ANALYSIS OF SOME RESOURCES OF ECONOMIC GROWTH IN EGYPT (1977- 2012)

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Abstract

Economic growth is one of the basic goals that all nations strive to achieve. This achievement can be observed in whatever economic system, regardless of the stage of progress or backwardness reached. However, this is due to its impact on the welfare of the country, the level of its citizens, and its reflection on the progress and strength of the economy. Consequently, this stems from the fact that economic growth is characterized by being the outcome of a complex and interrelated process. Many factors combine to make this process succeed. These factors are economical, social, political, and institutional factors. On the other hand, many internal and external obstacles also hamper it. Many theories have discussed about economic growth. Also, different economic schools have tried to interpret its mechanisms based on variables and factors that affect it. Some economic schools focused on external factors, while others focused on the internal factors. In addition, applied studies included a variety of variables to expand the production functions which were used as a theoretical framework for models of economic growth. Thus, this was according to the nature of the economy and the specificity of the factors that controls its performance.

This study aims to analyze the real GDP in Egypt sources, during the period (1977-2012) by determining the contribution of each component of the selected economic factors towards the increase of the GDP. This is with the aim of detecting the importance of each element according to its contribution in GDP. Thus, this helps decision-makers to maximize the benefit from the active growth elements. The study also seeks to predict the size of the GDP and its components during the next four years. It is an important factor to see to how much these values will reach in the future. Subsequently, this helps in shaping the future plan in accordance with the objectives of the required growth and the available possibilities with the quest to improve it.

Keywords: Economic growth, Egypt

Introduction

If we want to understand why countries differ dramatically in standards of living, we have to grasp why countries suffer from extreme variations in economic growth rate in the long term. Therefore, the economies of growth is the part of the entire economy that really matters[1].

Economic growth is considered one of the basic objectives that all countries seek to accomplish whatever their economic systems are and regardless of the stage of progress or backwardness. However, this is because economic growth influences the welfare level of the country, as well as the welfare level of its citizens. This is due to the fact that the whole clear picture that economic growth reflects shows the progress and strength of the economy. It can be defined as the result of a complicated and interconnected process, by which various factors cooperates in helping it succeed. These factors include economic, social, political, and institutional factors. In addition, there are also internal and external obstacles that hamper this process of which different countries seek to deal with and overcome.

Economic growth has two concepts: one is economic, and the other is social. It represents one of the most significant economic indicators. It is also considered as an aim of any economic policy. This can be refuted by the fact that there can be an economic growth that is not accompanied with improvement in standards of living. However, this fact may be due to dysfunctions in mechanisms of income and wealth distribution inside the society; of which economic growth has nothing to do with. This makes us support economic growth not for the sake of growth in itself, but for the sake of improving economic welfare. In other words, it supports sustainable development. Many theories tackled the subject of economic growth. Different economic schools tried to explain its mechanisms on the basis of the variables and factors that affect it. Some economic schools concentrated on external factors, while others are concentrated on internal factors. Furthermore, applied studies listed different variables to enlarge production functions used as a theoretical framework for economic growth models. Therefore, this was done according to the nature of economy and specificity of the factors that control its performance.

The problem of the study is to recognize and identify growth limitations in Egypt through testing special and appropriate variables that influences its level and fluctuations. This requires the induction of economic literatures related to different economic growth theories. Furthermore, it involves conducting a comprehensive survey of distinguished applied economic studies. After then, a research will be made on the nature of the economic status of the country. The problem is not confined to this extent. Therefore, it is necessary to know how important each one of the selected factors is, according to the significance of its relation to and influence on gross

domestic product (GDP). This is a process which needs the formulation of a suitable econometric model that answers these questions. Finally, the problem that faces us is to know the values of these variables in the future. This requires that the model is applicable so that the explanation process is not disrupted.

This study aims to analyze the resources of real GDP growth in Egypt from 1977 to 2012 with the aim of finding out the importance of each factor according to its range of participation in production. These facts will help decision makers to maximize the benefit of the factors that effectively influence growth. In addition, the study seeks to predict the size of this gross product and its factors during the next four years which is very significant for knowing what these values will be in the future. Consequently, this will help draw up future plan according to the required growth objectives and available capabilities, as well as a trial to improve them.

The importance of this study results from the lack of economic studies related to the explanation of economic growth in Egypt, particularly those studies that take into consideration a time sample greater than 20 years. Moreover, decision makers need studies in this regard in the light of contradictory explanations and expectations about annual growth rate. However, this is especially in the light of what the state is undergoing concerning various successive and conflicting political and economic changes.

The time framework of this study extends to a long period as it was designed for the study to tackle the time from 1960 to 2012. However, because of shortage in the data of some variables needed for the model, the period has been shortened from 1977 to 2012. Furthermore, the methodology of this study depends on the induction method through a brief and accurate presentation of literatures and theories of economic thought regarding economic growth or related participations. This included the use of deductive approach to reach the most important results concerning that analytical subject. Next is the stage of using the analytical approach based on the experience acquired from the previous two steps. In this approach, we try hard to devise a final vision based on the constants of economic theory, available information, and many other elements in order to build a function relation explaining the phenomenon of economic growth and its relation to the most influential factors. Finally, the existing econometric approach will be used for mathematical models test of the sample. Thus, its results will be tested through using them in the economic theory in this regard in helping to formulate the final model of the studied variable.

This study consists of two main topics. The first one addresses the theoretical framework of economic growth. Also, it addresses previous studies where a quick historical overview is presented about the development

of economic growth rates worldwide, especially during the last century. Next, entity, conditions, gains, and burdens of economic growth are demonstrated. Then, the difference between it and the economic development with a short overview of the most important methods of measuring it was also demonstrated. After that, there was a simple presentation of the most significant economic theories which explains economic growth throughout the history of economic thought. At the end, results of the most important previous studies on economic growth and its relation and many other economic variables were mentioned. Particular focus is given to studies and participations of the American scientist, Robert Barro, Professor of Economics at Harvard University. He was recognized as one of the best scientist all over the world who is interested in subjects of economic growth. The second part is allocated to formulating econometric models needed to explain the main variable of the study and its relation to other variables. Necessary steps have been followed to build the model. In addition, the use of statistical methods has varied according to the nature of variables. Also, statistical programs have been different such as the programs of SPSS and Eviews. Finally, important and basic results of the study were also presented.

The First Party: Theoretical Framework of Economic Growth
(1-1) Historical Overview of Economic Growth around the World
   In a study by Jaume Ventura on economic growth and development of its per capita at the world level during the last five hundred years, it was noticed that the world economy underwent a stage of recession and weakness in economic growth during the middle centuries and for five centuries. This state continued till the beginning of the nineteenth century. However, this century coincided with the beginnings of the industrial revolution when the world economy entered a new phase of economic development that witnessed positive successive and rising positive increases in economic growth rates. Growth rate of per capita product reached 18% from 1500 to 1820, and about 750% from 1820 to 2005. Although economic growth rates witnessed remarkable increases from the beginning of the nineteenth century, they decreased in the period from 1913 to 1945 because of World War I and II. Then, they considerably rose again in the period from 1946 to 1675 and continued as such for thirty successive years in most countries of the world. After that, these rates decreased in later periods[2].

Figure (1). Development of Economic Growth Rates in the Period (1870-1990)[3.]
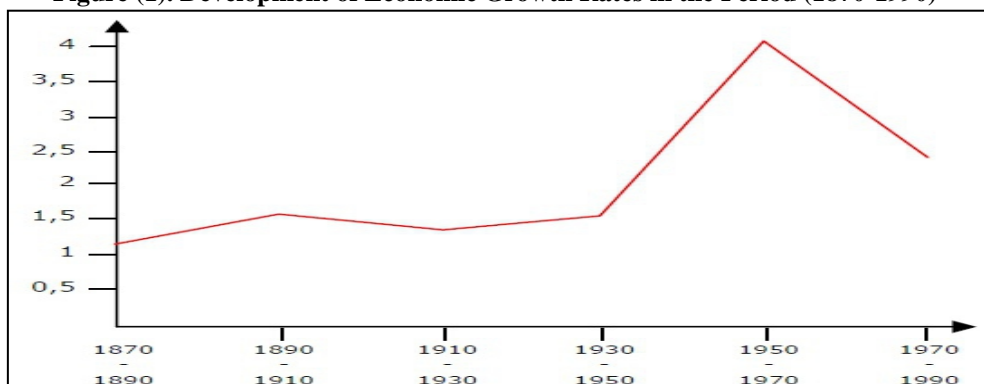
Consequently, it is important to refer to the book of the famous American author, Gergory Mankiw entitled "Principles of Economy". He points out that considering the development of economic growth rates and the development of per capita gross domestic product, many significant economic remarks can be deducted concerning issues of economic growth[4]. Table (1) shows per capita gross domestic product in thirteen countries around the world where the data available that is related to each country covers a period of time which is about a century or more. It should be noticed that the period of each country is not the same as that of other counterpart countries because of many considerations such as the availability and accuracy of data. In order to make a comparison among per capita gross domestic product in each country, the currency must be unified to an accepted and negotiable currency in all countries of the world. Thus, this currency is usually the American dollars of 2000. It is necessary also to take into consideration the effects of inflation in each country.

However, it is remarkable that the standard of living differs dramatically from one country to another. In the United States of America, for instance, per capita gross domestic product is a value that is nine times greater than that of the Chinese counterpart and fourteen times greater than that of the Indian counterpart. It is observed that average Chinese per capita gross domestic product in 2000 was close to that of the British counterpart in 1870. However, average Bangladeshi per capita income in 2000 was close to the German per capita income a century ago. In the United Kingdom, for example, per capita gross domestic product was 4170 dollars in 1870 and 23500 dollars in 2000. This reflects a rate of annual economic growth that was about 1.35% in 130 years.

The table arranges studies countries according to the average growth rate of GDP. It was found that Japan was on the top with an average of 2.815. Nevertheless, natural resources were scarce in Japan 100 years ago as Japan was not a rich country at that time when the average per capita gross

domestic product was a little more than that of the Mexican counterpart and less than that of the Argentina counterpart. Furthermore, average per capita income in 1890 was less than that of an Indian counterpart in 2000. However, due to the prosperous and constant economic growth, Japan has become an international economic power where the average per capita income is a little less than that in USA. At the end of the list, comes Bangladesh and Pakistan with an annual average growth rate of 1.16% in the last century. The population of both countries lives in abject and continuous poverty till now.

Difference in annual growth rate is the cause of changes in the classification of countries. Japan advanced remarkably to be the first internationally. On the other hand, Britain moved backward in the world ranking. In 1870, it was the richest country with 4107 dollars per capita and an increase of 20% over the USA. It was double the income in Canada. However, average per capita income in UK is less than its previous colonies. The important result deducted from this table is that the richest countries in the world have no guarantee to stay rich, while the poorest countries have nothing to compel them to stay poor or prevent them from growth and advancement.

Table (1). Average Growth Rates of Some Countries in 100 Years' Time[5]

Country	Period	GDP in the beginning of the period ($ in 2000)	GDP in the end of the period ($ in 2000)	Average annual economic growth rate
Japan	1890 – 2000	1256	22460	2.81
Brazil	1900 – 2000	650	7320	2.45
Mexico	1900 – 2000	968	8810	2.23
Canada	1870 – 2000	1984	27330	2.04
Germany	1870 – 2000	1825	25010	2.03
China	1900 – 2000	598	3940	1.90
Argentina	1900 - 2000	1915	12090	1.86
USA	1870 – 2000	3347	34260	1.81
India	1900 – 2000	564	2390	1.45
Indonesia	1900 – 2000	743	2840	1.35
UK	1870 – 2000	4107	23550	1.35
Pakistan	1900 – 2000	616	1960	1.16
Bangladesh	1900 – 2000	520	1650	1.16

(2-1): Entity, Characteristics, Gains, and Burdens of Economic Growth

Economic growth is considered a relatively new term in human history that has been accompanied with appearance of capitalism, its mechanical ability, and its industrial production. This capitalism was associated with continuous technical changes and accumulation of capital that led to essential transformations of communities which were previously primitive. It seeks to

gain means of living and survival, and is not interested in the amount or rate of increase[6]. Before mentioning different definitions of economic growth, it must be noted that the key of economic growth in any country is technical and technological progress, as well as the growth rate of the population, savings, and reserve of capital (investment) through which more technology can be attracted. The significant point is not the abundance of natural resources, but the rational use of available resources and utilizing economies of scale[7].

Definition of economic growth requires identifying the variable according to that which this growth is measured. It also requires the identification and measurement of the variable. The simplest definition of economic growth is the expanding ability of a country in producing goods and services needed by its population[8]. Philip Peru defined it as the recorded rise during a period that is usually a year or successive periods in an expansive economic variable which is the real net product. Moreover, it can be identified as the growth that results in accelerating growth rates to reach higher standards of living through producing more goods and services and improving their quality[9]. Bonnet emphasizes that economic growth is an automatic economic expansive process measured by occurring quantitative changes, while Kosov says that economic growth recorded a change in the size of economic activity[10].

Kuznets indentifies economic growth as the ability of a country to offer its citizens a variety of economic goods which result in a growing increase in production capacity based on technological development and institutional modifications required for this matter[11]. According to this definition, economic growth has six characteristics that distinguished developed communities. These characteristics are[12]:

a) Availability of high rates of per capita product which are not less than 2%.
b) Availability of high rates of total productivity of production factors ranging from 50 to 75%.
c) Availability of high rates of economic structural transformation, i.e. the transition from the agricultural sector to the industrial one, amounting to about 7% of workers in the agricultural sector.
d) Availability of high rates of social, political, and ideological transformation. However, Myrdal points out that it affects aspects of sensibility, economic planning, social and economic balance, equality, and improvement of institutions and trends.
e) International dominance.
f) Limited dissemination of world economic growth.

Limitations of economic growth can be summed up through the above presentation in terms of quality and quantity of human resources, quality and

quantity of natural resources, capital accumulation, technical progress rate, environmental factors, and finally specialization and macro-production[13]. As for the benefits of economic growth, it can be said that they are represented by: increase of quantities of services and goods available for community citizens; rise of people's welfare via increase of production and high rates of wages, profits, and other income; elimination of poverty; improvement of health and educational level of the population; increasing the resources of a country and boosting its ability to undertake all its responsibilities such as provision of security, health and education; optimal income distribution; and finally participation in alleviating the problem of unemployment. On the contrary according to the cost of alternative opportunity, it can be alleged that economic growth has burdens and costs that can be mentioned briefly as follows[14]:

✓ Whenever economic growth rate increases, the need is more for producing capital goods and directing resources and investments to them. Therefore, this is in addition to increasing investment in training and education which requires sacrificing some Consumer goods at present time in order to increase production in the future.

✓ Economic growth in developed countries and even in developing ones leads to increasing environmental pollution, eradication of natural resources, and crowdedness of cities.

✓ Lack of economic stability because of economic fluctuation such as partial unemployment. This occurs since the process of economic development takes place in an irregular and unstable way.

✓ Whenever economic growth rate increases, the material progress increases. Also, the material aspects dominated the spiritual and ethical ones in the community.

(3-1): The Difference between Economic Growth and Economic Development

In the beginning, we would like to demonstrate the difference between growth and economic development on one hand, and advancement or economic progress on the other hand. Development linguistically means the process of moving forward. Development in the field of economy means the advancement of economy towards previously identified objectives, whether quantitative such as increase of product or qualitative such as better distribution inside the country. Thus, development or progress indicates change and movement. It is mostly used to refer to the economic state of a certain country or sector. For instance, we may speak of economic development or industrial development in a given country during a specific time. It is not a synonym for growth as there can be development in the industrial field with a percentage that is less than that of the population

increase. In this case, there is no growth. It is not also a synonym for advancement as there can be economic development that is not accompanied with structural and social changes that ensures continuity and regularity of this development[15].

According to Todaro, policy makers in developing countries have to take into consideration the achievement of economic growth first before reaching economic development in community. Therefore, the three following basic components must be available[16]:

- ✓ Accumulation of capital including all new investments in lands and tangible instruments on one hand, and human resources on the other. This is possible through improving the quality of human capital that greatly affects production capacity.
- ✓ Population growth and consequently the actual growth of manpower.
- ✓ Technological progress that is considered to be the most important factor of economic growth resulting from increase of investment in human capital.

Economic development theories have not appeared suddenly. However, many economic theories appeared to try in the beginning to reach an optimal model to achieve economic balance, to reduce deviations of economic growth in the short run, and then to make it sustainable to lead to deep variations in the economic and social structure of a country. Consequently, this will result in improvement of the share of the poor and middle social categories of the total welfare of a country and of the economic development in turn.

Growth and economic development are considered as an increase in the production capacity of the economy, i.e. productive investment increase the development of material and human capabilities for producing real income in community. Nevertheless, they differ as for the content, aims, and the issues they deal with. Economic growth simply means an increase in quantity and value of goods and services produced in the local economy. It only reflects the progress of the economy and does not necessarily lead to increase in individuals' welfare which is one of the meanings of economic development that takes into consideration the social dimensions in economic growth.

Gerald Meyers, American economist and UN expert, defines economic development as the process through which the real national income increases during a period of time. Hence, this definition includes three main indicators: continuous movement of development process, the relatively long time this process takes, and its reflection in constant rise in real national income[17]. Prof. Yehia Al-Naggar defines it as the process that occurs in the framework of presenting basic production factors and composing or forming demand on products without achieving an increase in real national income in the form of size or rates during a long period of time[18]. The well-known economist

Tirkus mentions in his book about the formation of constant capital in developing countries that economic development is related considerably to human abilities, social trends, political circumstances, and historic events[19]. Furthermore, the outstanding Swedish economist Myrdal defines development as the uprising movements of the social systems as a whole.

In addition, economic development is defined as the actual transition from an economic structure with low productivity as for the individual to a structure that allows high productivity within the limits of available resources. This means using existing capacities in a country in an optimal way through introducing radical changes in economic and social structure, and the distribution of production factors among sectors[20].

As mentioned above, it can be defined as the process through which transformation occurs from a state of economic backwardness to a state of progress. Also, it constitutes its requirements of introducing various radical and essential changes in the economic structure. This process allows economy to enter the stage of going forward towards self-growth and fulfills an increase in average per capita real income by time. It happens through changes in the production structure, quality of services, and the produced services provided. However, they are associated with changing the structure of income distribution in favor of the poor. Moreover, it can be defined as the ability of national economy, whose economic conditions have been quite still for a long time in generating an annual increase in gross domestic product of this economy. Thus, its rate ranges from 5% to 7% or more.

Giving a clear concept of the development process is an important and basic step to place a country on the right track as serious mistakes that occurred under the veil of development increased backwardness considerably. Wrong policies and practices led to more backwardness with its various dimensions at the time when the concept of development in developing countries was related to the liberal development thought throughout the main stages. This thought did not manage to solve partial or whole crises in those countries because it depended on the secondary components of the concept of development[21]. Thereupon, some differences between development and economic growth were presented in the table below:

Table (2). The most important differences between Economic Growth and Economic Development

Economic Growth	Economic Development
It leads to an increase in production capacity of economy i.e., increasing productive investment in the development of material and human capabilities to produce income.	It leads and is interested in individuals' welfare and improvement of the average of their real income and their purchasing ability.
It only reflects the progress of the economy.	It results definitely in the increase of individuals' welfare.

Its economic theories try to reach an optimal model to achieve economic balance and to reduce the deviations of economic growth in the short run.	It is concerned with the long term. Through making growth sustainable, it leads to deep changes in the economic and social structure of the country.
It occurs without making any decisions that result in introducing the structural change of community.	It is an intended and planned process that aims to change the structure of community to offer its individuals better life.
It focuses on the change in size or quantity of goods and services gained by individual.	It is concerned with the quality of goods and services provided to individual.
It is not concerned with the distribution of real income among individuals.	It is concerned with the increase in average real per capita income, particularly that of the poor.
It is not concerned with the feature of national income increase.	It is concerned with the feature of national income increase and its diversity.

(4-1) Methods of Measuring Gross Domestic Product (GDP)

Economic growth is measured by gross domestic product despite the contradictions it includes. GDP has great significant as a comprehensive economic variable because it expresses productivity of work and capital and reflects their development. It shows how much different sectors of local economy participate in production. It expresses the importance of job opportunities availability and reduction of unemployment. It gives a comprehensive vision for decision makers about the possibility of expansion in posing taxes required for financing the general expenditures of the country[22]. It is considered a clear indicator of real economic performance through which the relation between all input and outputs becomes obvious. Therefore, it is important to measure economic growth[23]. This differs from one country to another according to many reasons related to the availability of data and statistics, as well as the method of creating indictors and the adopted foundations for that. Estimations of economic growth are basically reflections of the estimations of production size in economy. This is because the economic growth is considered to be the annual relative change in the production size. Consequently, there are three methods for estimating the size of GDP: the method of added value[24], the method of income[25], and the method of expenditure[26]. However, in estimating economic growth, the economy through the measurement of GDP is faced with a lot of difficulties that makes this indicator less reflective of economic performance reality.

(5-1) Theories and Models of Economic Growth

Many theories tackled the issue of economic growth. Different economic schools tried to explain economic growth mechanisms depending on the variables and factors that influence it. Nevertheless, current theories have focused on various factors affecting growth level such as the cognitive,

religious, geographic, institutional, and the political factors. In addition, there is a simplified illustration of these theories in the next table.

Table (3). Brief analysis of economic growth theories

Theory	Explanation
1-The Classical Theory	At the end of the eighteenth century and the beginning of the nineteenth century, the industrial revolution with the technological inventions which was presented led to the raising production levels according to the thoughts of most classical economists in western European countries. Depending on this revolution, they formed their thoughts and opinions about economic growth, its reasons, and how they achieved it. Classical economists connected production level to both capital and labor. They pointed out that the increase in capital and labor leads to raising production level and to growth, which in turn requires more specialization, labor division, and freedom of trade. Viewpoints of classical economists are almost similar about economic growth analysis in spite of difference and diversity of analysis methods according to their era and the circumstances that distinguished it. Classical economists pointed out that economic growth is like organic growth as it cannot be achieved suddenly but gradually. In addition, it is an interdependent, integrative, and coincident process with mutually positive impact where growth in a certain sector leads to growth in the rest of the sectors. Therefore, they emphasized the possibility of economic growth continuity without recession. Distribution theory and its relation to growth was a great part in the analysis of classical scientists. As such, they looked for growth causes in the long term relying on process of partial economic analysis. Classical economists thought that development of capitalist economic system is considered a race between technological progress and population growth. If technological progress surpasses population growth, a wave of growth appears because the increase in technical progress leads to more employment, more production, and higher wages. Therefore, a state of economic revival prevails. This later state results in an increase in population and a new wave of recession. This is followed by growth and revival and so on. This theory is said to have the deficiency of ignoring the factor of organization by considering it not to be strategic. The wave of pessimism that prevailed was represented by the growing population on the one hand and the diminishing returns on the other hand. The classical theory assumes that in the light of the absence of external chocks or technological changes, all economies will move towards zero growth because economies do not have any intrinsic properties that cause growth and make it last for long. Growth, thereupon, is the only short term growth that occurs in separate periods. Adam Smith, David Ricardo, and Thomas Malthus are outstanding scientists of this school.

| 2-The Neoclassical Theory | Beginnings of neoclassical thought in the seventies of the seventeenth century emerged through the participations of the most prominent scientists of this school such as Alfred Marshall, and Rass, Vixl and Clark. In the same way like the classical, neoclassical economists tried to explain the process of economic growth. The two schools agreed on the possibility of continuing the growth process without the occurrence of economic recession. Neoclassic economists devised new mechanisms for economic growth that were free from the rigidity of classical thought because they introduced the factor of technology and innovations as an external factor in the movement of the production process. The technological factor is considered the only one affecting the level of capital reserve which is considered to be a function in capital accumulation when economy is in a state of stability. Therefore, it has a positive or negative impact on economic growth. Regarding the factor of organization, advocate of this theory believe that organizer utilizes technological advancement in a way that eliminates any rigidity in the process of development. He is always capable of renewal and innovation. Classical scientists counted on Sai's law to analyze economic growth, while the neoclassical relied on Marginal utility to identify prices of production factors. The process of capital formation is done through replacing labor with it away from the population theory. Thus, this depends on savings that depend in turn on interest rate and income level. However, investment is identified with interest rate and marginal productivity of capital. Concerning capital, the neoclassical considered growth process as a result of interaction between capital accumulation and growing population. This is because the increase in capital formation leads to an increase in capital supply. Thus, the interest rate goes down, investments increases, and economic growth is fulfilled.

    The neoclassical theory encountered much criticism such as being focused only on the accomplishment of growth ignoring social, cultural, and political aspects. Also, it entails being concerned with the short term without reference to what may happen in the long term. This model is not important for the role of the state in the economic growth process as it believed that the aims of the state are determined according to external factors. It can be said that this model is one for economic growth only on the long run as is reflects the process of approaching a stable state of economy that is achieved in the long term[27]. |

| 3-
Keynes's
Theory | The outstanding economist John Maynard Keynes depended considerably on studying the thoughts of traditional scientists and finding out how rigid they are, compared to the economic reality. He lived in the era of the Great Recession the world witnessed from 1929 to 1933. That recession was the main reason for showing the deficiency and inadequacy of the classical and neoclassical theories that were incapable of explaining this crisis or finding solutions for it. The classical thought rejected the probability of unemployment or reduction in total demand compared to total supply. In spite of the flexibility that distinguishes the capitalist system regarding wages and prices to the extent that ensures automatic regaining and achievement of balance at the level of complete employment, Keynes emphasized the inflexibility of wages and prices because of labor unions and unexpected strikes. Thus, economic balance may be achieved at a level less or more than complete employment which is a special state that does not occur permanently.

Concerning the idea of state interference in the economic activity, Keynes opposed the capitalist thought that advocates refusing any intervention from the state in any case. He stressed the importance of the state intervention as an inevitable necessity. Thereupon, he called for state intervention in the achievement of economic balance via the use of financial policies particularly in the light of the inability market mechanisms and monetary policies to regain activity and economic balance in the Great Recession.

Effective supply is the cornerstone and the starting point that Keynes depended on for analysis. He pointed out that the problems of the capitalist system are not due to supply, but to insufficient effective demand which is the basis of economic growth process. Consequently, this is because it expresses all economic dealers whether individuals, institutions or governments. Moreover, he indicates that economic growth process is fulfilled through multiplier mechanism which explains transition of the effect of demand changes in supply.

Keynes supposes that investment is a function of interest rate; that savings are function in income; and that balance of production and income happens in the state of equality between planned investment and planned savings. Moreover, he illustrates that in the short term, income becomes local and equal to gross production value. Consequently, any targeted increase of it is not accomplished unless there is an increase in production value. The later can only be achieved through increasing investment and production capacity[28].

It can be said that Keynes's model can be best applied in developed capitalist countries, while it cannot be applied in developing countries whose essential problem is in the aspect of supply, and not in the aspect of demand due to lack of capital, low efficiency of labor factor, and failure of production means. Hence, governmental expenditure increase is not expected to lead to local production increase. On the contrary, it leads to inflation and rise in the general level of prices. Underdeveloped economies, therefore, requires specific analysis because of particularity and the nature of their economic problems that differs dramatically from those of the advanced countries. |

4- External Growth Theories	According to external growth theory, economy reaches a state of stability in the relation between capital and economic growth because of decreasing returns of capital. Nevertheless, the state of growth stability cannot be surpassed to growth continuity through external or dependent factors determined outside the model such as modern technical innovations that allow raising the level of efficiency of production factors. There are important theories which explain that. These theories include Harrod–Domar model, Solow–Swan model, Walt Rostow's Stages of Economic Growth model, and Mead's model.
5- Internal Growth Theories	The high level of capital formation prevented some countries from fulfilling high growth rates. As a result, some economists have reservations to economic growth models that depend on raising the level of productivity through technical progress as an external factor. Therefore, growth models have been created according to which technical progress is stimulated by economic factors determined from inside the model. This trend has been fostered by the fact that some economists have been influenced by the role of human capital in the remarkable economic growth in the German experience after the second world war. This called for concentration on the significance of human capital accumulation like financial capital accumulation as a growth model. Researches of economic growth took another dimension through the papers of "Paul Romer" in 1986 and "Robert Lucas" in 1988 that set off from the idea of rapprochement among international economies. This idea means that economies of advanced countries are at a level near the point of balance. As a result, their growth rates are low. However, economies of developing countries are far from the point of balance; and as such, their growth rates are high allowing these countries to catch up with the developed ones in the long term. Thereupon, modern thought assumes that economic growth limitations in the long run as an economic policy are considered to be the main factors for economic growth. It also supposes that the factor of technology is an internal factor that is identified inside the growth model. Consequently, there are basis for determining this factor and its resources accurately. Thus, it is considered one of the most significant resources of economic growth in the long run. Therefore, they have been entitled as theories and models of internal growth[29]. Internal growth theory creates the foundation of positive relation between long term economic growth and development on one hand, and world trade on the other. This is because this theory considers: minimizing trade obstacles, accelerating growth rates and development in the long run through making developing countries absorb advanced technology at a faster rate, increasing benefits that flow from research and development, achieving economies of scale and minimizing prices distortions in a way that leads to greater efficiency in use of local resources in economic sectors, achievement of more specialization and greater competence in the production of intermediate inputs, and presenting new products and services[30]. Examples of the most important models are Rebelo AK model[31], Lucas model, Romer model, and the K.J. Arrow model.

(6-1) Previous Studies

In this study, we presented the most important previous practical studies on economic growth in order to shed light on the most significant factors that determine growth and their strength of influencing. It should be noted that focus will be given to studies of the scientist Robert Barro who is considered as one of the most significant and well-known scientists interested in issues of economic growth around the world.

In his study entitled "Economic Growth in a Cross Section of Countries" in 1991, Barro tried to point out the importance of human capital (as a modern concept at that time) in boosting economic growth. He chose the rate of joining primary and secondary schools as a measurement for human capital. The study he conducted on 100 countries during the period next to the Second World War proved that the growth rate of real per capita gross domestic product is directly proportional to the rate of joining primary and secondary schools, i.e. to the growth rate of human capital. In addition, the study proved that the countries that have big stock of human capital have low fertility rates and high investment rates. There is an inverse relationship with governmental expenditure and weak compromise with public investment. The new classical theory which is the external growth theory, indicates that the countries enjoying high level of individuals' income (countries where average per capita capital is high) have low growth rates of real per capita gross domestic product. Therefore, this is because the return on capital decreases after reaching a certain point according to the rule of diminishing returns. From the above, it is clear that the results of this study contradict with the previously mentioned external growth theory. Also, the results of this study cope completely with internal or self growth theory that emphasizes the significance of human capital in the process of economic growth[32].

In his study entitled "Inflation and Economic Growth" that he conducted in 1995, Barro used the data of 100 countries in the period from 1960 to 1990 to assess the effects of inflation on economic performance. He found that 10% annual increase in inflation can lead to a reduction in the growth rate of real per capita gross domestic product. Consequently, this is with an annual percentage ranging from 0.2% to 0.3% assuming that the rest of the factors are constant. At first, the relation between inflation rate and growth rate may seem weak and not to be of great importance particularly in the short term. However, this relation is very important especially on the long run. This is due to the fact that continuous 10% inflation for 30 years in a given country results in 4% to 7% reduction in real per capita gross domestic product. This result is very sufficient for proving the importance of prices stability to keep the performance and growth of the local economy of a certain country[33].

In the study he made in 1996 under the title "Democracy and Growth", he analyzed the relation between growth rate of gross product and democracy in 100 countries in the period from 1960 to 1990. In this study, he proved the existence of directly proportional relation between the growth of real per capita GDP and the determinants of democracy. According to the study, these determinants are the rule of law, free markets, government austerity, and the level of human capital. Barro found out that continuous improvements in the standard of living such as increase in age expected at birth, increase of expenditure on education, and raising the level of political freedom, allows the model to predict if those countries will be more or less democratic in the future[34].

The study he conducted in 2001 under the title "Inequality and Growth in a Panel of Countries" indicated that the inequality of individuals' income in rich countries is positively proportional to the growth rate of economic real per capita GDP and investment, while the inequality of individuals' income in poor countries is inversely proportional to economic growth rate and investment. This means that incomes policies in developing countries must tend to reduce the inequality gap in income among individuals in order to boost the process of economic growth[35].

The study he conducted under the title "Economic Growth in East Asia Before and After the Financial Crisis" pointed out that five countries in East Asia, namely Indonesia, Malaysia, South Korea, the Philippines and Thailand, suffered from severe financial crisis from 1997 to 1998 . This was when real GDP diminished sharply and severely in a way that these countries have not witnessed before. Economic growth in the studies of five countries was recovered considerably from 1999 to 2000. However, it is not clear if growth rates before the crisis will be reached or not because there are pessimistic indicators showing the probabilities of permanent recession. Thus, this is due to huge reduction in investment proportions that had only little recovery. Hence, this occurs due to reduction in market stock prices. Data analysis of sectors in these countries' economies showed that the bank crisis caused 3% annual reduction in economic growth from 1997 to 1998 during the crisis. However, growth decreased 2% annually over the five years which followed the crisis[36].

In his study under the title "Regional Growth and Migration", Barro and Xavier tried to answer a very important economic question: "Do poor economies grow faster than rich countries?" They analyzed two groups of regional data: 47 districts in Japan and 48 states in USA using Beta-Convergence approach. The study proved that there is an obvious convergence between both countries and that poor states and districts grows faster. Based on the analysis of standard deviation in states and districts, a reduction in economic growth rates in the long term was found. This

phenomenon is called "sigma-convergence". Finally, the study determined regional rates of migration. Again, remarkable aspects of similarity were found in both countries. Response of net migration rates for income was slightly higher than 0.025 indicating slow response, while there was much higher response of population compared to income variations. The study indicated that there are weak evidence that population movement is the reason for the convergence of economic growth among some countries[37].

In a study entitled "Economic Growth and Environment" in 1994, the data of Global Environment Monitoring System (GEMS) were used for measuring the relation between some environmental indicators and the level of per capita income in a certain country. The study covered four kinds of indicators: concentrations of air pollution in urban areas, Measurements of the state of oxygen system in river valleys, concentrations of fecal pollutants in river valleys, and concentrations of heavy metals in river valleys. The study proved that there is no evidence of deterioration of environment quality in proportion to economic growth. Nevertheless, the study found out that the beginning of economic growth brings about the first stage of environmental deterioration followed by a successive phase of improvement. However, this improvement begins in the countries where average per capita income is not less than 8000 US dollars[38]. In a study by Levine and Renelt that sought to discover the relation between long term growth rates and a variety of policies and economic and institutional indicators, it was found that there is strong connection between GDP on one hand and investment share and trade percentage on the other hand[39].

In a study entitled "Growth in a Time of Debt" in 1994, he studied the relation between economic growth and inflation at different levels of governmental and foreign debt. Analysis relied on data for about 44 countries, covered almost 200, and included more than 3700 annual observations that cover a wide range of political systems, organizations, arrangements of exchange rates, and historical circumstances. One of the main results of the study showed that the relation between governmental debt and the growth of real GDP is weak if the percentage of local debt/GDP is less than 90%. However, if the percentage is more than 90%, growth rate decreases with a proportion of one per cent. Also, the average growth decreases with much higher proportion. In addition, the study found that limits of public debt are similar in advanced and beginner economies. Emerging markets face reduction of foreign debts (public and private ones) which are usually estimated in a foreign currency. When foreign debt reaches 60% of GDP, annual growth decreases with a percentage of 2%. But when public debt reaches higher levels, growth rates decrease almost to the half. The study proved that there is no clear current connection between inflation and the level of public debt in developed countries (except some countries

such as USA that suffers from high inflation rate because the percentage of debt/GDP is very high). On the contrary, the situation is totally different regarding emerging markets where inflation rises severely with increased debts[40].

       The study under the title "Capital Flows and Economic Growth in the Era of Financial Integration and Crisis" in 1990-2010, tackled the relation between economic growth and flows of international capital categorized into foreign direct investment, portfolio investment, shares investment, and short term debts before and after the crisis using data of 100 countries from 1990-2010. Here, emerging markets became more integrated into the international financial system. The study discovered a complicated and blended relation between growth and capital flows as this relation depends on the kind of financial flows, economic structure, and the models of international growth. The study proved that there is a huge and strong relation between economic growth and foreign direct investment with its two kinds of internal and external flows. However, it was found that the relation between growth and prices of shares is weaker and less stable. There was no relation between growth and debts in the short term before the crisis, while there was a negative relation during the crisis[41].

       The study entitled "Implications of Population Aging for Economic Growth" in 2012 has expected the increase of population percentage whose age is ranging between 60 and more in most countries in the world from 2005 to 2050. The study emphasized that population aging usually leads to reduction in participation of manpower and in the rates of savings. Consequently, it leads to more fears about slow economic growth in the future. The study indicates that countries of Organization for Economic Co-operation and Development (OECD) will probably witness slight reduction in economic growth rate, but not catastrophic because of the previously mentioned aging impacts. The study points out that this problem can be dealt with through increasing female workforce and reformation of some work policies such as raising the legal age of retires in order to minimize the economic implications of the old population. In most countries who are not members of the Organization, low rates of fertility result in diminishing participation of youth in the workforce. However, this can be compensated with reforming some work policies such as raising the legal age of pension to increase adult participation in labor market and reducing the negative effect of low fertility rates. However, the conclusion of the study affirms that population aging will not dramatically hamper the process of economic growth in developing countries[42].

       The study entitled "Catch-up Growth Followed by Stagnation: Mexico, 1950–2010"analyzed the economic history of Mexico 1877-2010. The study divided the history of economic growth in Mexico into three

phases. The first phase is from 1950 to 1981 when Mexico entered economic set-off or in other words, experienced very speedy economic growth. It grew fast for many years due to policies of urbanization, industrialization, and education. The second phase is from 1982 to 1992 when economic growth stopped in spite of the main reformations in the liberalization of foreign trade and investment. The third phase is from 1996 to 2010. Since that time, Mexico has been growing modestly. It urgently needs more reformations particularly in trade liberalization and investment with the purpose of resuming fast growth so that it can approach the income levels of the United States[43].

The study entitled "Foreign Currency Debt, Financial Crises and Economic Growth: A Long Run View" aims to consider the indirect impacts of foreign currency debts through their effect on financial crises on the short and long run and on product in 45 countries during two periods, 1880-1913 and 1973-2003. Increased proportion of foreign currency debts to total debts is strongly related to higher risks of financial crisis. This relation depends basically on the size of the reserve of foreign currency that a country has and the credibility of its economic policies. Financial crisis resulting from increased foreign currency debts lead to tremendous losses in economic product and reduce economic growth of the country. This conclusion asserts the findings of the study on the economic crisis of East Europe in late 2008[44].

The study entitled "Endogenous Innovation in the Theory of Growth" demonstrates the strong relation between investment in knowledge and economic growth. Thus, these investments play a crucial role in the process of development on the long run. The study emphasizes the significance of internal growth theory because it explains the existence of economic growth in the light of the reduced returns on capital. It explains also generally slow economic growth processes and inability of classical and new growth theories to present enough explanations to justify growth process. Consequently, the model of the study proves that the advancement processes and technological dissemination associated with scientific innovations leads to increasing economic growth in the country[45].

A study under the title "Role of Financial and Monetary Policies in Economic Growth" tried to test the effectiveness of two policies and their impact on GDP in the Kingdom of Jordan during the period from 1966 to 2010. The study found that monetary policy is more influential than financial policies. The increase in the supply of money led to transfer of the curve of production possibilities to the top of the right side. This fact supports the increase of the total demand resulting from the increase in money supply which causes the increase of the total product. Thus, the study

affirms the effectiveness of monetary policy in the short term and the ineffectiveness of financial policy in this term[46].

A study entitled "Impact of Foreign Direct Investment in Economic Growth in Jordan 1990-2006" asserts that although foreign direct investment (FDI) is important in the process of increasing accumulation of domestic capital and consequently increasing economic growth, its role is limited according to estimations of Cobb–Douglas production function. The function showed the existence of the positive effect of labor in making economic growth. In addition, there was not any impact with the statistical implication of foreign direct investment. The study found that this effect needs time so that in-kind FDI can go deeper in industries and sectors with intermediate and high technologies. Also, this makes it possible for them to integrate well with the factor of relatively efficient labor. This may pave the way for dissemination of technology and knowledge in different sectors of the economy. This requires work continuity for the achievement of economic and political stability, as well as the development of incentives system so that Jordanian economy can attract bigger size and the best quality of these investments[47]. Another study about the impact of FDI on economic growth in countries of Middle East and North Africa showed findings which contradicts that of the previous study. It indicates the existence of positive and significant impact of FDI on economic growth in the studied countries. Therefore, the study calls upon governments of these countries to attract flows of these investments because their increase directly leads to increase in the economic growth of these countries[48].

A study under the title "Effect of Information and Communication Technology on Economic Growth in Arab Countries" targeted17 Arab countries from 2000 to 2009. Conclusions of the study indicated the existence of positive and significant effect of information communication and technology on economic growth. This means that more use of internet, telephone, and cell phone have led to an increased average of real per capita GDP. Thereupon, governments of Arab countries have to continue increasing the use of information and communication technology due to its direct and indirect positive impact on economic growth[49].

A study under the title "Impact of Exchange Rate Systems on Economic Growth in a Group of MENA Countries" selected a certain group of MENA countries represented in Egypt, the Kingdom of Saudi Arabia, Kuwait, Algeria, Tunisia, Morocco, and Libya. After revising the theoretical and measurable framework of the probability of existing relation among them, the development of expenditure system and determinants in each country as for choosing its optimum exchange rate and economic results was taken into consideration. Using VAR technology, the study proved that choosing an exchange rate has no impact on growth in the

selected countries[50]. This proves that the theory of Frankel (1999) states that no particular exchange rate is valid permanently for all countries.

A study under the title "Estimation of the Impact of Exports on Economic Growth in Islamic Countries: Standard Analytical Study" proved the significance of exports in addition to local investment (total constant capital formation) as the explanatory variables for economic growth expressed by GDP. In addition, significant differences have been found among various groups of Islamic countries (with less income, intermediate income, and petroleum countries) expressed in sections of the model or its partial features. Despite the significance of exports in explaining domestic product, their impact is minor in the group of petroleum countries. On the contrary, results indicated superiority of investment impact to exports impact in domestic product in Islamic countries with low and intermediate income. This superiority is less in Islamic petroleum countries[51].

A study under the title "Education and Economic Growth in the Kingdom of Saudi Arabia: A Standard Study Using Simultaneous Equations" found that there is no direct positive correlation between education (those enrolled in public education) and economic growth except through the existence of governmental expenditure on education. Any increase in governmental expenditure on education leads to increasing real GDP of non-petroleum sector. This, in turn, leads to increasing the number of enrolled students in public education. Thus, the vice versa is not true[52].

The Second Party: The Applied Study

In this topic, there will be formulation and preparation of an economic growth model for the study. The applied study aims to create a suitable optimal econometric model regarding economic and statistical criteria to identify the variables that affect the growth rate of gross domestic product (GDP). Also, this study predict this rate in future years in the light of those variables which will help in drawing up economic policies and making decisions. A time series data were used from 1977 to 2012 of the following data[53]. As for the variables of the study, they can be expressed in the next table below:

Table (4). Variables Used in the Study

Symbol of the Variable	Description of the Variable
Y	Annual Growth Rate of Gross Domestic Product
X1	Annual Growth Rate of Government Expenditure
X2	Annual Growth Rate of Constant Capital Formation
X3	Annual Growth Rate of Households' Expenditure
X4	Annual Growth Rate of Foreign Direct Investment
X5	Annual Growth Rate of Domestic Savings
X6	Annual Growth Rate of Imports
X7	Annual Growth Rate of Exports
X8	Annual Growth Rate of Inflation
X9	Annual Growth Rate of Money and Quasi Money
X10	Annual Growth Rate of Fertility
X11	Annual Growth Rate of Age Expected at Birth
X12	Annual Growth Rate of Population

Adopted statistical analysis will follow the next steps.

(1-2): Descriptive Statistics of Variables of the Study

Descriptive statistics aims to describe variables of the study regarding central tendency and dispersion and distribution. In addition, descriptive statistics includes some graphs showing sequence of variables' values during the time of the study (See table No.5).

Table (5). Descriptive statistics of variables of the study

Variables	Arithmetic Mean	Standard Deviation	Inflection	Flattening	The Least Value	The Highest Value	Quartiles		
							The First 25	The Median 50	The Third 75
Y	5.14	0.31	12.84	1.08	2.1	1.09	2.41	5.14	6.1
X1	3.01	0.38	0.17	-11.83	3.62	0.16	5.55	3.01	5.09
X2	4.71	0.95	1.49	-13.36	-0.83	0.1	10.69	4.71	13.2
X3	5.13	9.35	-0.95	0.6	4.76	2.01	3.21	5.13	5.86
X4	19.09	5.98	0.33	-679.59	9.68	-1.49	164.89	19.09	58.33
X5	7.86	9.85	0.49	-31.67	0	-0.14	17.44	7.86	18.74
X6	4.77	10.88	28.8	-17.89	0.28	0.17	10.88	4.77	10.4
X7	6.58	17.44	28.76	-14.51	-0.06	0.32	9.85	6.58	12.54
X8	11.56	164.89	23.86	2.27	-0.89	0.17	5.98	11.56	16.59
X9	18.29	3.21	51.42	5.66	3.14	1.49	9.35	18.29	21.43
X10	-1.87	10.69	-0.96	-3.93	-0.2	-0.95	0.95	-1.87	-1.13
X11	0.69	5.55	1.37	0.23	-1.35	0.33	0.38	0.69	1.13
X12	1.87	2.41	2.36	1.54	-1.6	0.49	0.31	1.87	2.2

This will be applied on variables of the study as follows:

Table (6). Descriptive Analysis of Variables of the Study

Variable	Description of the Variable
Annual Growth Rate of GDP (Y)	Throughout the period of the study, it reached 5.14%. Its value approached the median that was 4.98. This fact indicates that values were around this rate with a standard deviation of 2.41. The least value was 1.08%, 1.76%, and 2.2% during 1991, 2011, and 2012 as the rate witnessed remarkable reduction during those years. This reduction may be due to political instability especially during 2011 and 2012. It reached the highest rate that was 12.84% in 1977. In the first quartile of the least nine years, the rate was less than 3.59%. The rate increased in the highest 9 years (the third quartile) to more than 6.1%. The following figure shows this rate during the period of the study. (See figure 2 in the statistical appendix)
Annual Growth Rate of Government Expenditure (X1)	Throughout the period of the study, average growth reached 3.01%. Its value approached the median that was 3.02%. This fact indicates that values were around this rate with a standard deviation of 5.55%. The least value was 11.83% in 1977. It reached the highest rate that was 12.13% in 1981. In the first quartile of the least nine years, the rate was less than 1.47%. The rate increased in the highest 9 years (the third quartile) to more than 5.09%. The following figure shows this rate during the period of the study. (See figure 3 in the statistical appendix)
Annual Growth Rate of Constant Capital Formation (X2)	Throughout the period of the study, average growth reached 4.71%. Its value approached the median that was 4.93%. This fact indicates that values were around this rate with a standard deviation of 10.69%. The least value was 13.36% in 1993. It reached the highest rate that was 25.26% in 1978. In the first quartile of the least nine years, the rate was less than -3.46%. The rate increased in the highest 9 years (the third quartile) to more than 13.2%. The following figure shows this rate during the period of the study. (See figure 4 in the statistical appendix)
Annual Growth Rate of Households' Expenditure (X3)	Throughout the period of the study, average growth reached 5.13%. Its value approached the median that was 4.56%. This fact indicates that values were around this rate with a standard deviation of 3.21%. The least value was 0.6% in 1986. It reached the highest rate that was 15. 63% in 1979. In the first quartile of the least nine years, the rate was less than -3.06%. The rate increased in the highest 9 years (the third quartile) to more than 5.86%. The following figure shows this rate during the period of the study. (See figure 5 in the statistical appendix)
Annual Growth Rate of Foreign Direct Investment (X4)	Throughout the period of the study, average growth reached 19.09%. Its value was less than the median that was 6.88%. This fact indicates that positive inflection in data. This means that data are asymmetric and do not follow the normal distribution. This fact was assured by normal distribution test with a standard deviation of 164.89%. The least value was -679.59% in 2011. It reached the highest rate that was 427.93% in 2003. In the first quartile of the least nine years, the rate was less than -38.29%. The rate increased in the highest 9 years (the third quartile) to more than 58.33%. The following figure shows this rate during the period of the study. (See figure 6 in the statistical appendix)
Annual Growth	Throughout the period of the study, average growth reached 7.86%. Its value

Rate of Domestic Savings (X5)	approached the median that was 6.39%. This fact indicates that values were around this rate with a standard deviation of 17.44%. The least value was -31.67% in 2011. It reached the highest rate that was 45.63% in 1992. In the first quartile of the least nine years, the rate was less than -4.44%. The rate increased in the highest 9 years (the third quartile) to more than 18.74%. The following figure shows this rate during the period of the study. (See figure 7 in the statistical appendix)
Annual Growth Rate of Imports (X6)	Throughout the period of the study, average growth reached 4.77%. Its value approached the median that was 3.54%. This fact indicates that values were around this rate with a standard deviation of 10.88%. The least value was -17.89% in 2009. It reached the highest rate that was 28.8% in 2007. In the first quartile of the least nine years, the rate was less than -0.58%. The rate increased in the highest 9 years (the third quartile) to more than 10.4%. The following figure shows this rate during the period of the study. (See figure 8 in the statistical appendix)
Annual Growth Rate of Exports (X7)	Throughout the period of the study, average growth reached 6.58%. Its value approached the median that was 4.93%. This fact indicates that values were around this rate with a standard deviation of 9.85%. The least value was -14.51% in 2009. It reached the highest rate that was 28.76% in 2008. In the first quartile of the least nine years, the rate was less than 0.3%. The rate increased in the highest 9 years (the third quartile) to more than 12.54%. The following figure shows this rate during the period of the study. (See figure 9 in the statistical appendix)
Annual Growth Rate of Inflation (X8)	Throughout the period of the study, average growth reached 11.56%. Its value approached the median that was 11.27%. This fact indicates that values were around this rate with a standard deviation of 5.98%. The least value was 2.27% in 2001. It reached the highest rate that was 23.86% in 1996. In the first quartile of the least nine years, the rate was less than 7.14%. The rate increased in the highest 9 years (the third quartile) to more than 16.59%. The following figure shows this rate during the period of the study. (See figure 10 in the statistical appendix)
Annual Growth Rate of Money and Quasi Money (X9)	Throughout the period of the study, average growth reached 18.29%. Its value approached the median that was 16.66%. This fact indicates that values were around this rate with a standard deviation of 9.35%. The least value was 5.66% in 1999. It reached the highest rate that was 51.42% in 1980. In the first quartile of the least nine years, the rate was less than 11.28%. The rate increased in the highest 9 years (the third quartile) to more than 21.43%. The following figure shows this rate during the period of the study. (See figure 11 in the statistical appendix)
Annual Growth Rate of Fertility (X10)	Throughout the period of the study, average growth reached -1.87 %. Its value approached the median that was -1.55%. This fact indicates that values were around this rate with a standard deviation of 0.95%. The least value was -3.93% in 1991. It reached the highest rate that was -0.69% in 1977. In the first quartile of the least nine years, the rate was less than -2.37%. The rate increased in the highest 9 years (the third quartile) to more than -1.13%. The following figure shows this rate during the period of the study. (See figure 12 in the statistical appendix)

Annual Growth Rate of Age Expected at Birth (X11)	Throughout the period of the study, average growth reached 0.69%. Its value approached the median that was 0.66%. This fact indicates that values were around this rate with a standard deviation of 0.38%. The least value was 0.23% in 2003. It reached the highest rate that was 1.37% in 1977. In the first quartile of the least nine years, the rate was less than 0.31%. The rate increased in the highest 9 years (the third quartile) to more than 1.13%. The following figure shows this rate during the period of the study. (See figure 13 in the statistical appendix)
Annual Growth Rate of Population (X12)	Throughout the period of the study, average growth reached 1.87%. Its value approached the median that was 1.68%. This fact indicates that values were around this rate with a standard deviation of 0.31%. The least value was 1.54% in 1995. It reached the highest rate that was 2.36% in 1987. In the first quartile of the least nine years, the rate was less than 1.61%. The rate increased in the highest 9 years (the third quartile) to more than 2.2%. The following figure shows this rate during the period of the study. (See figure 14 in the statistical appendix)

(2-2) Kolmogorov–Smirnov Test of Normality of Data Distribution

Table (7) in the statistical appendix shows results of Kolmogorov–Smirnov Test of Normality of Data Distribution. The table shows that variables follow normal distribution as the level of significance of Kolmogorov–Smirnov Test was more than 0.05. This fact indicates that the data do not differ significantly from the normal distribution which reflects that the condition of "Normality" exists. This condition is necessary for using these data in the regression equation. However, this is true except for the two variables of the "Growth rate of FDI" and the "Growth Rate of Population". However, both variables were excluded from Stepwise Regression equation.

(3-2) Dickey-Fuller Test of Unit Root to Test Stationary Variables of the Study

Variables were tested to find out if they are stationary because if they are not, the regression estimated by ordinary least squares (OLS) is Superior Regression. If variables are stationary, OLS can be depended on because in this case, this method is the Best Linear Unbiased Estimators (BLUE). Table No. 8 in the statistical appendix shows results of Augmented Dickey-Fuller of Unit Root to find out if variables are stationary or not using the econometric program, Eviews. According to the table, it is obvious that variables of the study are stationary at the level. This fact indicates the validity of OLS method to estimate the parameters of the model except for the two variables X11 and X12. Thus, they were excluded from the Stepwise Regression program of the regression model.

(4-2) Multiple Regression Analysis

After applying ordinary least squares method (OLS) on data of the study using the statistical program SPSS to test variables that have significance as for the growth rate of GDP and to estimate the parameters of the econometric model, the results were shown in table No. 9 in the statistical appendix. According to the table, it is obvious that the model is totally significant as the value Faculty= 6.051 with a level of significance that is less than 0.05. The explanatory power of the model is 75%. Therefore, this means that explanatory variables explain 75% of the changes that occur to the dependent variable which is high explanatory power. However, the deficiency of the model is that the explanatory variables are not significant. As a result, Stepwise Regression Model was used.

(5-2) Stepwise Regression Analysis

In case of using many independent variables that have significant correlation, the model is exposed to the phenomenon of Multicollinearity among independent variables that consequently affect the accuracy of results and the significance of variables. Therefore, in this case, we use stepwise regression method which treats this phenomenon as variables are entered gradually according to the strength of their impact on the dependent variable. Only independent variables that do not have significant correlation among them were used. This method follows ordinary least squares (OLS) which is suitable for stationary variables. As variables represent growth rates, they are stationary. This fact was emphasized by applying Dickey-Fuller Test on these variables. (See table No. 10 in the statistical appendix).

1. Estimating Parameters of the Model

After estimating the parameters of the model using Stepwise Regression method, results (according to table No. 10 the statistical appendix) showed that the regression equation took the following form where E refers to random error:

$Y = 1.766 + 0.246*X3 + 0.047*X5 + 0.074*X2 + 0.076*X9 + E$

T   3.123   2.810   3.269   3.149   2.558

Sig. 0.004   0.009   0.003 0.004   0.016

R square = 0.683

F test = 16.706   Sig. = 0.000

D.W = 1.88

White Heteroskedasticity Test

F-statistic	3.201954	Probability	0.010923
Obs*R-squared	17.52640	Probability	0.025071

2. Testing the Model as for Economic Criteria

From the model, it is clear that the minimum annual growth rate of GDP according to the model is 1.766. This is obvious from the steadiness of the regression which is the value of the regression equation if explanatory variables equals to zero. Moreover, the variables entered into the model are as follows according to their importance. Thereupon, values and parameters cope with economic theory which indicates that the model matches with the economic criteria.

- ✓ The variable X3 that refers to "Annual Growth Rate of Households' Expenditure" as 1% increase in this rate leads to 0.0246% increase in annual growth rate of GDP.
- ✓ The variable X5 that refers to "Annual Growth Rate of Domestic Savings" as 1% increase in this rate leads to 0.047% increase in annual growth rate of GDP.
- ✓ The variable X2 that refers to "Annual Growth Rate of Constant Capital Formation" as 1% increase in this rate leads to 0.074% increase in annual growth rate of GDP.
- ✓ The variable X9 that refers to "Annual Growth Rate of Money and Quasi Money" as 1% increase in this rate leads to 0.076% increase in annual growth rate of GDP.

3. Testing the Model as for Statistical Criteria

From table No. 11 and figure No. 15, it was concluded that the model has coped with statistical criteria indicating that the model can be used in prediction. However, figure No. 15 shows that actual values are close to fitted values. This proves the quality of model fitting.

Table (11). Statistical Tests of the Model

Test	Result
Significance of the model and the variables	It is proved that the model has coped with statistical criteria as the value Faculty=16.706 with 0.000 level of significance which indicated significance of the model as a whole. In addition, T test proved the significance of all coefficients that entered the model and steadiness of regression because the level of significance was less than 0.01 for each one. This fact proves the significance of these variables.
The explanatory power of the model and quality of fitting	The value of R square= 0.683 indicating that explanatory variables explain about 68.3% of the changes that happen to the dependent variable which is a medium explanatory power. This fact points out fitting of the model. The following figure shows actual and fitted values of the model.
Autocorrelation test	The value of Durbin Watson = 1.88 indicating that this value is close to 2. This fact emphasizes that the model does not suffer from autocorrelation.

Multicollinearity Test	The value of variance inflation factor ranged from 1.071 and 1.335 which is much less than 10. This fact points out that stepwise regression has succeeded in the treatment of multicollinearity.
Hetroskadesticity test	According to Hetroskadesticity test, F = 3.202 with a significance level of 0.011. This fact indicates that the model does not suffer from Hetroskadesticity.

Figure (15). Comparison between Actual and Fitted Values of the Model
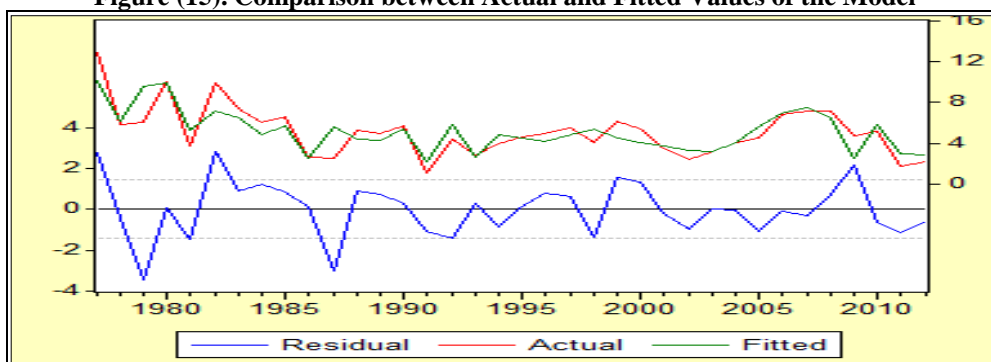
4. Using the Model in Prediction

The model is used for prediction. First, independent variables are predicted. Then, the values of these variables are put into regression model to get the prediction of the value of the dependent variable. To predict the values of the independent variables, the method of Curve Fitting is used. A model is selected from many ones based on the value of R Square. However, this model is used for prediction. The method of Curve Fitting was used for predicting values of the variable where (t) expresses time and results were as follows: (See table No. 12, 13, 14, and 15 in the statistical appendix)

Table (16). Equations of Predicting Independent Variables

Prediction of "Annual Growth Rate of Households' Expenditure" (X3)	$X3 = 12.719 - 1.307*t + 0.056*t^2$
Prediction of "Annual Growth Rate of Domestic Savings" (X5)	$X5 = 17.846 - 5.508*t + 0.166*t^2 - 0.003*t^3$
Prediction of "Annual Growth Rate of Constant Capital Formation" (X2)	$X2 = 28.0 - 5.643*t + 0.326*t^2 - 0.005*t^3$
Prediction of "Annual Growth Rate of Money and Quasi Money" (X9)	$X9 = 39.989 - 2.448*t + 0.071*t^2$

After predicting the values of the independent variables and putting these values into the regression equation to get the value of the dependent variable, the results were as follows: (See table No. 17)

Table (17). Prediction of independent variables and dependent variable

Years / Variables		2013	2014	2015	2016
X3	Annual Growth Rate of Households' Expenditure	5.33	5.23	5.08	4.87
X5	Annual Growth Rate of Domestic Savings	-5.22	-8.40	-11.95	-15.91
X2	Annual Growth Rate of Constant Capital Formation	-4.45	-8.13	-12.38	-17.23
X9	Annual Growth Rate of Money and Quasi Money	12.06	12.05	12.02	11.97
Y	Annual Growth Rate of GDP	3.42	2.97	2.45	1.85

From the above table, it is obvious that the growth rate of GDP is decreasing from one year to another in the light of current circumstances because of diminishing both "annual growth rate of savings" and "annual growth rate of Households' Expenditure" due to instability. However, they are the main determinants of the growth rate of GDP. The following figure shows future development of independent variables and dependent variable.

Figure (16). Prediction of Independent Variables and Dependent Variable from 2013 to 2015
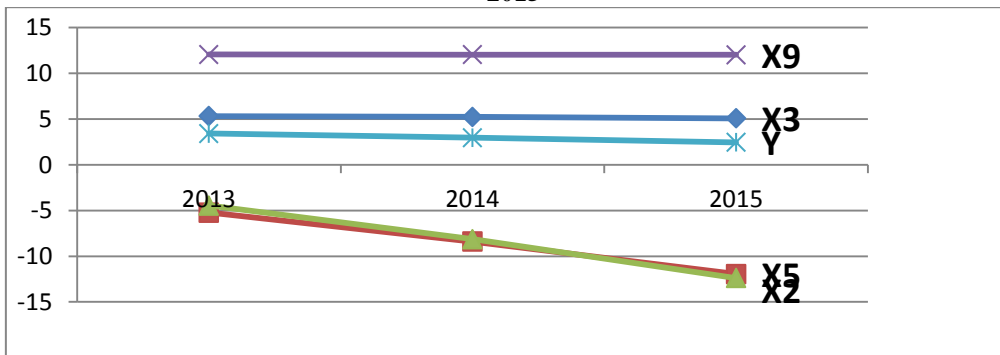
(6-2) Analysis Using ARIMA Models

This method aims to demonstrate steps of using ARIMA models that are Autoregressive Integrated Moving Average ones. This is the approach of Box-Jenkins that relies on merging autoregression and moving average. This approach is used for predicting the growth rate of GDP.

1- Stability of Time Series and Problem of Identification

To examine the stability of the time series and identifying the ARIMA ranks, autocorrelation function ADF and partial autocorrelation function have been conducted. Results were as shown in the diagram (figure 17 in the statistical appendix). Also, table No. 18 (in the statistical appendix) indicated that autocorrelation function ADF and partial

autocorrelation function PADF are not significant in all slowdown periods. This fact proves the stability of time series. Recommended models have been ARIMA(1,0,0), ARIMA(0,0,1), and ARIMA(1,0,1).

2- **Estimation of the Parameters of Suggested Models**
The following table presents estimated models:

Table (19). ARIMA Models and their Equations

Model	Its Equations
ARIMA (1,0,0) model through which the significance of the estimated parameters appears (See table No. 21 in the statistical appendix).	$Y_t = 5.202 + 0.317*Y_{t-1} + e_t$ T 9.165 1.906 Sig. 0.000 0.065 MAE = 1.645
ARIMA (0,0,1) model through which it is proved that the coefficient e_{t-1} is not significant. This fact indicates that the model is invalid. (See table No. 22 in the statistical appendix)	$Y_t = 5.176 - 0.222*e_{t-1} + e_t$ T 10.716 -1.299 Sig. 0.000 0.203 MAE = 1.683

ARIMA (1,0,1) model through which it is proved that the estimated parameters are significant. (See table No. 23 in the statistical appendix)	$Y_t = 5.316 + 0.818*Y_{t-1} + 0531*e_{t-1} + e_t$
	 T 5.603 3.922
	        1.712
	 Sig. 0.000 0.000
	        0.096
	 MAE = 1.661

(7-2) Using the Model for Prediction

Using ARIMA (1,0,1) model for predicting growth rate of GDP and comparing this rate with the previous results gained by using Stepwise Regression, the results were as follows:

Table (20). Prediction using Stepwise Regression and ARIMA (1,0,1) model

Years Variables	2013	2014	2015	2016
Stepwise	3.42	2.97	2.45	1.85
ARIMA(1,0,1)	3.91	4.16	4.37	4.55

From the model, it is obvious that ARIMA model is higher in its estimations than Stepwise Regression models. However, Stepwise Regression model is more accurate because it is a causal model; meaning that it takes into consideration the impact of independent variables on the dependent variable. But ARIMA model is a non-causal model; meaning that it takes into consideration the time only. Therefore, predictions based on Stepwise Regression model can be relied on in drawing up policies and making decisions to try to save diminishing growth rates of GDP.

Results of Applied Study

   After analyzing time series data from 1977 to 2012 of the independent variables (Annual Growth Rate of Government Expenditure X1, Annual Growth Rate of Constant Capital Formation X2, Annual Growth Rate of Households' Expenditure X3, Annual Growth Rate of Foreign Direct Investment X4, Annual Growth Rate of Domestic Savings X5, Annual Growth Rate of Imports X6, Annual Growth Rate of Exports X7, Annual Growth Rate of Inflation X8, Annual Growth Rate of Money and Quasi Money X9, Annual Growth Rate of Fertility X10, Annual Growth Rate of Age Expected at Birth X11, and Annual Growth Rate of Population X12) to test their impact on Growth Rate of Gross Domestic Product Y, the researcher reached the following results:

✓ The researcher found out the factors that have a significant impact on the growth rate of GDP. These factors are:
   ➢ Annual Growth Rate of Households' Expenditure (X3).
   ➢ Annual Growth Rate of Domestic Savings (X5).
   ➢ Annual Growth Rate of Constant Capital Formation (X2).
   ➢ Annual growth Rate of Money and Quasi Money (X9).

✓ After testing data as for normality of distribution and stability, the researcher found an econometric model using Stepwise Regression. The model took the following form:

$$Y = 1.766 + 0.246*X3 + 0.047*X5 + 0.074*X2 + 0.076*X9 + E$$

   The model has been tested mathematically and statistically. It has been proven that it fits the economic and statistical criteria.

✓ The model has been used for prediction after predicting independent variables via Curve Fitting Method. Prediction equations used independent variables as a function of time (t) in the following forms:

$$X3 = 12.719 – 1.307*t + 0.056*t^2$$
$$X5 = 17.846 – 5.508*t + 0.166*t^2 - 0.003*t^3$$
$$X2 = 28.0 – 5.643*t + 0.326*t^2 - 0.005*t^3$$
$$X9 = 39.989 – 2.448*t + 0.071*t^2$$

   ✓ After predicting the growth rate of GDP in future years i.e. outside the scope of data of the study from 2013 to 2016 using Stepwise Regression, it has been proven that this rate will be diminishing because it will be 3.42%, 2.97%, 2.45%, and 1.85% in 2013, 2014, 2015 and 2016, respectively. It has been proven that the decrease in this rate is due to diminishing growth rates of the following variables:

- ➢ Annual Growth Rate of Savings.
- ➢ Annual Growth Rate of Constant Capital Formation.
- ✓ Prediction has been made Using ARIMA (1,0,1) model which was the one selected. Thus, it took the following form:

$Y_t = 5.316 + 0.818 * Y_{t-1} + 0531 * e_{t-1} + e_t$

- ✓ Using this model for prediction, growth rates of GDP will be 3.91, 4.16, 4.37, and 4.55. However, the researcher thinks that predictions of Stepwise Regression are more precise because they take into consideration the impact of independent variables on the dependent variable. Nevertheless, this is contrary to ARIMA models that are restricted to time as an influential factor on the growth rate of GDP.

References:

Barro, R. J. and X. Sala-i-Martin, *Economic Growth*, Second Edition, Cambridge, MA: MIT Press, 2003

Jaume Ventura. A global view of economic growth. National bureau of economic research, working paper no 11296, p 106, 2005.

Nicolas crafts and Gianni toniolo. European economic growth, 1950-2005. An overview, centre for economic policy research, discussion paper no 6863, pp7, 10.

Gergory Mankiw, Mark Taylor, Principes de l`economie, Adaptation europeenne, de boeck, 2010.

Robert J. Barro et Xavier Sala-i-Martin, Economic Growth, Mc Graw Hill, New York, 1995.

Rob Morris: "Economic Growth and Underdeveloped Countries", Translation of Hisham Metwalli, the Second Edition, Pioneer House for Printing and Publishing, Beirut 1979.

Fatema Ahmed Al-Sherbini et al: "Economies of Mechanization", The Scientific Library, Zagazig, 1998.

Wallace Peterson: "Income, Employment and Economic Growth, Franklin Corporation for Printing and Publishing, Beirut, 1968.

Mohammed Samir Tobar: "Principles of Economics", Zagazig, without a publisher 1996.

Mohammed Medhat Mustafa and Soheir Abdel Fattah: "Mathematical Models for Planning and Economic Development, Artistic Enlightenment Library and Printing House, Egypt 1999.

Anand, S., and R. Kanbur, "the Kuznets Process and the Inequality-Development Relationship"; Journal of Development Economics. , 1993.

Michele Todaro: "Economic Development", Arabization of Mahmoud Hassan Hosni, Mars Publishing House, Saudi Arabia 2006.

Abdel Rahman Ismael and Harbi Oreikat: "Economic Concepts and Systems" Wael House for publishing, Jordan 2004.

Abdel Mottaleb Abdel Hamid: "The Economic Theory", University House, Egypt 2006.

Mustafa Zeroni: "Economic Growth and Development Strategies with Reference to Economies of Southeast Asian Countries, A State PhD Thesis in Economic Sciences, University of Algiers, Algeria 2000.

Michele Todaro: "Economic Development", Arabization of Mahmoud Hassan Hosni, Mars Publishing House, Saudi Arabia 2006.

Gerald. M. Meier. & Robert. E. Baldwin: "Economic Development" the first part, Arabic Edition, Lebanon Library, Beirut 1965.

Yahia al-Najjar: "Development between False and Correct Concepts, the Ministry of Information, Freedom Printing House, Baghdad 1977.

Hussein Omar: "Strategic Planning", Egyptian Knowledge House, Cairo 1967.

Abdel Rahman Ismael and Harbi Oreikat: "Economic Concepts and Systems" Wael House for publishing, Jordan 2004.

Saleh Salehi: "Alternative Development Approach in Islamic Economy": Al-Fajr Publishing House, the First Edition in 2006, p. 89-88.

Basic guide to the world economic growth, 1970 to 2007, Areport by: The Global Social Change Research, May 2007.

Christian Comeliau, La croissance economiques: mesure ou demesure? Univerite Montesquieu Bordeaux IV, France 2004.

Stanely Fischer et autres: Macroéconomie 2éme édition, édition dunod. Paris, 2002.

Fathi Khalil Al-Khadrawi: " Macroeconomic Analysis: Expectations Theory", Faculty of Commerce, Tanta University, 1996.

Gregory Mankiw: Macroéconomie, 3éme édition, édition de Boeck, Belgique, 2012.

Gregory Mankiw: Macroéconomie, 3éme édition, édition de Boeck, Belgique. P 219.

Fathi Khalil Al-Khadrawi: " Macroeconomic Analysis: Expectations Theory", Faculty of Commerce, Tanta University, 1996.

Robert barro, Xavier Sala. I. Martin. La croissance économique, edition, international, France, 1996, p 13.

Khaled Mohammed Al-Sawaee: "Trade and Development", Curricula House, Oman, the First Edition in 2006.

Gregory .N. Mankiw "Macroéconomie", 3eme édition, De boeck, Paris, France 2003, p 264.

Barro R. J., "Economic Growth in a Cross Section of Countries," Quarterly Journal of Economics106, 2, 407-443, 1991.

Barro R. J., "Inflation and Economic Growth". NBER Working Paper No. 5326. Issued in October 1995.

Robert J. Barro., "Democracy & Growth", NBER Working Paper No. 4909, 1994.

Robert J. Barro**.**, "Inequality and Growth in a Panel of Countries" Journal of Economic Growth, 5-32. 2001.

Robert J. Barro. **"**Economic Growth in East Asia Before and After the Financial Crisis**",** NBER Working Paper No. 8330. 2001.

Robert J. Barro, Xavier Sala-i-Martin, Regional Growth and Migration: A Japan-U.S. Comparison, NBER Working Paper No. 4038,1992.

Gene M. Grossman and Alan B. Krueger.,"Economic Growth and the Environment", NBER Working Paper, No. 4634, 1994.

Levine R. and Renelt D., "A Sensitivity Analysis of Cross-Country Growth Regressions", American Economic Review, 82, 942-963, 1992.

Carmen M. Reinhart, Kenneth S. Rogoff,. **"**Growth in a Time of Debt **"**, NBER Working Paper No. 15639, 2010.

Joshua Aizenman, Yothin Jinjarak, Donghyun Park, Capital Flows and Economic Growth in the Era of Financial Integration and Crisis 1990-2010, NBER Working Paper No. 17502, 2011.

David E. Bloom, David Canning, Günther Fink, ' Implications of Population Aging for Economic Growth', NBER Working Paper No. 16705, 2011.

Timothy J. Kehoe, Felipe Meza "Catch-up Growth Followed by Stagnation: Mexico, 1950–2010"., NBER Working Paper No. 17700, 2011.

Michael D. Bordo, Christopher M. Meissner, David Stuckler, Foreign Currency Debt, Financial Crises and Economic Growth: A Long Run View, NBER Working Paper No. 15534, 2009.

Gene M. Grossman, Elhanan Helpman, Endogenous Innovation in the Theory of Growth, NBER Working Paper No. 4527,1993.

Ahmed Al-Heity and Aus Ayyob: "Role of Monetary and Financial Policies in Economic Growth. Anbar University Economic and Administrative Sciences Journal, Vol. 4, Edition No. 8, Iraq 2012.

Botheina Mohammed Ali Al-Mohtaseb: "Effect of Foreign Direct Investment on Economic Growth in Jordan (1990-2006), Studies of Administrative Sciences, Vol. 36, Edition No. 2, Jordan 2009.

Magdi Al-Shorbagi: "Impact of Foreign Direct Investment on Economic Growth in Countries of the Middle East and North Africa", the second international scientific forum, November 14th to15[th,] 2005.

Magdi Al-Shorbagi: "Effect of Information and Communication Technology on Economic Growth in Arab Countries", an international forum on intellectual capital in Arab business organizations in modern economies, Algeria, December 13th to 14th, 2011.

Kebdani Ahmed and Kasem Fouad: "Impact of Exchange Rate Systems on Economic Growth in Some MENA Countries", Performance of Algerian Institutions Journal, Edition No. 3, Algeria 2013.

Abed Al-Abdali: "Assessment of Impact of Exports on Economic Growth in Islamic Countries: A Standard Analytical Study", Journal of Saleh Abdullah Kamel Center for Islamic Economics, Al-Azhar University, the ninth year, Edition No. 27, Egypt, 1426 AH 2005 AD.

Abdullah al-Maliki, Ahmed Obaid, " education and economic growth in the Kingdom of Saudi Arabia: An Empirical Study using the simultaneous equations, OM ELKORA University, 2006, Maka.

Data Source: World Bank.

http://data.worldbank.org/country/egypt-arab-republic.

Used Database[54]

	Years	y	X1	X2	X3	X4	X5
Variables of the Study							
1	1977	12.84	-11.83	12.67	15.27	203.66	21.33
2	1978	5.78	7.99	25.26	3.95	282.28	-9.92
3	1979	6.04	-7.54	16.39	15.63	-54.92	6.21
4	1980	10.01	6.64	-2.17	11.24	37.26	34.43
5	1981	3.76	21.13	11.22	2.10	-60.99	-5.17
6	1982	9.91	-2.30	20.46	2.48	66.91	17.90
7	1983	7.40	10.10	8.52	4.17	48.80	28.82
8	1984	6.09	11.26	4.39	8.10	61.50	-14.12
9	1985	6.60	1.27	4.15	5.97	3.38	17.45
10	1986	2.65	0.71	-12.39	0.60	-22.15	-1.57
11	1987	2.52	3.05	-8.84	5.87	25.57	29.46
12	1988	5.30	1.08	1.75	4.80	5.06	-6.94
13	1989	4.97	-5.12	-8.97	4.50	-41.29	14.73
14	1990	5.70	-7.12	-0.63	5.82	-65.53	1.44
15	1991	1.08	2.33	-10.44	4.64	81.42	-29.98
16	1992	4.43	5.98	-3.84	2.95	7.41	45.63
17	1993	2.90	4.83	-13.36	2.97	154.77	2.28
18	1994	3.97	4.61	10.42	4.23	-52.39	8.21
19	1995	4.64	5.03	6.42	3.32	6.35	14.82
20	1996	4.99	5.39	11.35	4.04	40.02	-4.93
21	1997	5.49	5.11	13.38	4.18	20.82	5.22
22	1998	4.04	2.99	22.64	2.24	-0.99	12.81
23	1999	6.11	2.58	3.93	4.63	15.93	19.03
24	2000	5.37	2.83	-2.30	5.16	-58.71	6.57
25	2001	3.54	4.89	-2.19	3.98	26.87	1.36
26	2002	2.37	2.63	5.51	2.15	-63.30	-6.67
27	2003	3.19	2.73	-8.74	2.33	427.93	-2.96
28	2004	4.09	2.04	6.17	2.10	328.92	3.58
29	2005	4.47	2.80	14.22	4.83	86.82	14.72
30	2006	6.84	3.11	13.79	6.44	15.29	30.54
31	2007	7.09	.19	23.76	6.94	-18.00	15.44
32	2008	7.16	2.13	14.81	5.73	-29.31	28.79

33	2009	4.69	5.57	-9.65	5.68	-4.86	-13.26
34	2010	5.15	4.51	5.46	5.13	-107.56	30.18
35	2011	1.76	3.79	-4.12	4.02	-679.59	-0.77
36	2012	2.21	3.14	0.68	6.37	0.00	-31.67

Variables of the Study							
	Years	X6	X7	X8	X9	X10	X11	X12
1	1977	5.43	9.63	12.73	34.03	-0.69	1.37	2.12
2	1978	3.42	0.24	11.08	27.03	-0.76	1.31	2.14
3	1979	16.23	-3.55	9.90	31.33	-0.86	1.24	2.17
4	1980	8.13	17.01	20.82	51.42	-0.96	1.17	2.21
5	1981	5.35	-1.47	10.32	30.90	-1.04	1.14	2.23
6	1982	-13.17	-10.41	14.82	31.15	-1.11	1.15	2.25
7	1983	1.04	10.74	16.08	22.63	-1.18	1.17	2.27
8	1984	14.79	6.12	17.04	18.85	-1.27	1.19	2.30
9	1985	2.98	4.10	12.11	18.30	-1.52	1.17	2.32
10	1986	-12.67	.45	23.86	20.95	-1.94	1.10	2.35
11	1987	-15.56	6.35	19.69	20.96	-2.43	.99	2.36
12	1988	3.07	11.18	17.66	21.55	-2.96	.87	2.31
13	1989	1.65	16.67	21.26	17.50	-3.46	.75	2.19
14	1990	3.66	7.14	16.76	28.73	-3.80	.67	2.03
15	1991	1.18	3.33	19.75	19.34	-3.93	.63	1.85
16	1992	-4.96	12.90	13.64	19.43	-3.85	.64	1.70
17	1993	12.56	1.27	12.09	13.25	-3.53	.67	1.59
18	1994	1.24	.50	8.15	11.21	-3.07	.71	1.55
19	1995	4.49	11.44	15.74	9.90	-2.61	.73	1.54
20	1996	-1.95	1.72	7.19	10.84	-2.19	.71	1.55
21	1997	5.38	-1.03	4.63	10.77	-1.98	.64	1.55
22	1998	8.01	-3.59	3.87	10.78	-1.94	.55	1.56
23	1999	2.94	9.11	3.08	5.66	-1.98	.45	1.57
24	2000	-3.40	3.80	2.68	11.58	-1.96	.36	1.58
25	2001	-1.13	3.29	2.27	14.07	-1.94	.28	1.60
26	2002	5.53	5.77	2.74	12.31	-1.79	.24	1.62
27	2003	1.28	13.83	4.51	21.09	-1.57	.23	1.64
28	2004	17.24	25.32	11.27	15.82	-1.37	.23	1.66
29	2005	23.82	20.20	4.87	11.49	-1.23	.24	1.67
30	2006	21.77	21.26	7.64	15.00	-1.08	.26	1.68
31	2007	28.80	23.28	9.32	19.12	-1.09	.28	1.68
32	2008	26.29	28.76	18.32	10.49	-1.10	.29	1.69
33	2009	-17.89	-14.51	11.76	9.47	-1.18	.31	1.69
34	2010	-3.16	-2.98	11.27	12.42	-1.23	.32	1.68
35	2011	8.06	3.74	10.05	6.66	-1.32	.32	1.67
36	2012	11.15	-4.65	7.12	12.35	-1.34	.32	1.66

Table (7). Results of Kolmogorov–Smirnov Test of Annual Growth Rates of Variables

Variable	Description of the Variable	Kolmogorov–SmirnovZ	Sig.
Y	Annual Growth Rate of GDP	0.735	0.653
X1	Annual Growth Rate of Government Expenditure	1.802	0.192
X2	Annual Growth Rate of Constant Capital Formation	0.542	0.931
X3	Annual Growth Rate of Households' Expenditure	1.217	0.10
X4	Annual Growth Rate of Foreign Direct Investment	1.490	0.024
X5	Annual Growth Rate of Domestic Savings	0.477	0.977
X6	Annual Growth Rate of Imports	0.833	0.492
X7	Annual Growth Rate of Exports	0.598	0.658
X8	Annual Growth Rate of Inflation	0.542	0.930
X9	Annual Growth Rate of Money and Quasi Money	0.849	0.467
X10	Annual Growth Rate of Fertility	1.044	0.226
X11	Annual Growth Rate of Age Expected at Birth	0.996	0.275
X12	Annual Growth Rate of Population	1.753	0.004

Table (8). Results of Augmented Dickey-Fuller Test

Variable	Description	T statistic	Sig.
Y	Annual Growth Rate of GDP	-5.351	0.0001
X1	Annual Growth Rate of Government Expenditure	-4.739	0.0007
X2	Annual Growth Rate of Constant Capital Formation	-3.697	0.0085
X3	Annual Growth Rate of Households' Expenditure	-5.753	0.0000
X4	Annual Growth Rate of Foreign Direct Investment	-4.553	0.0009
X5	Annual Growth Rate of Domestic Savings	-7.810	0.0000
X6	Annual Growth Rate of Imports	3.815	0.0063
X7	Annual Growth Rate of Exports	-4.105	0.0029
X8	Annual Growth Rate of Inflation	-2.664	0.0904
X9	Annual Growth Rate of Money and Quasi Money	-2.625	0.0976
X10	Annual Growth Rate of Fertility	-3.858	0.0065
X11	Annual Growth Rate of Age Expected at Birth	-2.369	0.1581
X12	Annual Growth Rate of Population	-1.817	0.3657

Table (9). Results of Estimations of Ordinary Least Squares

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.024	3.276		1.839	.079
	X1	-.072	.060	-.165-	-1.198	.243
	X2	.070	.039	.312	1.789	.087
	X3	.196	.134	.262	1.467	.156
	X4	.001	.002	.083	.662	.515
	X5	.034	.020	.247	1.667	.109
	X6	-.053	.047	-.241	-1.126	.272
	X7	.047	.054	.193	.878	.389
	X8	.044	.071	.110	.626	.537
	X9	.044	.044	.173	1.011	.323
	X10	.626	.391	.247	1.599	.123
	X11	1.697	1.671	.268	1.015	.320
	X12	-1.966	1.993	-.250	-.986	.334
a. Dependent Variable: y						

F test   = 6.051 Sig.= 0.000R square = 0.76

Table (10). Results of Stepwise Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
4	(Constant)	1.766	.566		3.123	.004		
	X3	.246	.088	.328	2.810	.009	.749	1.335
	X5	.047	.014	.342	3.269	.003	.934	1.071
	X2	.074	.023	.329	3.149	.004	.939	1.064
	X9	.076	.030	.296	2.558	.016	.763	1.310

a. Dependent Variable: y

Table (12). Results of Curve Fitting for Prediction of Variable X3

Dependent Variable:X3

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.094	3.518	1	34	.069	6.853	-.093		
Logarithmic	.262	12.081	1	34	.001	10.177	-1.900		
Inverse	.384	21.152	1	34	.000	3.845	11.048		
Quadratic	.350	8.897	2	33	.001	10.750	-.709	.017	
Cubic	.390	6.817	3	32	.001	12.719	-1.307	.056	.000
Compound	.013	.438	1	34	.512	4.900	.994		
Power	.080	2.962	1	34	.094	7.326	-.196		
S	.157	6.336	1	34	.017	1.318	1.319		
Growth	.013	.438	1	34	.512	1.589	-.006		
Exponential	.013	.438	1	34	.512	4.900	-.006		
Logistic	.013	.438	1	34	.512	.204	1.006		

Table (13). Results of Curve Fitting for Prediction of Variable X5

Dependent Variable:X5

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.010	.331	1	34	.569	10.865	-.162		
Logarithmic	.009	.298	1	34	.588	12.858	-1.880		
Inverse	.008	.278	1	34	.602	6.849	8.719		
Quadratic	.011	.184	2	33	.833	9.319	.082	-.007	
Cubic	.036	.400	3	32	.754	17.846	-2.508	.166	-.003
Compound[a]	.	.	.	.	.	.000	.000		
Power[a]	.	.	.	.	.	.000	.000		
S[a]	.	.	.	.	.	.000	.000		
Growth[a]	.	.	.	.	.	.000	.000		
Exponential[a]	.	.	.	.	.	.000	.000		
Logistic[a]	.	.	.	.	.	.000	.000		

Table (14). Results of Curve Fitting for Prediction of Variable X2

Dependent Variable:X2

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.007	.248	1	34	.621	6.313	-.086		
Logarithmic	.052	1.852	1	34	.182	12.181	-2.808		
Inverse	.082	3.031	1	34	.091	2.743	16.996		
Quadratic	.083	1.497	2	33	.239	13.374	-1.201	.030	
Cubic	.280	4.151	3	32	.014	28.000	-5.643	.326	-.005
Compound[a]	.	.	.	.	.	.000	.000		
Power[a]	.	.	.	.	.	.000	.000		
S[a]	.	.	.	.	.	.000	.000		
Growth[a]	.	.	.	.	.	.000	.000		
Exponential[a]	.	.	.	.	.	.000	.000		
Logistic[a]	.	.	.	.	.	.000	.000		

Table (15). Results of Curve Fitting for Prediction of Variable X9

Dependent Variable:X9

Equation	Model Summary					Parameter Estimates			
	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.541	40.058	1	34	.000	30.363	-.653		
Logarithmic	.613	53.844	1	34	.000	40.780	-8.459		
Inverse	.349	18.238	1	34	.000	14.728	30.700		
Quadratic	.660	32.039	2	33	.000	38.098	-1.874	.033	
Cubic	.664	21.115	3	32	.000	39.989	-2.448	.071	.000
Compound	.557	42.666	1	34	.000	30.602	.967		
Power	.579	46.798	1	34	.000	50.104	-.422		
S	.306	15.022	1	34	.000	2.622	1.475		
Growth	.557	42.666	1	34	.000	3.421	-.034		
Exponential	.557	42.666	1	34	.000	30.602	-.034		
Logistic	.557	42.666	1	34	.000	.033	1.035		

Table (18). Autocorrelation Function ADF and Partial Autocorrelation Function PADF

Autocorrelation Function ADF	Partial Autocorrelation Function PADF
Lag ACF T LBQ	Lag PACF T
1 0.220000 1.32 1.89	1 0.220000 1.32
2 0.238341 1.37 4.18	2 0.199602 1.20
3 0.204845 1.12 5.92	3 0.130202 0.78
4 -0.153853 -0.81 6.93	4 -0.284296 -1.71
5 0.140309 0.73 7.80	5 0.174370 1.05
6 0.005295 0.03 7.80	6 0.015270 0.09
7 0.050426 0.26 7.92	7 0.078189 0.47
8 0.078230 0.40 8.22	8 -0.069733 -0.42
	9 -0.098567 -0.50 8.71

Table (21). Parameters of ARIMA (1,0,0) Model

|				Estimate	SE	T	Sig.
y-Model_1	Y	No	Constant	5.202	.568	9.165	.000
		Transformation	AR Lag 1	.317	.166	1.906	.065

Table (22). Parameters of ARIMA (0,0,1) Model

|				Estimate	SE	T	Sig.
y-Model_1	Y	No	Constant	5.176	.483	10.716	.000
		Transformation	MA Lag 1	-.222	.171	-1.299	.203

Table (23). Parameters of ARIMA (1,0,1) Model

|				Estimate	SE	T	Sig.
y-Model_1	Y	No	Constant	5.316	.949	5.603	.000
		Transformation	AR Lag 1	.818	.208	3.922	.000
			MA Lag 1	.531	.310	1.712	.096

Figure (2). Growth Rate of Gross Domestic Product GDP during the Period of the Study (Y)
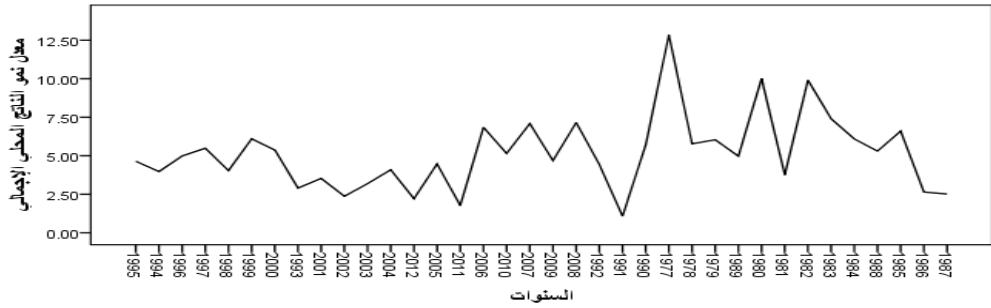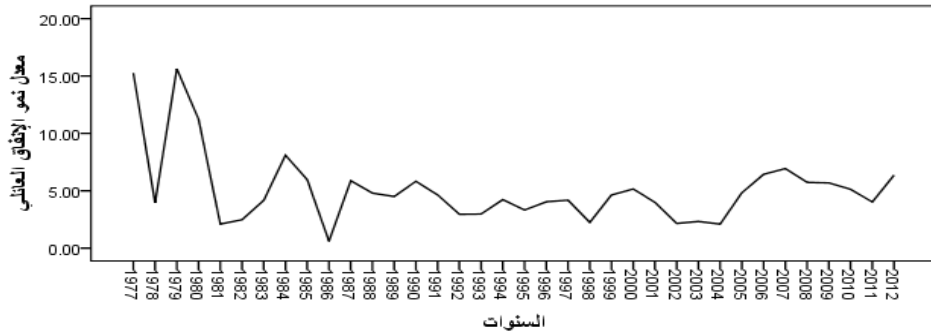

Figure (3). Growth Rate of Government Expenditure during the Period of the Study (X1)
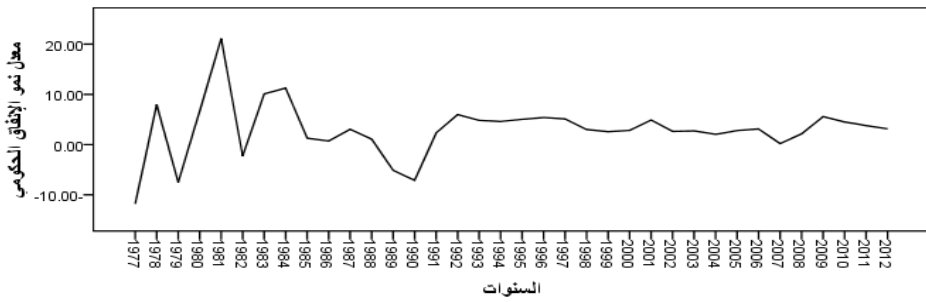
Figure (4). Growth Rate of Constant Capital Formation during the Period of the Study (X2)

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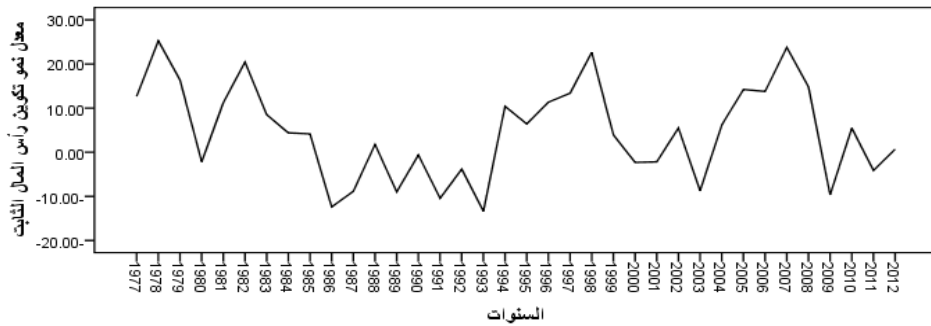
Figure (5). Growth Rate of Households' Expenditure during the Period of the Study (X3)

Figure (6). Growth Rate of Foreign Direct Investment FDI during the Period of the Study (X4)

Figure (7). Growth Rate of Domestic Savings during the Period of the Study (X5)

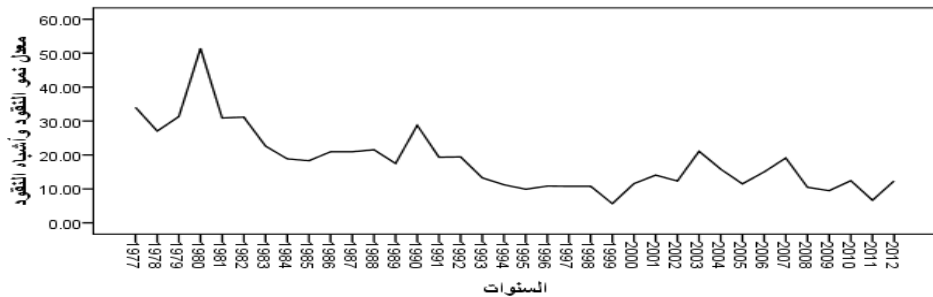**Figure (8). Growth Rate of Imports during the Period of the Study (X6)**

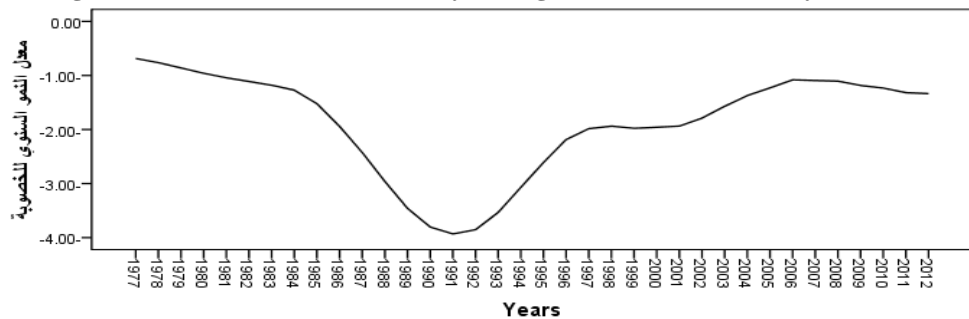**Figure (9). Growth Rate of Exports during the Period of the Study (X7)**

Figure (10). Growth Rate of Inflation during the Period of the Study (X8)

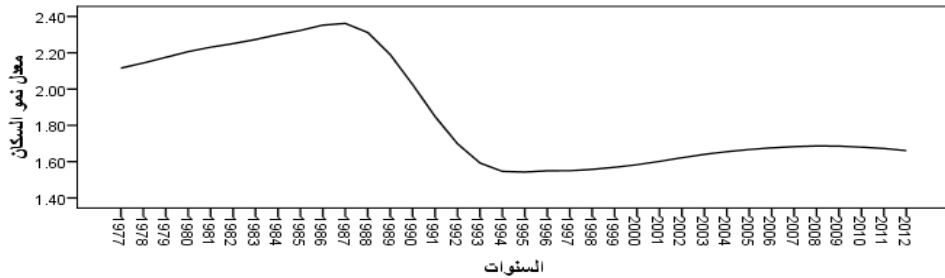**Figure (11). Growth Rate of Money and Quasi Money during the Period of the Study (X9)**

Figure (12). Growth Rate of Fertility during the Period of the Study (X10)

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Figure (13). Growth Rate of Age Expected at Birth during the Period of the Study (X11)

Figure (14). Growth Rate of Population during the Period of the Study (X13)

Figure (17). Autocorrelation Function ADF and Partial Autocorrelation Function PADF

دالة الارتباط الذاتي الجزئي PADF   **دالة الارتباط الذاتي ADF**