is significant at 5% significance, which means that there is significant difference between the HDI before 2002 and after 2002. Thus, HDI in Egypt after 2002 is significantly higher than HDI before 2002.
6. The other independent variables have no significant effect on HDI at 5% significance.

From tables 13 & 14 we can see that there is no serial correlation as Durbin Watson value is near to 2. Moreover, from Q-statistics probabilities, there is no serial correlation as p-value is greater than 0.05, which is also supported by graph (12) as the residuals is scattered randomly. In addition, the fitted value is almost the same as the actual values, and from the value of adjusted R-square we can say that the model is good fit.

**Table 13: Model Criteria/Goodness of Fit**

R-squared	0.982991	Mean dependent var	0.605401
Adjusted R-squared	0.977712	S.D. dependent var	0.054996
S.E. of regression	0.008210	Akaike info criterion	-6.550281
Sum squared resid	0.001955	Schwarz criterion	-6.123727
Log likelihood	137.7305	Hannan-Quinn criter.	-6.397237
F-statistic	186.2171	Durbin-Watson stat	2.236993
Prob(F-statistic)	0.000000		

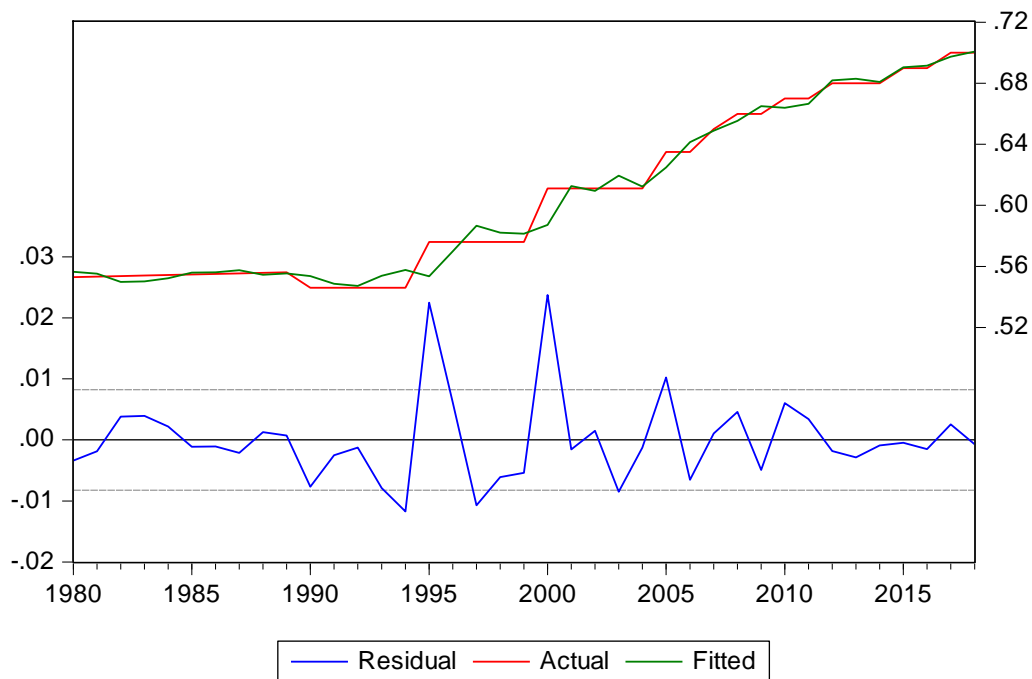
**Source:** constructed by the author using data from 1980 to 2018.

**Table 14: Q-statistic Probabilities Adjusted for 4 Dynamic Regressors**

	AC	PAC	Q-Stat	Prob*
1	0.060	0.060	0.1508	0.698
2	0.057	0.054	0.2924	0.864
3	0.098	0.092	0.7190	0.869
4	-0.069	-0.084	0.9375	0.919
5	0.523	0.533	13.821	0.17
6	0.026	-0.087	13.853	0.31
7	-0.099	-0.155	14.342	0.45
8	-0.078	-0.211	14.655	0.066
9	-0.134	0.006	15.619	0.075
10	0.006	-0.346	15.621	0.111
11	-0.111	-0.098	16.324	0.130
12	-0.154	-0.032	17.727	0.124

**Source:** constructed by the author using data from 1980 to 2018.

**Graph (12): Actual, fitted, Residual Plot**



**Source:** constructed by the author using data from 1980 to 2018.

## **Chapter V: Research Findings and Conclusion**

### **5.1: Findings & Conclusion**

In short, if we look at the taxation system in Egypt, we can easily realize that it is suffering from several drawbacks like the exclusion of social justice, lack of broad tax administration capability, and the increasing in the rate of tax evasion, which all are affecting the economic growth and development.

In reality, we can easily realize that although the Egyptian government has succeeded to concentrate on raising more tax revenues, it does not fulfil its fairness towards people who pay the tax burden. Moreover, the Egyptian government is inefficient in deciding who, whether individuals or businesses or both, can afford the tax burden. And who really should be exempted, the poor or investors or both from tax policies. On the other hand, despite the recent tax reforms, the most important weaknesses in the tax system have not been corrected, which hinders the effectiveness of tax revenue collection.

Thus, this study examined the extent to which revenue generated from corporate and income taxes can enhance economic development in Egypt by using GDP and HDI. The result indicated that there is positive long and short-run impact of the direct taxes (corporate, income taxes) on the economic growth (GDP) in Egypt, at significance level 5% by fixing all other factors. Moreover, there is negative short-run impact only of the direct taxes (corporate, income taxes) on the economic development (HDI) in Egypt, at significance level 5% by fixing all other factors.

The design of the tax system based on variety of factors, and it varies between countries. Taxes have a positive and negative effect on both economic growth and economic development, so it is important to understand that the tax is that revenues are

raised directly and indirectly from individuals, businesses, investors, and suppliers. Therefore, when these taxes (revenues) are spent effectively on public expenditure such as improving the quality of education, health care system, technical development etc. Consequently, both economic growth and economic development can only be positively impacted, if these actions are carried out in terms of effectiveness and adequacy. On the other hand, if the country uses the tax revenues to fund its budget deficit, this would have a negative effect on its economic development.

In fact, GDP is a measure of economic growth, and not the social well-being, economic equality, welfare, or the environmental well-being of people of a country. At the same time, the increasing amount generated from tax every year should have ensured improved economic well-being and a better standard of living for the Egyptian citizens, but the present positions of HDI have not changed significantly over the years. Thus, we can easily note that high rate of poverty, unemployment, inflation, insecurity, and inadequate healthcare delivery still prevails despite the increasing tax revenue. This means that the implication of tax revenue is not making as much impact on economic development as on gross domestic product of Egypt. By applying these findings on some of the economic theories like the substitution and income effects on the labor side, definitely these findings seem weird and ambiguous. Because all the theories are accepting that increasing tax rates is one of the reasons that negatively affect the economic growth, but this does not happen here in our case. In my opinion, there are several economic theories are formed with assumptions, which not dealing well with specific cultures, because of the different consumers' behavior. Thus, for developing country like Egypt, the higher burden of taxes



could lead people to work or produce more, which definitely will lead to better economic performance and higher economic growth in the short and long run.

At the end, the attention to improve the economic development by providing high quality of public goods and services is very important point, because if individuals and businesses do not have clean drinking water, no decent road network, a better health care system, an efficient education system, so why they be able to pay taxes? People in Egypt need to feel the effect of progress to voluntarily pay taxes. Therefore, the tax revenue generated must be sufficiently, effectively and wisely used to ensure sustainable economic development, and the Egyptian government should pay attention to encourage its people to create trust in it through tax transparency, ensuring high fulfillment of the promises made to the public.

## **5.2: Policy Recommendations**

There are some measures that can be applied in Egypt, according to effective tax reform cases in developing and developed countries:

Reform of tax policy and reform of tax administration can be seen as sharing common initiatives helping to raise tax revenues. Tax policy reform and tax administration reform have been linked to each other in several nations. A large rise in tax revenues has resulted from the combination of moderate tax rates with improved administration. Great examples of countries that have successfully combined the two reforms are Bosnia and Herzegovina, Georgia, Paraguay and Rwanda (OECD and ITC, 2015).

It's efficient and effective to expand the tax base. Whether through the elimination of deductions and exemptions or through better audit and regulation, a wider tax base has succeeded in raising revenue without placing a higher tax burden on society and business.

Moreover, in order to raise tax revenue, the registration of tax payers is important. Taxpayer registries were previously in rough condition in each country research, with many individuals just outside the scheme.

Trying to simplify tax processes will make it simpler and less expensive to pay taxes, and we have a good example in Africa, which is Ghana. The reform and simplicity of the Ghana Revenue Authority (GRA) has been a crucial reform of the tax administration. It included merging the Internal Revenue Service into one comprehensive entity with the Value Added Tax (VAT) Service and Customs Operations. Tax offices were also segmented into big, medium and small taxpayer offices, covering both income tax and VAT in all areas. A new organizational structure with consolidated tax offices, updated reporting lines and new job functions was created over five years of reforms. Both workers have been qualified in auditing, taxpayer programmes, compliance procedures and other skills in the assigned offices (OECD and ITC, 2015).

Modern digital transformation (IT) is a key element of any overall tax modernization initiative. IT systems are costly, and design, procurement, and implementation errors have also been made by donors and developing countries. IT programmes require a lot of time in planning process and the lack of cooperation among donors and fear of change in a developing country are one of the most important challenges to be addressed.

A significant instrument to help tax reforms and tax collection is the fight against corruption. Corruption in several tax and customs systems around the world is a problem. Reducing corruption helps raise the tax revenue of a country. A taxpayer who is less

vulnerable to a disreputable behavior of officials and unfair business practices created by those eager to "pay to play" is also advantageous.

Thus, the government should take the following points into account in order to strengthen the Egyptian tax system.

The government should start by amending tax legislation, so it should be formulated according to modern principles in line with modern scientific philosophies by making the legislation easier, simpler and more flexible. Perhaps this is what the tax administration in Egypt has started heading towards by simplifying procedures in linking and collecting tax, even though the tax department is not yet able to understand the nature of how to simplify procedures. Therefore, it is better to rely on young administrative competencies that keep pace with the requirements of the new era of taxes, and gradually exclude the senior employees from the executive work related to the treatment of the taxpayer. Consequently, the government is need to start develop the tax administration itself, automating inventory, checking and review processes, supplying it with all technological means, and linking tax interests in various sectors. Beside all these recommendations, the government should adopt a new philosophy based on the trust between the taxpayer and the tax authority, and this is could be done by canceling the prison sentences for tax evaders.

On the other hand, the government should improve its strategy regarding the international trade approach, especially the exports side. It is one of the most important factors in improving the economic development, so the government should encourage the domestic producers by reducing the exports taxes as well as increasing the imports taxes. At the same time, the Egyptian government should take into consideration the social equality indicator, because it is one of the main indicators that refers to the economic

development of any country. Thus, the enhancement of the well-being of people in our society, achieving systemic improvements in our economy, and achieving sustainable prosperity, all these needs creating new laws that encourage equity in the income distribution.

In my opinion, the transparency and the efficient communication channels between the government and people is in need to be improved. I suggest that the Egyptian government should announce its intentions throughout setting and publishing a medium- and long-term plan for the expected or potential changes that could exist in the system, which will help the taxpayers and policymakers in providing a roadmap of what will happen. At the same time, this will contribute in lowering the uncertainty and boosting decision making coordination.

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