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Impact of the change in interest rate on the economies of developing countries, case study of Algeria

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Declaration

I declare that the thesis “Impact of the change in interest rate on the economies of developing countries, case study Algeria” has been completed by me, without any other outside help and only the defined sources, and study aids were used; they are cited in the thesis and provided at the end of the thesis.

Prague, Oct, 20124 _____

Melad Abdulrahman

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Last but definitely not least, I hope that my study's findings contribute to the knowledge and be used to the business owners, academics and practitioners.

Abstract:

The interest rate has a prominent role within the monetary policy tools, which led Algeria in monetary reform to follow indirect monetary policy, after they adopt a direct monetary policy, which resulted in the interest rate liberalization, and left it's determined according to supply and demand and that led to the results and the effects on the level of many economic variables. This research showed that real economic growth and interest are influence each other and have lag and lead relationship. Regression tests showed that one and two lag of inflation rate had impacted the current interest rate and one lag of GDP also had impacted the current interest rate. All regressions proved that ARCH (Autoregressive conditional heteroskedasticity) effect existence where some of the tested variables did not have volatility or spill over risk during the GARCH (Generalized autoregressive conditional heteroskedasticity) model. This research will provide beneficial contribution to the current literature on real growth implemented to Algerian economy. It will test the impact of inflation, real GDP and interest rate on the real growth rate of Algerian economy.

Key Words:

Interest rate, impact, inflation, growth rate, Algerian, economy, GDP, financial, regression, relationship, influence.

Abstrakt:

Úroková sazba má výsadní postavení mezi nástroji monetární politiky, je důležitá pro monetární reformy a zároveň patří k nástrojům nepřímé monetární politiky. Liberalizace, a sní spojený pokles úrokové míry, umožňuje působení základních ekonomických sil – nabídky a poptávky. Na základě výsledků této práce je možné konstatovat, že ekonomický růst a úroková míra se, byť se zpožděním, navzájem ovlivňují. Regresní testy ukázaly, že zpožděná proměnná inflace ovlivnila současnou úrokovou míru, zároveň o jednu zpožděná proměnná pro HDP zároveň ovlivnila proměnnou pro současnou úrokovou míru. Všechny provedené regresní testy prokázaly existence tzv. ARCH (Autoregressive conditional heteroskedasticity) efektu, kdy některé z testovaných proměnných nevykazovaly volatilitu, či přelívání rizik během GARCHova (Generalized autoregressive conditional heteroskedasticity) modelu. Tato práce tak přináší přínos k současné literatuře zaměřené na ekonomický růst Alžírské ekonomiky. Ověřuje vliv inflace, reálného HDP a úrokové míry na skutečný ekonomický růst Alžírské ekonomiky.

Klíčová slova:

Úroková míra, Vliv, Inflace, Růstová míra, Alžírsko, Ekonomika, HDP, Finance, Regrese, Vztah, Působení

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Introduction

The subject of interest rate is still points of difference among economists. The interest rate remains to the present time of study and analysis of academics, and the subject raises debate researchers' economists of different persuasions and schools. Never in the history of economic thought that raised the subject of controversy and debate as the interest rate theme, both in determining the concept or measurement methods, not to mention how important the role and scope of its impact on economic activity or justify the deal with it. The policies of interest rate have a great importance in the field of the means used to correct economic path for developed countries and developing countries, and there are a lot of economists - especially - traditional and contemporary said that the interest rate variable is pivotal role in building and display monetary theories with its stages of development, and it consider as an essential factor in the activity of financial and banking institutions. Many of the economic research theory and field addressed the study and analysis, concluded that it does not envisage non-existence as a variable in the economic life, though the results of those studies have varied in determine the extent of its importance and its role within the various economic communities.

A lot of economists of different in there interpretations said that the selection of interest rate works to reduce its role in job in balancing and proper guidance of resources and limiting the growth and development of the financial and monetary sectors. Then the price of interest has an important role, an indicator of balance internal and external economic and efficient allocation of resources investment and financial. The liberalization of the interest rate is a necessary and vital to the operations of macroeconomics, and it is inevitable in achieving efficiency and effectiveness of changes associated with the process of structural reform in the financial and monetary systems.

The researchers and economists in their studies said that the interest rate is the cause of the problems and economic crises that faced the developing countries. Therefore, the uses of interest rate to influence economic activity, but some of them want to cancel this tool, and look for other alternatives to be more efficient and convenient. When was the reality of all countries at different levels and their dealing in the present benefit, as it consider as tool used to correct the economic conditions of developing countries, it was necessary to search in the impact of change in interest rate on the economies of these countries. The result of studies and field trials for the topic of interest rate, have concluded that the economy of developing

countries have suffering from imbalances in the structure of interest rates, which led to negative effects on the efficiency of resource allocation and the productivity of capital. So, that led the interest rate to lose its effectiveness as a guide for lending, catalyst for savings and indicator in the demand for money and determine the general level of prices.

Interest rates have determined by administrative, with pattern of economic and install of the prices. As a result of these policies and inflation caused by different factors such as; fiscal, monetary, some structural, and some imported. In addition to lower cash balances available for lending and low efficiency of investment. and has coincided with the effects that increased external debt of these countries, which showed the urgent need to schedule these debts and that necessitated the need for access with the International Monetary Fund in the agreement include the implementation of a comprehensive program of economic reform and structural adjustment. The interest rate it a prominent role within the monetary policy tools, which led these countries in monetary reform to follow indirect monetary policy, after they adopt a direct monetary policy. Which resulted in the interest rate liberalization, and left it's determined according to supply and demand and that led to the results and the effects on the level of many economic variables.

These considerations we chose to discuss the issue of "the impact of interest rate change on the economies of developing countries" by defining the concept and the role and nature of the interest rate as well as demonstrate the impact and importance in monetary theories and policies. In order to access the study and analysis to interpret the reflection adjust interest rates on economic variables for developing countries. So, the issue of the interest rate and its impact of change on the economies of the developing countries cannot be processed without exposure to the economic reform policy pursued by these countries in the field of monetary policy and banking. Especially with institutions of IMF, and determine the extent of success of the policy of interest rate liberalization in reducing inflation by raising interest rates to a level that allows the rule of real interest rates are positive, in order to raise the level of mobilization of national savings to finance economic development programs and social. Therefore, raise the productivity of capital with efficient of projects, which allow real economic growth to deal with examining contemporary forms of interest rate liberalization, and analysis of the experiences of some developing countries. Algeria is from developing country that goes on approach to economic reform and structural adjustment and analyzes the impact of these reforms on interest rate and recent indicators of overall economic balances.

Economic growth of any economy represents its ability to increase production of goods and services. The economic growth can be defined as the ability to increase the quantity of goods and services produced within an economy. The most important are the real quantities and that is why nominal GDP is usually adjusted for the inflation. One of the most important macroeconomic factors which influence the ability of an economy to grow is the interest rate. The fluctuation of the interest rate is usually connected to inflation rates. The fluctuation of interest rate causes a decrease or an increase in economic growth rates. This explains the importance of the accurate prediction of interest rate for investors and economic actors. This research will provide beneficial contribution to the current literature on real growth implemented to Algerian economy. It will test the impact of inflation, real GDP and interest rate on the real growth rate of Algerian economy. The research emphasizes on the following economic relationships:

-The relationship between gross domestic product and economic growth rate.
-The relationship between interest rate and inflation rate.
-The impact of interest rate, real GDP and inflation rate on economic growth rate.

Research Significance:

The importance of this study lies in the importance of interest rate and its impact on the economies of the developing countries. Interest rate today cares by politicians, economists, researchers and academics, and preoccupation with business, economic operators, banks and financial institutions etc. The global economic system involves a combination of factors and forces to make renewed and changes in each stage of its development. The effects of the interest rate are not confined to the developing countries, but it will goes on all countries of the world positively or negatively, and to varying degrees.

Research Hypotheses:

We assume that there is a direct correlation between change of the interest rate and the economies of the developing countries. The purpose of this study is to analyse existing data, and determine the impact of interest rate on the economy. This study seeks to determine which factors appear to have the greatest impact on economy and seeks to identify the policy implications of such revelations. The research hypotheses are the following:

- GDP does not cause change in Growth
- Growth does not cause change in GDP
- Inflation does not cause change in GDP
- GDP does not cause change in Inflation
- Inflation does not cause change in Growth
- Growth does not cause change in Inflation
- Interest does not Granger-Cause Inflation
- Inflation does not Granger-Cause Interest
- Interest does not Granger-Cause GDP
- GDP does not Granger-Cause Interest
- Interest does not cause change in Growth
- Growth does not cause change in Interest

Research Tasks

Quantifying of real economic growth of an economy tends to assess if the growth is able to cope with the increasing demands of economic actors within a society including prosperity of growth rates and how to assure and prevent the depletion of natural resources.

This research is built to examine the impact of economic factors such as inflation rate, GDP and interest rate on Algerian real economic growth by answering the following research questions:

-Is the impact of real GDP on economic growth rate significant?

-Is the impact of interest rate on economic growth rate significant?

-Is the impact of inflation on economic growth rate significant?

The Methodology

To answer the research questions the author follow the academic research methodology with the pedagogical nature of professional considerations, and privacy of the proposed research addressed, in the context of combining inductive and deductive approach. To treatment and discuss this research the author based on the basis of the surface of the economic, social and historical as independent variables , and that the monetary theories are dependent variables. Then, include in the search to be monetary theories independent variables and the interest rate dependent variable. Finally, the interest rate as independent variable and other economic variables are dependent variables.

The main aim of this thesis is to examine the impact of interest rate on real economic growth in Algeria during the time period 2000-2010. The research time period is limited to 2000-2010 due to scarcity of data. To analyze the integration order of the variables, the unit root test has been used. Four variables (interest rate, inflation rate, GDP and economic growth) have undergone a cointegration analysis. This research has employed Johansen test. The results showed that max eigenvalue and trace test of the four equations have significant level of 1% or 5%, which means that there is a long term equilibrium relationship among all the above mentioned variables. The research has adopted above mentioned variables to analyze Granger Causality relationship. The results proved that inflation leads to an increase in interest rate, while the other variables are entirely independent. The regression was utilized to test the mutual influence of economic growth rate and interest rate which showed that interest rate influences the economic growth rate. The regression also used to examine the relationship between inflation rate and economic growth rate, and it showed that inflation rate influences economic growth rate. Lastly regression was utilized to examine the relationship between GDP, interest rate and inflation rate together, findings have showed that current GDP and subsequent GDP influence economic growth rate.

Data were compiled from Algerian Central Bank. The variables are: Nominal Interest rate, Inflation rate, Consumer price index (CPI) and Gross Domestic product (GDP). The research was done for the time period 2000 – 2010.

Various techniques were applied to enhance the research study and meet the objectives of the study. The main objective of regression analysis is to analyze the relationship between variables.

The **mean** may often be confused with the median, mode or the mid-range. The mean is the arithmetic average of a set of values, or distribution; however, forskewed distributions, the mean is not necessarily the same as the middle value (median), or the most likely (mode)

The generalized mean, also known as the power mean or Hölder mean, is an abstraction of the quadratic, arithmetic, geometric and harmonic means. It is defined for a set of n positive numbers xi by:

$$\bar{x}(m) = \left(\frac{1}{n} \cdot \sum_{i=1}^{n} x_i^m \right)^{\frac{1}{m}}$$

By choosing different values for the parameter *m*, the following types of means are obtained:

$m \to \infty$ maximum of x_i

$m = 2$ quadratic mean

$m = 1$ arithmetic mean

$m \to 0$ geometric mean

$m = -1$ harmonic mean

$m \to -\infty$ minimum of x_i

***f*-mean**

This can be generalized further as the generalized f-mean

$$\bar{x} = f^{-1} \left(\frac{1}{n} \cdot \sum_{i=1}^{n} f(x_i) \right)$$

and again a suitable choice of an invertible f will give

$f(x) = x$ arithmetic mean,

$f(x) = \frac{1}{x}$ harmonic mean,

$f(x) = x^m$ power mean,

$f(x) = \ln x$ geometric mean.

Medians of probability distributions

For any probability distribution on the real line **R** with cumulative distribution function *F*, regardless of whether it is any kind of continuous probability distribution, in particular an absolutely continuous distribution (which has a probability density function), or a discrete probability distribution, a median is by definition any real number *m* that satisfies the inequalities

$$\mathrm{P}(X \leq m) \geq \frac{1}{2} \text{ and } \mathrm{P}(X \geq m) \geq \frac{1}{2}$$

or, equivalently, the inequalities

$$\int_{(-\infty,m]} dF(x) \geq \frac{1}{2} \text{ and } \int_{[m,\infty)} dF(x) \geq \frac{1}{2}$$

in which a Lebesgue–Stieltjes integral is used. For an absolutely continuous probability distribution with probability density function f, the median satisfies

$$\mathrm{P}(X \leq m) = \mathrm{P}(X \geq m) = \int_{-\infty}^{m} f(x)\,dx = \frac{1}{2}.$$

Any probability distribution on **R** has at least one median, but there may be more than one median. Where exactly one median exists, statisticians speak of "the median" correctly; even when the median is not unique, some statisticians speak of "the median" informally.

Pearson's moment coefficient of skewness[edit]

The skewness of a random variable X is the third standardized moment, denoted γ_1 and defined as

$$\gamma_1 = \mathrm{E}\left[\left(\frac{X-\mu}{\sigma}\right)^3\right] = \frac{\mu_3}{\sigma^3} = \frac{\mathrm{E}\left[(X-\mu)^3\right]}{(\mathrm{E}\left[(X-\mu)^2\right])^{3/2}} = \frac{\kappa_3}{\kappa_2^{3/2}},$$

where μ_3 is the third central moment, μ is the mean, σ is the standard deviation, and E is the expectation operator. The last equality expresses skewness in terms of the ratio of the third cumulant κ_3 and the 1.5th power of the second cumulant κ_2. This is analogous to the definition of kurtosis as the fourth cumulant normalized by the square of the second cumulant.

The skewness is also sometimes denoted Skew[X].

In probability theory and statistics, **kurtosis** (from the Greek word κυρτός, *kyrtos* or *kurtos*, meaning curved, arching) is any measure of the "peakedness" of the probability distribution of a real-valued random variable

Pearson moments

The fourth standardized moment is defined as

$$\beta_2 = \frac{\mathrm{E}[(X-\mu)^4]}{(\mathrm{E}[(X-\mu)^2])^2} = \frac{\mu_4}{\sigma^4}$$

where μ_4 is the fourth moment about the mean and σ is the standard deviation. The fourth standardized moment is lower bounded by the squared skewness plus 1 [4]

$$\frac{\mu_4}{\sigma^4} \geq \left(\frac{\mu_3}{\sigma^3}\right)^2 + 1$$

where μ_3 is the third moment about the mean.

The fourth standardized moment is sometimes used as the definition of kurtosis in older works, but is not the definition used here.

Corrected sample standard deviation[edit]

When discussing the bias, to be more precise, the corresponding estimator for the variance, the *biased sample variance:*

$$s_N^2 = \frac{1}{N}\sum_{i=1}^{N}(x_i - \overline{x})^2,$$

equivalently the second central moment of the sample (as the mean is the first moment), is a biased estimator of the variance (it underestimates the population variance)

The sum of squared deviations needed to calculate sample variance (before deciding whether to divide by *n* or *n* − 1) is most easily calculated as

$$S = \sum x^2 - \frac{(\sum x)^2}{n}$$

From the two derived expectations above the expected value of this sum is

$$\mathrm{E}(S) = n\sigma^2 + n\mu^2 - \frac{n\sigma^2 + n^2\mu^2}{n}$$

which implies

$$\mathrm{E}(S) = (n-1)\sigma^2.$$

This effectively proves the use of the divisor *n* − 1 in the calculation of an **unbiased** sample estimate of σ^2.

Granger defined the causality relationship based on two principles:[6]]

1. The cause happens prior to its effect.
2. The cause has *unique* information about the future values of its effect.

Given these two assumptions about causality, Granger proposed to test the following hypothesis for identification of causal effect of X on Y:

$$\mathbb{P}[Y(t+1) \in A|\mathcal{I}(t)] \neq \mathbb{P}[Y(t+1) \in A|\mathcal{I}_{-X}(t)]$$

where A is an arbitrary non-empty set. The symbols $\mathcal{I}(t)$ and $\mathcal{I}_{-X}(t)$ denote all the information until time t in the entire universe and the modified universe in which X is excluded, respectively. If the above hypothesis is accepted, we call X Granger causes Y.[6][4]

An ***F*-test** is any statistical test in which the test statistic has an *F*-distribution under the null hypothesis. It is most often used when comparing statistical models that have been fitted to a data set, in order to identify the model that best fits thepopulation from which the data were sampled. Exact "*F*-tests" mainly arise when the models have been fitted to the data using least squares.

The *p*-value is defined as the probability, under the assumption of hypothesis H, of obtaining a result equal to *or more extreme than what was actually observed*. Depending on how we look at it, the "more extreme than what was actually observed" can either mean $\{X \geq x\}$ (right tail event) or $\{X \leq x\}$ (left tail event) or the "smaller" of $\{X \leq x\}$ and $\{X \geq x\}$ (double tailed event). Thus the *p*-value is given by

- $Pr(X \geq x|H)$ for right tail event,
- $Pr(X \leq x|H)$ for left tail event,

An **eigenvector** of a square matrix A is a non-zero vector v that, when the matrix multiplies v, yields a constant multiple of v, the latter multiplier being commonly denoted by λ. That is:

$$Av = \lambda v$$

(Because this equation uses post-multiplication by v, it describes a right eigenvector.)

The number λ is called the **eigenvalue** of A corresponding to v

The concept of eigenvectors and eigenvalues extends naturally to abstract linear transformations on abstract vector spaces. Namely, let V be any vector space over some field K of scalars, and let T be a linear transformation mapping V into V. We say that a non-zero vector v of V is an **eigenvector** of T if (and only if) there is a scalar λ in K such that

$$T(v) = \lambda v.$$

ARCH(q) model Specification

Suppose one wishes to model a time series using an ARCH process. Let ϵ_t denote the error terms (return residuals, with respect to a mean process) i.e. the series terms. These ϵ_t are split into a stochastic piece z_t and a time-dependent standard deviation σ_t characterizing the typical size of the terms so that

$$\epsilon_t = \sigma_t z_t$$

The random variable z_t is a strong White noise process. The series σ_t^2 is modelled by

$$\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \cdots + \alpha_q \epsilon_{t-q}^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_i \epsilon_{t-i}^2$$

where $\alpha_0 > 0$ and $\alpha_i \geq 0,\ i > 0$.

An ARCH(q) model can be estimated using ordinary least squares. A methodology to test for the lag length of ARCH errors using the Lagrange multiplier test was proposed by Engle (1982). This procedure is as follows:

1. Estimate the best fitting autoregressive model AR(q)
$$y_t = a_0 + a_1 y_{t-1} + \cdots + a_q y_{t-q} + \epsilon_t = a_0 + \sum_{i=1}^{q} a_i y_{t-i} + \epsilon_t$$
.
2. Obtain the squares of the error $\hat{\epsilon}^2$ and regress them on a constant and *q* lagged values:
$$\hat{\epsilon}_t^2 = \hat{\alpha}_0 + \sum_{i=1}^{q} \hat{\alpha}_i \hat{\epsilon}_{t-i}^2$$
where *q* is the length of ARCH lags.
3. The null hypothesis is that, in the absence of ARCH components, we have $\alpha_i = 0$ for all $i = 1, \cdots, q$. The alternative hypothesis is that, in the presence of ARCH components, at least one of the estimated α_i coefficients must be significant. In a sample of T residuals under the null hypothesis of no ARCH errors, the test statistic TR^2 follows χ^2 distribution with *q* degrees of freedom. If TR^2 is greater than the Chi-square table value, we *reject* the null hypothesis and conclude there is an ARCH effect in the ARMA model. If TR^2 is smaller than the Chi-square table value, we *do not reject* the null hypothesis.

GARCH

If an autoregressive moving average model (ARMA model) is assumed for the error variance, the model is a **generalized autoregressive conditional heteroskedasticity** (**GARCH**, Bollerslev (1986)) model.

In that case, the GARCH (p, q) model (where p is the order of the GARCH terms σ^2 and q is the order of the ARCH terms ϵ^2) is given by

$$\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \cdots + \alpha_q \epsilon_{t-q}^2 + \beta_1 \sigma_{t-1}^2 + \cdots + \beta_p \sigma_{t-p}^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_i \epsilon_{t-i}^2 + \sum_{i=1}^{p} \beta_i \sigma_{t-i}^2$$

Generally, when testing for heteroskedasticity in econometric models, the best test is the White test. However, when dealing with time series data, this means to test for ARCH errors (as described above) and GARCH errors (below).

EWMA is an alternative model in a separate class of exponential smoothing models. It can be an alternative to GARCH modelling as it has some attractive properties such as a greater weight upon more recent observations but also some drawbacks such as an arbitrary decay factor that introduce subjectivity into the estimation.

Literature review of the research

Estrella and Hardouvelis (1991) proved that there is a positive slope of the yield curve associated with a future increase in real economic macroeconomic indicators such as consumption of goods and services and investments. They proved that it has a predictive effect on the index of leading indicators such as lagged economic growth and real short term interest rate and lagged rates of inflation. They found that the span between the yield on the ten years government bonds and the three months government bills is a beneficial predictor of economic growth up to four years in the future and economic growth up to more than seven incoming quarters. They also found that the span is able to predict beneficial information to private investors and policy makers regarding the future economic growth. Sweidan (2004): examined whether the relationship between inflation and economic growth has a structural break point effect. His results showed that there is a positive structural effect when the inflation rate is around 2%, but the effect was negative at higher rates. His main recommendation to central banks was that they should pay more attention to inflation while implementing monetary policies. The research of Berument (1999) showed that inflation rate had affected three months government bill rate by using conditional deviation of inflation rate to represent risk index. Haubrich and Dombrovsky (1996) examined the yield span over the period 1961 and 1995 and their results say that the yield span is a relatively precise predictor of almost one year economic growth, but this predictive ability is changing over time. Engen and Hubbard (2004) in their research have proved that an increase in government debt equivalent to 1% of GDP, Ceteris Paribus, would lead to an increase in long term of real interest rate by about 3 basis points. Hasanov (2010) tested the effect of inflation on economic growth in Azerbaijan´s economy over the time period of 2000-2009. The research showed that there is a non-linear relationship between these variables in this economy and according to this research the threshold level is thirteen percent. Inflation below thirteen percent has statistically significant positive effect on GDP growth, but when inflation is higher than thirteen percent this positive relationship becomes negative one.

Giovanni and Shambaugh (2007) in their research paper tested the relationship between interest rates and economic growth in major developed countries and they compare that with other countries. The findings showed that high foreign interest rates have a negative effect on real GDP growth in domestic economies with fixed exchange rates. The paper examines how the interest rate in major countries influences other economies. The effect of foreign interest rates on local economies is the most likely channel comparing with other possibilities such as the effect of foreign trade. Tridico (2007) in his research explained economic growth as a n aggregated issue which needs positive interaction of many economic, social and institutional factors. The research suggests that economies can grow with their own economic model and the determinants of growth is the ability of each economy to associate the right governance and institutions beside a good human development such as life expectancy growth and infant mortality reduction. Countries which experienced an increase of human development due to appropriate institutions have gained economic growth. Nisha and Nishat (2011) found out that economic growth can be created by inflow of capital to the most productive investments, since investors usually decide to invest just in the most productive companies. Shahmoradi and Baghbanyan (2011) which conducted their research for the time period 1990-2007 emphasized on the most important factors of FDI inflows into developing countries. Obamuyi and Olorunfemi (2011) analyzed the consequences of economic reforms and interest rate fluctuations on economic growth in Nigeria. The research revealed that economic reforms and interest rate have a significant effect on economic growth in that country.

Chapter one: Interest rate theories

Section one: Determine the interest rate:

Introduction

There are many definitions for interest rate such as; the interest rate is the cash price for the use of funds and this concept is not newly in economic thought, but this concept of interest rates and its role in economic activity was from many years ago, where Aristotle and ancient Greek thought attacked the lenders and interest. With the development of the forms and functions of monetary and growing importance in the modern economic activity "Jon Low" consider monetary as blood in the human body. So, he response to neo-classical school's ally (Smith, Rikadwr, mel, Sai, and Valras) who look to monetary as a neutral tool. Also, they said the monetary function as the exchange of goods and services to other monetary functions. If the monetary as blood in the human body that the interest may be considered as heart who drives economic activity. With the development of international trade and the movement of capital investments, and the increasing speculation and instability of the international monetary system before and after the First World War, and problems of gold payment system and the emergence of the Great Depression in 1929-1933, this was considered a major setback classic thought (Cho, 1990).

1.1.1 The concept of interest rate:

There are several definitions and concepts of interest rate, although it appears that there is a difference in the concept of the interest rate, but this difference is within the limits of words without meaning.

1_ definition of the interest rate: "Adam Smith" interest is used for capital resulting from the sacrifice (savings), and he cannot distinguish between profit and interest. Then, his contribution was to the theory of limited interest in the same way as "Ricardo", who was not clear in the distinction between profit and interest. However, more traditional contribution who was interested in saving analysis to explain the theory of interest is (Senior). It is a pioneer of the theory of time preference, which is the first one used word "deprivation" as an explanation for the interest on the capital. In his opinion the production supply due to three factors: labor, human deprivation, and the problem of limited production in the difficulty of finding people willing to sacrifice work and deprivation, part for work, and part for refrain from consumption (sacrifice) and provide the capital needed for the production process (Abdul Rahman, 2011).

"Marshall", has discussed factor of deprivation and its concept as a reason for the interest, and preferred to use the word wait (refrain) to express the same meaning, after it became clear to him that the word deprivation undesirable. He defended in his book "The Origins of Economics" about the need and importance of the interest on borrowed capital, attributed the opposition to the medieval and ancient to the lack of clarity of ideas about the nature and productivity of capital.

The Professor "Castle" in his book" the nature and the need for interest", he considered that investment is demand for wait and savings is supply for wait, while the interest rate is the "price tag" It achieves a tie between the two. While "Carver" said in its definition of the interest rate that the price at which achieves a balance between the marginal utility of the waiting and the marginal productivity of capital. The "Taussig" opines that the interest rate stabilizes at a level that makes the marginal productivity of capital brings the marginal amount of savings. "Fisher" In his theory of interest, considered the interest rate is the price of lack of patience to spend income and opportunity to invest, and "Samuelson" that the interest is income in the form of a percentage given as a bonus to lend money(Amory, 2002).

2_ nature of the interest rate: had previously pointed out that the interest rate is the price that pay for the use of capital, and represent the interest paid for investors, and at the same time income for savers. If the money used in investment was sourced from loans, so the interest will take contractual shape or if the source of funds was from direct entrepreneur's investment or through deductions from the total production in the form of profit is distributed, the interest will take implicit shape. Classic did not distinguish between loans for consumption and loans for production, where consumers may be forced to increase their consumption spending when their income do not permit to achieving it, therefore they will be willing to pay a benefit which match their spending in advance(Bassam, 2003).

The money midwife to borrow may be in the form of funds held to offset depreciation the production of capital goods that owned by investors, or be in the form of not distributed profit that kept by entrepreneurs usually in the form of reserves, and not spend this money (internal sources) in the money market, but it is one of the summed up the supply of loan funds in the national economy. Although, used by investors is represents an important part of the total demand for funds available for lending, and do not represent the interest on the loan funds from internal sources contractual interest. While the money that investors demand from

external sources are either be in the form of the sale of shares and bonds, which are part of the investors capital, and in this case the holders of shares are getting a share of the profits of the investment process, while bondholders receive predetermined benefits(Bassam, 2003).

So, the demand for loans may be on a contractual basis with promise to pay a predetermined benefit, and loans may take other divisions, including medium-and long-term loans, which usually represented in the form of bonds or short-term loans. Thus, the benefits may be the result of handling cash loans that can be obtained by banks and other financial institutions, may also be compared to trading and owning stock issued by private financial markets. When the benefits are obtained either from production loans or consumer loans, or return for cash loans or return of transactions in the financial markets, the interest in the foundation linked to two factors are time and risk, which lead to search in the structure of the interest rate (Brooks, 2005).

1.1.2 The interest rate structure:

The analysis of "Fisher" entrance in its treatment of the theory of interest, he was considered one of the first economists who took expectations theory, and this theory is based on analysis of the interest rate structure.

1_ definition of the structure of interest rate: The interest rate structure is intended to change the difference in the interest rate as a result of the difference in time and the accompanying risk. In other words, it is a study to analyze and explain the level of average index (Le Taux D Interet Directeur) that took place around the structure interest rate different varieties loans. The loans and bonds version is not entirely homogeneous, and this difference and contrast due originally to change the rates and the differences that separate them. This means of the interest rate structure shows the relationship between the rate of return and maturity private stock, and often used to compare the rates of return on the securities and bonds that have fixed return and known in advance return, which risk free. Since the government stock free from the risk of default, they always take as a basis for drawing the structure of interest rates in a certain time period, while the stock are non-governmental reserved risks, which may affect the return on these stock (whether in the form of dividends or interest) (Chance, 2004).

2_ Theory expectations rate: if the idea of "Fisher" in 1930 was in its original aims to determine the structure depending on the period for interest rates on the assumption that the

long rate is a function of (relationship) of short-term rates in the expected future. The estimated of implicit term rates and this theory means that the structure of interest rate (return and its relationship with accrual term) interpreted by investors' expectations for short-term of the interest rate, where this theory showed that the long term of the interest rates (back of stock with a long term of maturity). It can be calculated mathematically as the geometric mean of short rates (future and implicit) total period, which are the average ongoing series of interest rates and the average prices of short-term of the interest rate. Therefore, the annual interest rate for a stock after two years can be measured by the following formula (Chance, 2004).

(1 annual interest rate for a period of two years) 2 = (1 interest rate being for the first year) (1 interest rate for the second year in futures)

According to the theory of expectations the return curve or structure interest rate become very important, if hypotheses theory is correct, and it becomes a tool to predict, because it shows the direction of movement of short term rates in the future as happens in the stock market at the present time as it is the basis for pricing interest. This theory set hypotheses including:

- Investors maximize their profits during the period of planned investment.

- There is no time to invest a favorite for another time, where if the stock in terms of the type is equal the investors will not interested on the date of maturity.

In addition, real of the interest rate is like the fixed of the interest rate, the expected rate of inflation helps to anticipate the interest rate structure, and explains the behavior of the current interest rate or in the future. So, the individuals expect a real return on their savings, and this supreme return to exclude the rate of decline of purchasing of monetary power (inflation rate). If the nominal interest rate is less than the rate of inflation (a negative of the real interest rate). The individuals may tend either to increase consumption or make their savings in the form of assets in kind (Real Estate Tools perennial), or to buy foreign currencies relative stability compared to the decline that known by the purchasing power of their monetary (substitution of foreign currency instead of the national currency) (Ben Ali Belazzouz, 2008).

3_ Theory of rational expectations: New ideas have emerged on the theory of expectations by "Fisher" this theory is based on the ideas follow the Swedish School "Vixl" and some of

these economists are: “Lundberg, Lundal) ،Ohlin, Murdell, and Hansan. Also, Hasks (1939), Makil (1966), and Mcilmn(1962).” Where this theory is based on the existence of financial markets and monetary efficient and sophisticated in the advanced capitalist economy can through these markets linking decisions savers and investors' decisions. So, this modern theory of rational expectations based on the concept of market efficiency and responsiveness to change in any new information affecting the request of the money supply, to reflect on the interest rate and the price of stock. If featured data and statistics on investment and savings or growth in the quantity of money begins investors and businessmen in the case translate this new information to make new decisions to buy or sell stocks or borrowing, and accordingly changed the rates in a short period of time are given new information (Chuah, 2004).

The main assumptions and results for the rational expectations of efficient market as follows:

- Must reflect the stock prices and interest rates all the information available that appear in its time. If this information is used correctly by parties of the money market, it will help to estimate interest rates in the future (Ben Ali Belazzouz, 2008).

- Stop the change in the price of stock and the interest rates on unknown information, while already known information is reflected on the return rates and stock prices in advance based on the speed of the market's response to its efficiency in analyzing and understanding the information (Ben Ali Belazzouz, 2008).

- If the formation of expectations related to stocks prices and interest rates in the future through a rational process, these expectations are also used efficiently. So, interest rates are, according to this theory often close to the equilibrium point if an efficient financial market will also reduce the fluctuation of the interest rates by the forces of supply and demand.

- If parties predicted increase market demand for credit (with constant supply) and appeared unexpected announcement that the demand for credit is less, which lead to reduce the interest rates in the future(Chuah, 2004).

This theory is based on the interpretation of changes in interest rates and stock prices in the short term, encountered some difficulties that consisted mainly by following:

- How individuals shape their expectations for the future?

- What is information updated? What is the importance given to each variable?

- How can determine the equilibrium point between the forces of supply and demand balances? Especially that determine the interest rate in the monetary and financial markets is more complex than the pricing of goods in real markets.

1.1.3 Determine the interest rate:

1_ determine the interest rate in traditionalists: According to the quantity theory of monetary the interest rate is determined by the market with savings and investment help. Traditionalists believe that interest like any price tag can be determined by the interaction of supply and demand forces, any supply for capital (savings) and demand for capital (investment). The interest rate is take care automatically to achieve a balance between the demand for investment and the desire to save (Ben Ali Belazzouz, 2008).

The interest rate is also under the influence of market forces at that point it becomes a quantitative investment at a certain interest rate equivalent to the amount of savings at this price. To achieve this the traditional sees the need to provide the conditions and assumptions that summarized as following:

- The perfect competition prevails in the capital market.
- The stability of the national income level.
- The equilibrium interest rate will not be stable unless the amount of money saved is equal to the amount of investment, which mean savings equals investment.
- Everyone aims to maximize its gains and profits.
- Stability schedule time of preference for consumption, which is preference between present consumption and future consumption.
- Stability of central bank policy, or for government to expand lending.
- The demand for money confined on motivated transactions and reserves only.

If the Classic are considered an effective interest rate factor in influencing on the saving and investment decision, though the impact of the interest rate usually happen on investment. While the savings like any other view as an increasing function in the interest rate as the relationship between savings and interest rate is a direct correlation. So that individuals will do difference between current consumption and future consumption based on "the price of waiting," which is the interest rate. They work to reduce the size of their consumption and increase the size of their savings if the interest rate rises, and vice versa. It is also investing like any other show as a decreasing function in the interest rate, where they have opposite relationship, which mean decrease the investment lead to increase the interest rate, and vice

versa. The organizers and businessmen believe that the marginal productivity of capital decreases due to the laws of diminishing returns, and they seek to maximum their profits(Duraid Mahmoud al-Samarrai, 2004).

A - Mathematical expression of the balance of savings and investment; the investment and savings functions in the short period as traditional rule are as following:

Where: Savings (S), Investment (I), Interest (R).

$I = I(R)$ where $0\ I(R)$

This means the first derivative of this function is negative, is an indication that the investment function decreasing in the interest rate.

$S = S(R)$ where $0\ S(R)$

This means the first derivative of this function is positive, which refer that is positive relationship between the interest rate and savings.

When he savings and investment are not depend on the interest rate only, but they are depend on the amount of the income (Y) as well.

On the other hand, the traditional consider the income as fixed amount and it does not change, so the entrance variable of income in this function does not consider as substantially change in the traditional equation.

Assuming fixed income (Y), the equilibrium price instead in the form:

$I(R;Y) = S(R;Y)$ become $I(R) = S(R)$

As the investment (I) is a function of the variable interest (R), and savings (S), is a function of the variable of interest, including that determine the balance in the labor market and the size of operating in the economy gives us the equilibrium level of income (Y), and when income is given, the interest rate (R) will guarantee the equality of savings and investment and there will be a single price for the balance(Duraid Mahmoud al-Samarrai, 2004).

B- Determine the interest rate in chart; the equilibrium of interest rate is determined in intersection of the demand curve on savings (d1) for investment, with savings supply curve (s1), where is the first curve decreasing and the second curve is increasing. So, there will be only single price equilibrium of interest rate, which is a price of (R0). See Figure (1).

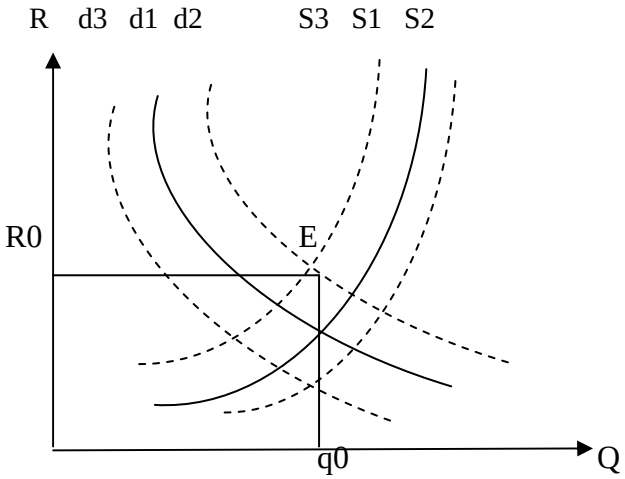


Figure (1-1); determine the interest rate in traditionalists

Traditional theory assumes that changes in the interest rate works to achieve a balance between savings and investment, which is any different between investment and savings, when prevails another interest rate and it is different to the equilibrium of interest rate the results will be certain forces and rebalance automatically again (Faisal Al-Fakhri, 2004).

In other words, if interest rates (R1) increased more than (R0), then the total supply of loan funds will increase more than total demand. With competition between savings that will lead to a reduce the interest rate to the equilibrium price, but if the interest rate (R2) is less than the equilibrium of interest rate, the total demand for loan funds will increase more than total supply. Thus the competition among money seekers would lead to a rise in the interest rate to the equilibrium level (Faisal Al-Fakhri, 2004).

Clearly, the interest rate in the traditionalists thought, is determined on the basis of the intersection of the demand curve on investment and supply curve on saving. However, this conventional analysis to determine the interest rate has faced add-ons and criticism, especially for hypotheses and conditions that the traditional based on to determine the interest rate (Faisal Al-Fakhri, 2004).

2_ determine the interest rate according to the theory of loanable funds: The theory of loanable funds consider as updating to traditional quantity theory of money, which is based essentially on the neutrality of money. The equilibrium price of interest is identifying the intersection of the demand curve on investment and supply curve of savings. So, the traditionalists reached that the interest rate is as basic tool to direct savings to invest, which lead to achieve a balance between savings and investment without taking income of the presumption of firmness at full operation of economic resources. The question that arises in this regard is what are the additions that came in the theory of loanable funds to the traditional analysis? The theory loanable funds try to make the theory of interest rate associated with the credit market related to lending operations and bank borrowing. The demand for cash balances of loanable funds comes mainly from investors in order to finance their productive activity and investment. This demand has negative relation with the interest rate, which means increase in the interest rate lead to decrease investor demand for loans and vice versa (Frenkel, 1998).

While the supply of loanable monetary balances, is represented in which provided by individuals, enterprises and banks in the form of savings that can be provided in the credit market, So, the positive relationship between the interest rate and the supply of loanable money (savings), which means increase in the interest rates lead to increase the loanable funds, and vice versa (Frenkel, 1998).

The relationship between savings and investment, and the interest, according to the following figure (2).

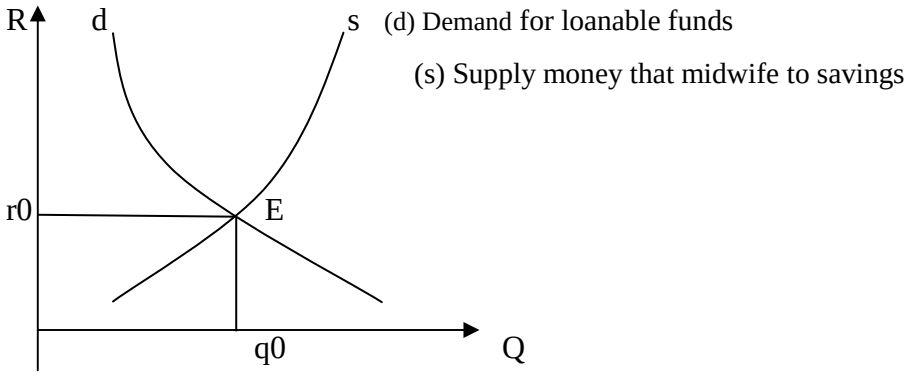


Figure (1-2) determine the interest rate according to the theory of cash balances.

The intersection point of the demand curve on lendable balances (investment) (d) with the supply curve lendable balances(Savings) (s) give us the equilibrium of interest rate (R0), and the equilibrium quantity of funds lendable and borrowing (q 0). When the savings in the national economy at a certain level, and this level cannot meets the needs of investors and businessmen, the central bank can provide the amount of legal currency (banknote) by new extra issuing, which leads to increased money supply, thereby increasing the amount of cash balances lendable (Fred Ragheb, 2010).

The total size of the money supply (banknote) is greater than the amount of monetary issuance by the central bank, because of the increase in deposits of commercial banks, which allows the central bank to make more cash flow through multiplier credit and then the expansion of credit (Fred Ragheb, 2010).

The result that the theory of loanable funds wants to reach is increase in the monetary issuance by the central bank consequent greater increase in the money supply. Then, an increase in cash balances, and this theory believes that it could make increase in the supply of loanable funds, without a equivalent this increase with any similar increase in the volume of savings. However, the source of the increase in cash balances is an activity central bank (banknote) and commercial banks (written money) through the process of derivation money, and also through the expansion of granting credit without any role in these increases played by individuals and business (Fuad Hashim Awad, 2005). When the relationship between the interest rate and supply of loanable funds was a direct correlation, this would divert savings to hoard, which means that savers prefer to maintain their money outside of the banking

system because the interest rate is very low it shown in figure (3) - a -

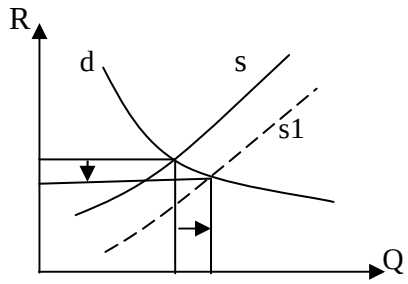


Figure (1-3) - a - the impact of increasing the supply of funds without a change in the demand

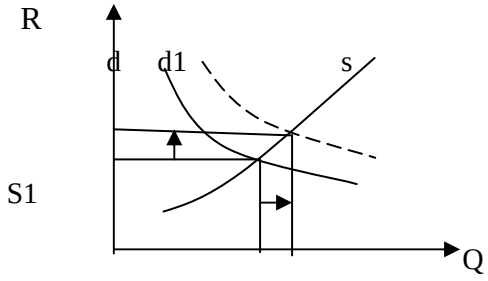


Figure (1-3) - b - the impact of increased demand for funds without the change in supply

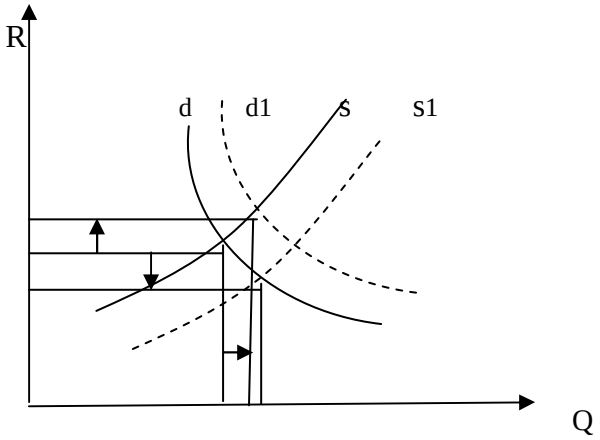


Figure (1-3) - c - the equilibrium of interest rate in the balances theory

In the case of increased demand for loanable funds (investment) with stability of supply, which lead to increase the interest rates as it shown in figure (3) - b - that leads to increase the savings and decrease the interest rates to the level of balance, as it shown in figure (3) - c -.

Through the pioneers of this theory who try to avoid the deficiencies and negatives, which have occurred in the traditional analysis. But these theory traditional monetary and modern classic theories have faced and criticism by many specialists and researchers, specially Keynesians, which lead to increase in the criticism of classic's hypotheses is what make the economic system suffering that it based on these principles, ideas and theories during the two World Wars I and II, and the global depression in (1929-1933) (Galenson, 1992).

1.1.4 Discussion and evaluation of interest rate:

Classical school is a pioneer in the field of analysis of the interest rate, which entering new concepts and analytical tools to contribute in the development of economic thought. Although, the analysis of "Bafrick, Vixl, Fisher, Marshall, Robinson and others" from traditionalists, who saw the interest rate as real phenomenon determined by market forces, supply of savings and demand of investment. Thus, consider the interest rate as indicator that depends upon the creation of the overall balance by influencing savings and investment. The outcome of the traditional theory, is necessary to accept and deal with real and positive interest rate due to several reasons, including the interest rate is the price of deprivation or wait (refrain). The present consumption is better than future consumption, and interest in the future consumption is the price of using capital (Gibson R, 2001).

Keynes has criticized the traditional theory of interest rate, as it does not expression the reality on the right way, where the traditionalists see these is direct correlation between the interest rate and the size of savings, while Keynes sees that the savings depends on the level of income and not on the interest rate through the multiplier of investment, but he also said to raise the interest rate leads to obstruct investment, which leads to decrease the income and savings. Therefore, he builds an indirect relationship between the interest and savings. While Hansen has criticized the traditional theory way to determine the interest rate, and he saw that the traditional theory does not offer a possible solution, and he justify it based on the determine of supply curve of savings would be subordinate to the level of real income, and it cannot know the interest rate until after determine the level of income. At the same time the level of income cannot be determine until the interest rate has known. Note that the savings may be taking without into account the interest rate, but may be interest make savings (hoarding) as it may be savings as negative of interest rate or benefits without saving (Graff, 1999).

Therefore there is no direct correlation between interest rate and response to the amount of savings to its changes. The saver takes two decisions in separate, first is estimated by people who saving from their income. The second decision special savings, that individual prefer to savings in the form of cash or in the form of stock of bonds, or lend to others. So, the price of interest rate does not affect the size of the savings but in a way to keep these savings (Hamid Bouzaydh, 2007).

The interpretation of the traditional concept of interest rate has some mystery, especially they consider the return as dividend wait, or as return of the deprivation that saver result refrain from consumption, note that the individual may receive a savings without risk, also may has deprivation without gets a return, but it may be a negative return (inflation). The decisions to refrain from consumption (savings) may be undesirable for concern that there is a payment of money outside the field of investment, which gradually lead to separate that role of the money from the production(Hassan Awad, 2007).

Keynes sees the theories that consider the interest rate depends on the marginal efficiency of capital they have got reconcile as well. In the equilibrium point the interest rate will equal to the rate of sufficiently marginal to the capital, where it is likely to increase or decrease the rate of financial investment until it reaches the point of equilibrium, but curve sufficiently marginal does not give the interest rate itself and it shows the limits can be paid the production and investment with a certain interest rate(Hassan Awad, 2007).

The traditional thought that decrease spending and increased savings leads to decrease the interest rate and on the other hand increase the investment leads to increase the interest rate, but the analysis of contemporary has different idea from this analysis, which is reducing the marginal propensity to consume is not desirable, as it leads to lack of operation size. The traditional theory of the interest rate, does not give us a plausible explanation for how to get the banks on interest rates for loans granted by these banks, is it as return of saving or refrain from current consumption? Or is it a part of wait and deprivation?. Banks get the interest without saving, due to these considerations that have no related to some of assumptions and justifications made in the traditional analysis (Salah E, 2008).

The classical theory does not take an important role played by central banks in influencing the interest rate, and this happen even in economically developed countries. These countries can control the interest rate and reducing or increasing the interest rate according to the monetary policy, if the countries want to increase the amount of the money they resorting to decrease the interest rate, and if the goal is to reduce credit expansion they resorting to raises interest rate (Salah E, 2008).

Section two: Interest rate in the contemporary economic thought:

This section will be allocated to Friedman's monetary theory, and analyze the theory of interest rate in contemporary monetary thought, and how their importance in the economic analysis.

1.2.1 The general framework of the quantity theory of money contemporary:

The theory of "Friedman" consider as an extension of the traditional economic thought, but in a new ideas and analysis tools more effective and realistic. Theory of contemporary amount of money is a theory that combines the results of monetary analysis of traditional and analysis results of Keynesian, which led to re-new life to monetary analysis, the pioneers and supporters of the theory of contemporary amount of money called "monetarist" (Hussein Ali, 2007).

Also, their analytical doctrine called "monetary doctrine". The quantity theory of money and holders of wealth and projects, consider as the most important contributions to economic thought. Their theory has mainly to renew and revive the theory of "Fisher" and "Marshall" with new additions and analyzing economic variables according to the experimental approach, which based primarily on the statistical analysis, and stay away from criticism suffered by the traditional theory and take advantage of the intellectual and scientific development of these theory (Hussein Ali, 2007).

1- A new theory of demand for money: Friedman has developed the theory of demand for money in 1956. By reformulated quantity theory of money, and he usually refers to "Fisher" in his analysis, which may suggest that his analysis is an extension or evolution to Fisher's analyze. However, the theory of the "Friedman" to the demand for money is closer to the analysis of "Cambridge School" compared to Fisher’s analyzed. Clearly, that contemporary theory is the analysis of the demand for money in way a more extensive of classical analysis (Hussein Hani, 2002).

In this regard, Friedman saw that motivated of the demand for money need requires of study and analysis the concept of wealth, prices and returns from other forms of alternative to keep wealth in the form of money. The contemporary theory of the quantity of money at first glance is the theory of the demand for money, rather than the theory of production, or income, or the price level. To consider the production or income or price there are some other variables should be entered with the quantity theory of money, such as supply for money. The demand for money will stopped on the same considerations that govern the phenomenon of

demand for goods and services, and then Friedman was considered the demand for money is part of the theory of wealth or capital that interested in the composition of the balance sheet or asset portfolio. Also, he has distinguished between the asset holders who represent money for them as a form of wealth and entrepreneurs who represent money for them as capitalist commodity such as machinery and inventory (Lamura Gamal, 2004).

A- The total wealth: the request of holders of wealth and real cash balances depend on the total amount of available wealth. The value of total wealth is a fixed amount in a certain moment of time, and then this represents the limitation on the amount of wealth that distributed between its various elements. Friedman saw that the total wealth is a wealth for all sources of income. So, the wealth consider as inventory, and income is flows resulting from this wealth or inventory. Then, concept of wealth from the perspective of this theory is the capital value of all sources of income, money is part of the wealth, while the other parts, and other components of wealth, they are represented in financial assets and cash (stocks and bonds) - physical assets (natural), as well as human investment (Madani Bin Fame, 2008).

But we know that the total wealth estimates are rarely available, and this one must use alternative indicator of overall wealth, and this indicator is income. So, what is income we use as an indicator of wealth? The current income as it measured by statisticians defect involves a measure of wealth, it may face different type of fluctuations from year to year, then the current income is a measure of the standard short-term, and requires the use of income as an indicator - or alternative - of wealth, but in the long term, which has been done by Friedman in the construction of his model and it called "income Permanent ". The concept of permanent income is an expression of the expected value of the expected income obtained from the return of wealth in the long term. The income can be determined as Friedman said by several factors including: the skill and professionalism, employability profile, future expectations, propensity for consumption. In general the permanent income (income expected) can be determined by three basic elements of wealth, consumer behavior, and interest rate (McKinnon, 2005).

B_ Expected returns of the various assets of wealth: The demand for money associated with the distribution of wealth on the various forms and this distribution is achieved according to the each type of return in these assets. Where the person distribute his wealth to the various assets according to the benefit that he obtained, and this benefit is determined by

income. So, the constituent asset to the wealth and expected returns for each asset based on Friedman rule can be summarized as follows:

Money: it is consider as the most of asset that has non-cash return, which represented comfort, convenience and safety that provided by the holder in the form of cash. The rate of return is measured for the money as follows:

Rate of return for the money = interest rate on the money + rate of change in the purchasing power of money

Accordingly, if money was intended as currency, the interest rate is equal to zero, as the rate of change in the purchasing power of money becomes negative in the case of inflation and be positive in the case of decline of the prices. Since the rate of return on money is negative in the case of inflation, it comes to mind, that this necessarily leads to a decline in demand for units of currency as an asset and a form of wealth in the asset portfolio, this perception is not necessarily to be true, why? (Kamal Bakri, 2006).

Suppose that the bonds as an alternative to money in case of inflation, in this case the interest rate tends to rise, which leads to decrease the real price (market) for bonds, and that causing loss of capital to the bonds holder. If the holders sold it that may lead to loss capital exceed the nominal interest obtained by the holder of the bonds, which makes the rate of return on the bond is negative by more than a negative rate of return on the money (Kamal Bakri, 2006).

Although, the previous analysis approach is clear and preferably to the conclusion that a increase the interest rate on the bonds will lead to decrease the demand for money. However, the Friedman did not want to reach this conclusion because he wanted to reach the same analysis that established by pioneers of classical school, especially Fisher's result that the interest rate does not affect the demand for money, which means that the demand for money non-flexibility to change the interest rate. Thus, the value of the real return of money according to the nominal money units depends on the size of the goods, or the accurate concept on the price level. So, the price level (P) is the critical variable that effective and influential on the value of real return for money and other forms of wealth (Kamal Bakri, 2006).

Bonds: it is consider as wealth assets that fulfill a steady return to its holder in the form of a percentage of the nominal value of the bond (Rb), and this return takes two forms:

- The value of the amount that is delivered annually and it called the interest rate on the bond.

- Change the actual value of the bond during the time period, and this change may be positive or negative.

Therefore, the value of real income support during a certain period, or the value achieved by the obtain bond is equal to the interest rate of bond in the market plus the change in the value of the bond during a certain period (Khaled W, 2005). In the end, the obtain bonds as a form of wealth depends on the rate of change in the interest rate and the general level of prices.

Stock: it is considered as financial assets, which is a form of wealth and the return or flow (income) resulting from its possession may take three forms:

- Fixed return delivers annually, in the case of the stability of the price.

- Change the value of fixed nominal return as a result of change in the price level.

- Change in the nominal value during the time period, which can occur as a result of change in the interest rate or prices.

Friedman called the income derived from shares as interest rate of stocks in the market (Re), and it can be expressed as nominal income resulting from the acquisition of wealth in the form of shares of the following equation:

Real income of the shares over a period of time = interest rate per share +(-) Change in the value of the share during the time period +(-) Change in the value of the price level during the same period.

Natural assets: it means ownership of wealth in the form of material goods, which represent physical capital things like machinery and real estate. Its flow that results from the acquisition of these assets depends on the general price level and its changing rate, which means the return on asset acquisition, and associated with expected change in the value of the price in a certain time period (Mahmoud Hamidat, 2012).

The return can be as; (1/px dp / dt). Where (1 / p) inverted the general level of prices and (dp / dt) represents the rate of price change for the time (T).

Human capital: Friedman said that it is difficult to determining the return on human capital at market prices, but he believes that there is a relationship between human capital and physical capital, where there is always assessing the wealth of human and non-human in the list of assets, and from there it can be coefficient between human capital and material wealth.

The coefficient ratio between material wealth to human wealth can be measured as (W) Where the total wealth is: W = Y / P

Return of human capital = total wealth x coefficient ratio between material wealth and non-material wealth; where (w) is the return on human capital (Mahmoud Hamidat, 2012).

Friedman believe that the person should not distributed his wealth among the various assets of its constituent depending on revenues, but governed as well as other considerations relating to tastes and order of preferences. Then, the quantity theory of contemporary has entered the tastes and order of preferences in the analysis of the demand for money and can be symbolized as (U) (Mahmoud Hamidat, 2012).

2 - **Aggregate demand function of Friedman:** Friedman tries to answer a question that is, why individuals prefer acquiring money? In his answer to this question, he did not analyze motives tenure of money (demand for money) as Keynes did, but he analyzed the determinants of the demand for money in the context of the theory of demand assets and decide which factors influence the request of any asset. The theory of asset request decided that the demand for money should be a function of the resources available to individuals (wealth) and expected rates of return on their assets compared to the expected return on the money (McKinnon, 2006).

After we explained the forms of wealth and return of each category, and we have given symbol of income for every form of wealth with the specific type, it can give a mathematical formula of Friedman's demand for money function in the following equation (1):

M = f (P, Rb, Re, 1 / p. dp / dt, W, u) ..... (1)

The demand for money function (No.1) is based on the basis of currency units, and not on the basis of valuation and real value. So, the equation of demand for money function can be based on the basis of the demand for real balance, and that by multiplying both sides of the equation to (1 / p) and so in order to convert the amount of money to the real balance (McKinnon, 2006).

If the quantity of money = return for different elements of the wealth.
The amount of money / price = output = function for a real change in return elements of the wealth.
M / P = f (Rb, Re, 1/P.dp/dt, W, U) ..... (2)

Friedman, the demand for money concept related with wealth, and where the money continued, the cash demand associated directly to the idea of wealth, and permanent income indicator of wealth and unlike the idea of current income commonly used in the economic analysis of traditional. The permanent income (which can be expected as average income in the long term) is characterized by impaired short-term fluctuations, which means the demand for money as Friedman said will not fluctuate much with the movement of the economic cycle (McKinnon, 2005).

Equation (1) expressing demand for money function can get to the quantity theory equation by multiplying the both sides of equation to the inverted party of income (1/Y). Where the amount of money (M) is equal to a change in the function returns for the various elements of wealth, and multiplying both sides of the equation No,1 to (1/Y) (Michael Juman, 2010).

The quantity of money (M) / income (Y) = change in return function for the various elements of wealth / income

Since the function of the change in the elements of wealth / income = 1 / average trading speed of change in the elements of wealth

when M / Y = 1 / average speed rotation change in trading revenue for elements of wealth

If income (Y) = average speed of rotation change in trading revenue for elements wealth M x

Friedman has expressed that the quantity theory by the following equation:

M / Y = 1 / V (Rb, Re, 1 / p .dp / dt, W, U) ..... (3)

From the equation No,3 the Friedman reached to the final equation for quantity theory.

Y = V (Rb, Re, 1 / P. dp / dt, W, U). M

(V) the speed of rotation of income.

Almost in the same way the function of demand for money to entrepreneurs (2) can be calculated.

3 - **The difference between monetary theory and traditional monetary theory based on Friedman:**

There is no different in his analysis of the quantity theory of contemporary money about the monetary traditional theory, he agrees that the demand for money will change directly and proportionately with the level of prices. Also, he agrees that the permanent income (expected) specified determine of demand for money, but he went further when he made the demand for money not only for the income and price. So, he consider it as a function of the real interest rate and the rate of increase in prices and the changes in permanent income and the level of prices lead to changes in the demand for money in the same direction, while the changes in

the interest rate and the rate of increase in the price level to the change in the demand for money function in the opposite direction. Although, the theory of contemporary monetary in opinion of many economists is nascent the theory of traditional monetary, but in the form of more expanded. However, there are some fundamental differences between the two theories, where the theory of exchange for "Fisher" and "Marshall" on the basis of the principle of presumption of the existence of the case fully operational (McKinnon, 2005).

The theory of contemporary monetary is based on the lack of a full operating assumption, which means the volume of production is a variable, not a fixed amount, as seen by traditionalists. The traditional analysis is based on the principle of each increase in the money supply leads to a direct increase in the price level without affecting the volume of production and income due to assume full operation of the economic resources. Friedman believes that as long as the economy has not reached the level of full employment, any increase in the quantity of money will result in an increase in operating and income. The theory of contemporary monetary is consider as theory of treatment that able to treat the economic imbalance on the basis of rearranging existing economic variables, through a new analysis approach to explain the movement of economic phenomena (McKinnon, 2005).

1.2.2 Interest rate in the contemporary monetary analysis:

After we dealt with the quantity theory of money from several aspects, it is important that we analyze and display the role and the nature of the interest rate within the concept of the theory, and know the impact of the interest rate on other economic variables, before we discuss the concept of interest rate in modern theoretical framework (Magdy M. Shehab, 2012).

1 - The concept of interest rate: at first glance seem that the theory of the interest rate has not received it share of attention and analysis in the monetary doctrine, but that persist in the demand for money equation when "Friedman" find it involves three types of interest rates, which are:

_ The interest rate on the bonds (Rb).

_ The interest rate (return) on shares (Re).

_ The interest rate (R).

Generally, the price of interest rate is the average of interest rate on the bonds and shares, in addition to the return that corresponds to human capital and physical capital (Rc).

So, the interest rate is R = Rb + Re / 2 + Rc

While the interest rate (return) on the money in the quantity theory of money contemporary is expected the rate of return for the money, where it can be measured as follows:
The interest rate of money = real interest rate of money + percentage change in prices. We conclude that Friedman has expanded in its analysis of the concept and the form of interest rate and its related to the revenue generated from the various forms of wealth (Magdy M. Shehab, 2012).

2_ determine the interest rate: Friedman has distinguish on others in the method of determining the interest rate, terms used capital theory as the basis for determining the interest rate, where the demand for capital is a function of the variable interest rate and the relationship between them is negative relation. While the supply for capital is a function of the variable interest rate, and the relationship between them is a positive relation (Madani Bin Fame, 2008).

What Friedman has been added in the search for equilibrium of interest rate is a difference between two cases, which are equilibrium and non-equilibrium. In the case of equilibrium the demand curve for capital is intersects with the supply curve for capital supply and that leads to get the equilibrium quantity of the interest rate and the amount of capital and stable over the long term. In the case of non-equilibrium through to dealing with the practical reality, the amount of capital cannot be in equilibrium. So, there is question of how the interest rate will be determined in the case of this non-equilibrium? To answer this question Friedman made different between the two cases, if there is or there isn't incentive for the production (Madani Bin Fame, 2008).

In the case that there is no motives to increase the production, if the owners of investment projects does not have an incentive to increase or change the amount of capital in any level of the interest rate, then the equilibrium price in this case will be determined in the market, but at a low level, which pushing the investors to borrow and at the same time will not push savers to lend. In the case that there is a motive of production, if the regulators and businessmen to enter the means, machinery and equipment of new technology that will lead to increase in the amount of capital, and this decision will lead to a rise in the interest rate, and forcing savers to increase the level of their savings to lend. While it leads the regulators to refrain to increasing the amount of capital so as not to encourage increasing the interest rate (Magdy M. Shehab, 2012).

This meets with desire of the wealth owners, and they must have other sources of capital to enable them to obtain the amounts they already paid. In this case, the community would be in stability, but it will be heading to collapse. Friedman mentioned that the negative balance of interest rate is rarely to happen(Magdy M. Shehab, 2012).

Namely that there is equilibrium resulting from access to a case of full employment, and this balance will continue for a long time.

The Friedman analysis is ended to the following:

- In the case of the non-monetary economy (natural) can be imagine negative balance of interest rate.
- In the case of the cash economy cannot be imagine negative interest rate of market. Finally, it cannot occur a negative balance of interest rate due to the simple reason that it cannot reach the level of balance resulting from full operation.

1.2.3 The importance of the interest rate in the contemporary monetary:

The economists mentioned the importance of interest rate as an effective tool in the economic life in the nineteenth century and early of the twentieth century, and due to the prosperity of the world depended largely on the activity of England trade in that period. So, economic changes were hypersensitive to the interest rate, increase in the interest rate at that time was enough to event deflationary cycle, and the long-term lending was quickly responds to any movement in interest rates in the London Stock Exchange. However, the degree of response to change in the interest rate did not stay that way as a result of changing economic conditions. The price of interest is no longer an effective weapon supervision of credit and monetary affairs in most cases, and the monetary authorities believed that it must use effective tools different to the traditional tool (Muhammad G, 2004).

Monetary policy that both England and America have resorted in the years of the global recession did not come with required purpose, and it did not work to stimulate investment in spite of this states paid attention to increase credit by reduction in the interest rate. This prompted the thinkers of the Chicago School to non-conviction to this analysis, which leads to increase their doubts about the importance and role of the interest rate are the results of research and studies carried out by a group of economists researchers especially Oxford University where most of results showed that the interest rate is a weak tool in building economic models, therefore it is less effective in economic analysis and interpretation of economic variables and phenomena (Mohammed Saleh, 2004).

To analyze and discuss this idea from the perspective of contemporary monetary theory, first we will show the relationship between the interest rate and the demand for money at Friedman, then we will exposed to interest rate index in the framework of this theory.

1 - The relationship between the demand for money and interest: Many economists especially monetarists reject that the demand for money has more flexibility compare to change in the interest rate. Friedman was based on statistical studies especially in the United States of America and he believes that there is no ideas at experimental school that impact of the interest rate on the real demand for money, but no agreement on whether there is a close relationship in the long or short term between the interest rate and liquidity preference. The result derived from the function of demand for money at Friedman determine by three basic variables: wealth, opportunity cost to keep the money (revenue) and tastes and order of preferences. It is known as previously mentioned that the interest rate includes different concepts. So, the interest rate even it was not the primary variable in the equation it cannot be denied or ignored its impact on the function of demand for money (Mohammed Saleh, 2004).

Friedman does not want to separation between the monetary sector and the real sector. So, he believes it should not look to the interest rate on that monetary phenomenon only that determined on the basis the supply and demand for money, but must be considered to interest rate as it depends on real indicators. The result reached by Friedman is that way out the interest rate of the demand for money function will allow to happening secession and break undesirable between the economic analysis monetary and real economic. Moreover, there is negative relationship between the interest rate and the demand for money, although this relationship is not very important it cannot say that the demand for money has more flexibility and great sensitivity than the interest rate (Mohamed M, 2006).

2 - The impact of monetary policy on interest rate: Friedman and his followers of monetarist believe that regulate the amount of money is only can affect entirely on the economy, while the other tools of traditional economic policy (particularly fiscal policy) just result to redistribution incomes between the various sectors. Therefore, he finds that the monetary policy cannot work on the installation of the interest rate at a certain level, he considers the assumption retain monetary authorities at low level of interest rates leads to sell financial assets at a high price, and low return, as well as increase the quantity available reserves to banks, which would lead to rise the amount of bank credit, and then increase the money supply (McKinnon, 2005).

The bank believes that increasing the amount of money due to the lower interest rate, but economists believe that this is due to the cash preference. So, increase money very quickly leads the interest rate to be at a lower level than the specified level. This is the turning point at Friedman where the continued increase in the money supply will be accompanied by increased spending. Moreover, under the influence of increase of investment and spending will lead to increase the income and the demand for loans. Which leads to a reduction in the amount of real money, and first impact will cause to reduce in the interest rate, but with the continued expansion of monetary growth it will lead to increase in the interest rates. Therefore, the reason that makes the monetary policy not successful to stabilizing the interest rate at a low level or high is because it always goes to the opposite level (McKinnon, 2005).

3 - The interest rate is misleading indicator: Friedman has reached in the previous analysis that it cannot install the interest rate, because of the related between interest rates and quantity of money. So, the increase in the interest rate means expansion in monetary policy with concept of the rapid growth of the quantity of money, while the low interest rate means a reduction of monetary policy with concept of slow growth of the quantity of money (Graff, 1999).

Based on the above, the monetary authorities can guarantee low level of interest rate to follow contraction of the monetary policy. So, at first it seems in the opposite direction. Also, the monetary authorities can guarantee the higher level interest rate to following an expansionary of monetary policy, but the interest rate will move in the opposite direction. Therefore, it concludes that the interest rate whether contraction or expansionary monetary policy is a misleading indicator. In the following scheme it shows that the interest rate is misleading indicator (Graff, 1999).

High interest rate = growth in the quantity of money = expansion in the direction of monetary policy to lower interest rate

To maintain a high level of interest rate Inflationary monetary policy

Low level of interest rate = slow growth in the quantity of money = contraction in the direction of monetary policy to high interest rate

To maintain the low level of interest rate Contraction in the monetary policy

Assessment of contemporary monetary theory:

The basic observation on demand function at Friedman is related to wealth, where he considered the main source of basic change in the function of the demand for money, while neglecting other variables as change in the interest rate. The expected or permanent income as flow of wealth is at the same time returns offered by various assets consisting of wealth. Although, most of these returns depend on the interest rate, then his assumption to stable or reduce the interest rate does not correspond to the reality, but he returned in recent acknowledges that interest rate can be considered as a element of the income components. Friedman assesses through his equation that positive relationship between real wealth (income) per capita and the request for money, which means increase in the wealth lead to increase the ability to retain cash as a form of wealth. The relationship between the demand for money and the opportunity cost to keep them is negative relation. So, the cost would increase when the returns as a result of hold cash rather than use in the purchase of stocks, which leads to increase the demand for money (Hamid Bouzaydh, 2007).

In addition, the role of the interest rate in the monetary analysis of contemporary despite that Friedman has expanded and related it in his equation to the investigator returns as different form of wealth, but he considered it as limited variable impact. However, the demand for money has weak flexibility for variable of the interest rate, as he considers the interest rate as misleading indicator. So, the monetary authorities cannot install the interest rate at a low level or high, where the automated movement of the interest rate and the amount of money working in the opposite direction (Mahmoud Younis, 2007).

To determine the equilibrium of interest rate, the theory of modern monetary has adopted same style as the previous of monetary theories, where they are determining the interest rate at intersection of supply curve for capital with demand curve for capital. So, we find that there is a relationship in determining the interest rate within the various theories, but differ according to the entrance of each theory. Friedman turned to the adoption of two key factors movement and direction of the interest rate to the equilibrium level and they are: a production incentive, where the interest rate increase when it increase and vice versa. The second factor is the tendency of individuals to save or invest. Increasing tendency for investment leads to raises the interest rate, and increase the tendency for individuals to savings leads to reduces the interest rate (the same result reached by the traditional analysis) (Mahmoud Younis, 2007).

Section three: Explain the behavior of interest rates in the Keynesian analysis:

1.3.1 Interest rate theory "Keynes":

After Keynesian has criticism the theory of traditional especially what has related to the demand for money, where quantum theory of the demand for money confined on the transactions and reserves, and there is no way for hoarding cash or used in speculative purposes. Thus, the quantum theory may exclude permanently and indirectly role of money in bringing balance in the market of goods and services, and it was only sufficient by Lasai's law. Keynes began his analysis for the reason that could someone prefers to keep his/her wealth in form of tenure that does not bring him any interest or return. By entrance the uncertainty factor for the interest rate in the future the form of the acquisition money would be more important. From this point we will observe the importance of cash preference to building a new theory that have crucial implications for monetary and economic analysis. Before getting into the details it has to be referred to the concept and nature of interest in the Keynesian analysis (Yoshikawa, 2001).

The concept of interest rate at Keynes is not a part of saving or deprivation and waiting, or it is the price of the preference as traditionalists believe, but it is the price waiver for cash, or it is the price of non-compactness. Therefore, Keynes define the interest rate as the price that must be paid induce holders of the funds for a waiver of cash assets in the form of cash or access to other assets carry a greater risk. So, the interest rate is the price of lending money. This about the concept of interest rate, but for determining the interest rate Keynes believes that the interest rate is a monetary phenomenon and not a real phenomenon as it assumed by traditional theory. Its price can be determined in the monetary of market on the basis of interaction monetary factors; it is supply and demand for money. Also, he believes that acquire in cash as savings do not result in any return. The interest rate is the price of a balance between the desires to acquire wealth in the form of cash. Then, the first factor to determine the interest rate is the money supply and the second factor is the cash preference (the demand for money) (Yoshikawa, 2001).

1.3.2 Theory of saving, investment and income:

1 _ relationship between investment, savings and income: Keynes has moved away in his analysis to the traditionalists' analysis in the interest theory. The traditionalists have treat with this subject of entrance quantity theory of money. While Keynes was based on the national income in his analysis of the concept of investment, and to clarify the relationship between investment and savings income, is appears in the following equation:

Income = value of production Y = Q..... (1)

Income = consumption + Investment Y = C + I…... (2)

Investment = income - Consumption I = Y - C..... (3)

Income = consumption + savings Y = C + S..... (4)

Savings = Income - Consumption S = Y - C….. (5)

From the equation (3) and (5) we find investment = savings S = I

Clearly, that Keynes did not add any new to the traditional analysis, where he was handed something of mystery that the total savings is equal to the total investment, and the difference between them was unclear and without results, and any increase in savings lead to an increase in investment, but Keynes added in his theory which is the dependent and independent variable. Although, the traditional theory has concluded that the savings has directly effects on the investment, while Keynes has reached different result which was the investment automatically leads to change the savings through its impact of a change in income through investment multiplier (Wall Street Journal, 2006).

2 - The theory of multiplier investment: the Keynes' theory in its general sense that the change in the quantity of money affects investment, which determines the level of income, production and operation through multiplier. This hypothesis is based on the consumption function information and specific, and hence the level of income. Therefore, it depends on the size of the investment amount. If the investment was at the large level (at a low level of interest rates) the size of the income is high and vice versa. This mean the saving is a negative factor, as it leads to a lack of demand for goods and services. So, if this negative factor does not compensate by positive factor which is investment, the total demand will be less than the size of total supply, thereby lead the economy to enter deflationary cycle, and to lower operating level and national income. If the investment is greater than the savings, the volume of production and operating level will increase, but if they are equal the level of operating level and income will remain in the steady and at the level of balance (Rebick, 2005).

The idea of multiplier at Keynes is based on comparing the relative sizes of the relative increase in investment with the overall increase of final income. Or in other words, the multiplier is the number of times multiplied by the increase in investment events reaction to consumption, which ultimately leads to increased national income. As intended multiplier investment a numerical laboratory which shows the extent of the overall increase in national income and generated by an increase in investment. Marginal propensities to consume plays a

key role in determining the value of the investment multiplier, and this idea can be illustrating mathematically do the following; the multiplier of investment is (T), an increase in investment (d I), an increase in income (d y), and an increase in consumption (dC). When multiplier of investment depends on the marginal propensity to consume and where the marginal propensity to consume is measured by the ratio between the change in consumption (dC) to the change in the income (dY) (Robinson, 2000). The relationship between the multiplier and the marginal propensity to consume is a positive relationship, which means increase in the marginal propensity to consume leads to increase the multiplier and vice versa. Moreover, the multiplier is inversely proportional to marginal propensity to saves. This can be illustrated mathematically as follows:

The multiplier is $dY = T.\, dI$ …… (1)

$T = dY / dI$ ……. (2)

where $Y = C + I$

$dY = dC + dI$ …….…….(3)

$dI = dY - dC$…….....…….(4)

divide both side of equation (4) on dY we will get the following equation:

$dI / dY = 1 - dC/dY$……...…(5)

by divided the equation (5) on 1 we will get the following equation:

$dY / dI = 1 \;/\; 1 - dC/dY$……...……(6)

The investment multiplier: marginal propensity to consume -1/1 =T

Since the marginal propensity to save = 1 - marginal propensity to consume

The investment multiplier: marginal propensity to save / 1 =T

That multiplier equals to inverted marginal propensity to save.

The study shows the importance of the theory of the multiplier as it allows us in general to know if the various projects have increase their spending on investment. It is expected that the consequent increase greater than the production, income and employment, as we can know the amount of the increase in investment and marginal propensity to consume (or marginal propensity to save). The other different point between the Keynes and traditional in this subject is that traditional consider saving and investment as function to the variable of the interest rate even if they have negative relationship, while Keynes meant the demand for investment is just like what it meant by classic about the demand for capital, but the

difference is clear when we talk about the propensity for consumption and save. The classic consider the interest rate factor effective and specific impact on savings, which means changing the curve that expresses the relationship between interest rate and the amount of savings, or change the demand curve at known or fixed level of capital and income, or when both curve may change, the new interest rate will determined at the point of intersection of the two new curves (Osama M, 2008).

This perception and interpretation is incorrect at Keynes where he assumed the stability of income is completely contrary to the possibility of independent a change for each of the two curves. Traditional theory assume that change in the demand curve on capital does not lead to a change in the development of the supply curve, but raise the interest rate will become more desire to savings achieved parity between the demand for capital and the savings at this high level of interest rate. In other words, the traditional theory deems it is necessary to the stability of the income level despite the change the size of the investment, which did not accept at Keynes' assumption. Where his theory considers that the change in the investment demand curve leads to a change in the display mode due to change in income as a result of change investment through the multiplier effect, and it is believed that the savings is a function of the variable income and it is not a variable of the interest rate, while investment is a function of the interest rate variable (Osama M, 2008).

1.3.3 Money Supply:

The meaning of the money supply is the amount of money available in a certain period of time, which is usually determined by the monetary authorities, or it is the amount of cash and all kinds of means of payment. Then, it can be discrimination in the money supply between three basic of concepts:

1- The narrow concept (M1): it knows as the total means of payment includes a compulsory of banknote, assistance money, and current deposits, all of these are cash assets that extremely liquid.

2- The broad concept (M2): it knows as local liquidity, and includes (M1) plus short-term savings deposits at banks and it has less liquid than (M1).

3- The concept of domestic liquidity (M3): include (M2) to the domestic liquidity plus government deposits with banks like bonds and treasury bills, which are less liquid than (M2).

The result that the money supply aggregate consists of banknote issued by the central bank and money assistance (paper and metal) that may be issued treasury or central bank. In

addition, the written money (banking) caused by commercial banks or money deposits (quasi-money), which represents the largest proportion of the size of the money supply in modern societies (Obstfeld, 2004).

The supply of money (amount of money) is determined by the monetary authorities, according to several factors, including the impact of quantitative monetary price level (inflation), and the stage of the economic cycle (if economic activity), growth rate and the level of economic well-being, which all of variables are stronger than interest rate. Accordingly the central bank directly influences the size of banknote (paper money). Also, affect the size of the written money issued by commercial banks through several tools. The most important change in the rate legal cash is open market policy, the discount rate, etc.... So, to influence multiplier credit, if the monetary authorities depend on expansionary of monetary policy, the bank will reduce of the cash reserve ratio to allow the commercial banks to expand in granting more credit, but if the goal is to pursue a contraction policy, it will raise the cash reserve ratio imposed on commercial banks, which limiting commercial banks' ability to issue more banking money (reduction of credit expansion) (Obstfeld, 2004).

Therefore, the determining the amount of money due to the monetary authorities and its totally independent from the variable of interest rate. In the banking systems of contemporary as it consider the quantitative monetary is inelastic to change of the interest rate, which means the money supply is inelastic for change in the interest rate and justifies the money supply curve parallel to the axis of the interest rate - see figure (4-b) (Omar Mohiuddin, 2009).

1.3.4 Money demand (liquidity preference):

Keynes means the liquidity preference is motives that compel an individual (project) to keep wealth in liquid form (cash), and expressed motives psychological liquidity, which is the desire of economic in possession of cash. Since it is represented the only asset that can be converted to any other asset in the shortest duration and without loss(Omar Mohiuddin, 2009). Keynes believes that motivated of the demand for money (liquidity preference) due to three purposes:

1 - Defended transactions: it is exchanges that desire of individuals to keep cash liquid to do expenditures ongoing during payments; it is the period that the person earns his normal salary. The desire of projects to keep cash money to pay the operating expenses and workers' wages and necessary expenses to process projects as real estate leases and others.

This factor consider as more common than other factors that drive the demand for money, where the main factor that motivates individuals and projects to maintain cash balances liquid. The resort to keep the amount of the cash balance for the purpose of transactions is related to scope of balancing over time between expenditure flows and income flows. The factors that determine the amount of cash balances that are kept for the purposes of transactions in normal circumstances is the general price level, and the level of employment. However, the important factor and basic upon which the demand for money in this purpose is income, as other factors do not change in the short period of time. The demand for money to the purpose of transactions is a function of the variable income as (Y) income and (dT) the demand for money to the purpose of transactions dT = f (Y) (Fred Ragheb, 2010).

2 - Defended reservists: it is (caution) desire of individuals (projects) to keep money at liquid form to face unexpected emergency, such as sickness and unemployment, or take advantage of unexpected opportunities like low prices for some commodities. As projects are aimed at this type of action to face what might happen from emergency or disaster requiring additional expenses related to production or to take advantage of opportunities bargains. The demand for money depends on the purpose of the reserve on the income level and other factors that are less important such as the nature of the individual and mental conditions surrounding the degree of uncertainty prevailing in the community (the crisis) and the degree of growth and regulation of capital. The basic factor that this the defended reservists depends on is the level of income, as other factors usually do not change in the short term, so the demand for money by motivated reserve is a function of the variable income (Fred Ragheb, 2010).

Where (dp) symbolizes the demand for money to reserve dp = f (Y)
Usually the demand for money of the purpose of transactions called reserve the term of the demand for money balances working or active, it can be expressed mathematically, where (dA) Labor demand for money, we get dA = f (Y)
This means that the demand for money motivated transactions and reserves, depends only on one variable which is income. It can be expressed by mathematical relationship between the demand for money motivated transactions and reserve (dA) and income (Y) in figure (4-a) As the function of the demand for money in context has nothing to do with the interest rate we can express the relationship between the demand for money and the interest rate as shown in figure (1-4-b) (Fred Ragheb, 2010).

The demand for money labors is represents (dA) in line parallel to the vertical axis (the interest rate), which reflects the lack of elasticity of demand for money for that purpose, and thus lack of sensitivity to the interest rate. In fact, the neglect of the interest rate as a determinant of balances transactions and reserves and the distinction between these stocks that depend on income only and balances speculation that depend on the interest rate, as the view of many economists, including: Baumol, Hansen and Tobin (Fred Ragheb, 2010).

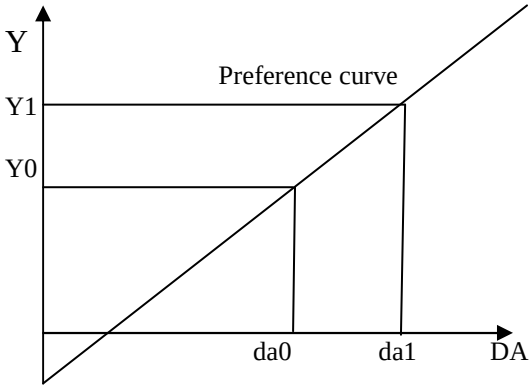


Figure (1-4-a); Curve of cash preference for the purpose of transactions and reservists

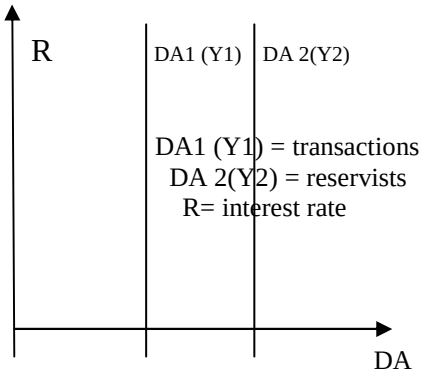


Figure (1-4-b); Curve shows the relationship between the interest rate and the demand for money motivated and reservists transactions

3 - The defended of speculation: Keeping money in the form of cash is not a development of the traditional functions, but of innovation Keynes money held for speculative purposes due to the function money as a store of the value, which is the traditional theory did not care about this point, on the grounds that defended the demand for money is limited only to the purposes of transactions and reserves. The retention of money represents to drive speculation a cash balances in liquidity allocated to speculate and make profits (Fred Ragheb, 2010).

Individuals retain a cash balances in the banks to wait for opportunities that allowed them to make a profit as a result of the change in the prices of securities on the stock market (financial markets), where its value change to high or low level according to changes in interest rates in the money market. Moreover, the individuals prefer to wait for long time to get the greatest value of interest in the in the future.

The demand for speculative money will be highly flexible for the change in the interest rate, see figure - (4-c). So, the negative relationship between the function of demand for money of the purpose of speculation and interest rate, and can be shown as following; (d s) the demand for money for the purpose of speculation, we get the following relationship: ds = f (R)

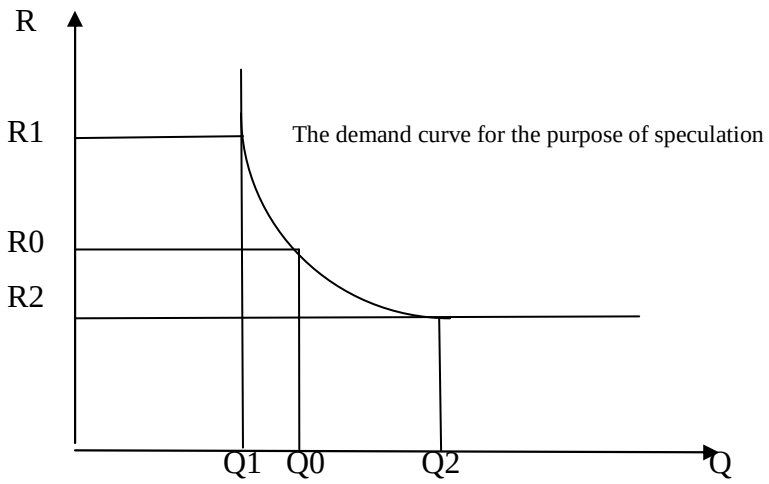


Figure (1-4-c); the demand curve for money for the purpose of speculation

Figure - (1-4-c) illustrate that at a very high level of interest rate is heading individuals (projects) to invest all the money in their possession to buy bonds, then the demand for money of speculative motive at this level is inelastic and it expressed by straight line applicable on the vertical axis. When the interest rate is very low, as is the case of (R2) the agents economic preferred to keep their money in the form of liquidity, so the demand for money then Infinitely elastic for the interest rate, so the curve defended speculative line parallel to the horizontal axis. This line shows that it does not finds individuals and businessmen any benefit from the investment of their liquid assets in the purchase of bonds, a situation was referred by Keynes as (trap) liquidity (the door of Liquidity). Which he is usually based on in his interpretation of effectiveness of monetary policy in the depression period. Notes that the function does not decrease after a certain interest rate; this has been question, why the interest rate is not reduced to zero? The answer to this question by many economists and Keynes was one of them, where he sees that the interest rate should not come down at a certain "minimum" because money and bonds are not perfect substitutes (Kandil, 2003).

1.3.5 Theoretical expectations for interest rate:

Keynes deems if the values of bonds was higher price than what the individuals was expected in the future, and they will start to sell their bonds and keep its price in the form of cash is better than selling them at low price as a result of expected and they loss in the future. In the case of expected decline the value of bonds in relation to the future, they will allocate a part of their cash incomes to buy more bonds in order to sell them in the future and achieve the expected profits from high prices. So, the fluctuations in the demand for money depending on the motive of speculation in the market of the most important reasons that lead to fluctuations

in interest rates, and considered speculative defended as a function of the interest rate as their relationship between them is negative. Keynes considers that the basic requirement for achieving this kind of speculation is not sure the movements of interest rates. Therefore, the speculator does not know the future value of the interest rate on the bonds, and then he does not know the exact price that he can sell his holdings of bonds (Mahmoud Hamidat, 2012).

If the movement of the interest rate was known in the future there would be no motive to keep the idle of money, and not invested in the stocks, but if the change of those rates was not sure in the future that can be as justify keeping the money speculative.

The speculator has choice between two types of assets they are guaranteed assets which are money, and unsecured assets involve certain risks which is bonds, and this choice is determined by taking into account the expectations of interest rate change. The economic indicator will separate in order of selection, it's prefer the secured assets which is a money broadly when thought that the interest rate will rise, and then the bonds price will decline, and choosing little of money less when thought that the interest rate will decrease, and increase in the bonds prices, which allows to gain capital profit by the owned bonds. Keynes raises the question, what is the variable that determines when and how the interest rate will change? To answers this question, the crucial factor to this question is the current interest rate. He has explained that there is at every moment a certain extent it is believed that it represents a natural border changes in the interest rate. It is considered by economic factors as price plain or reasonable of interest rates (Mahmoud Hamidat, 2012).

So, everyone will conduct their forecast in future by comparing the current price and the price for the long period of time (Regular Price), and determines their chosen between money and bonds. If the current interest rate is considered high for the average price, the individuals will expected to decline the interest rate in the future (Khaled W, 2005).

However, changing in the interest rate resulting expectations degrees in optimism about the future, some of them expect decline the prices of stocks, and then increase the interest rates, see figure (5).The Keynes' analysis conclude when the interest rate reach high level compare to normal rate that will lead the individuals and enterprises to invest their money in buying bonds, and they wait to a decline in interest rates in the future, which allows them to make a profit from the speculative process and vice versa (Khaled W, 2005).

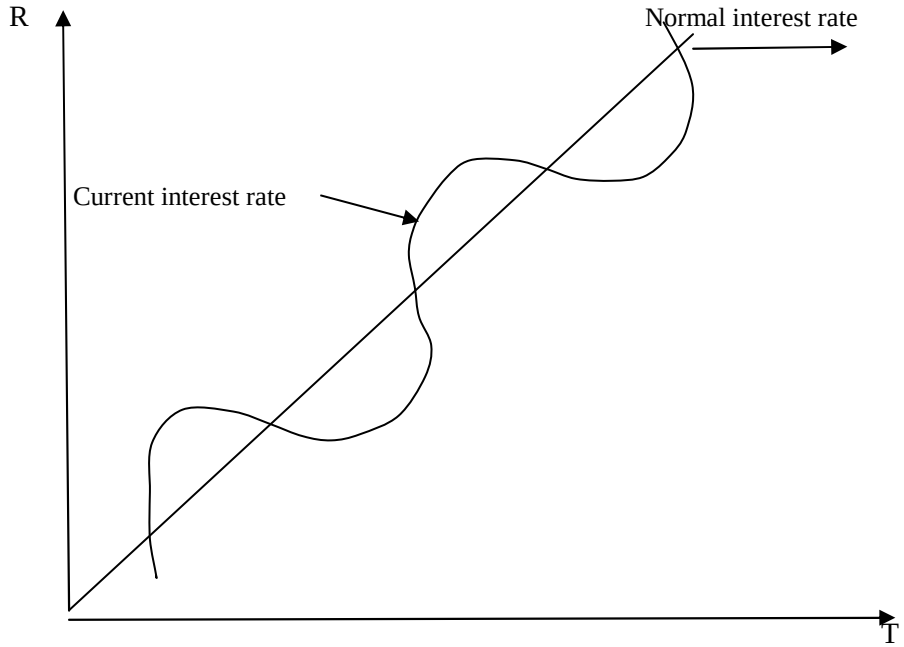


Figure (1-5); the current interest rate curve fluctuation around the normal interest rate

1.3.6 Determine the equilibrium interest rate:

Before explain how to determine the equilibrium of interest rate, it is necessary to give the mathematical formula to the total demand for money.

Demand for money function motivated transactions and reservists:

$dA = f(y)$

The function of demand for money of speculative motivated:

$ds = f(R)$

So, the function of total demand for money (DG) as follows:

$dG = dA + ds$

Where $dG = f(Y, R)$

The graphical representation of the demand for money is shown in figure (6).

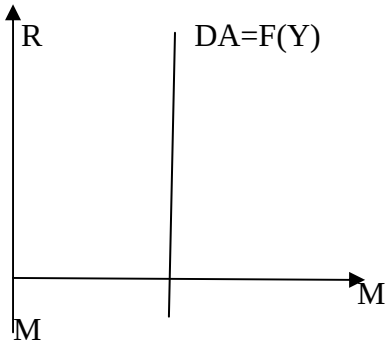


Figure (1-6-a):
The curve of cash balances for transactions and Reserve

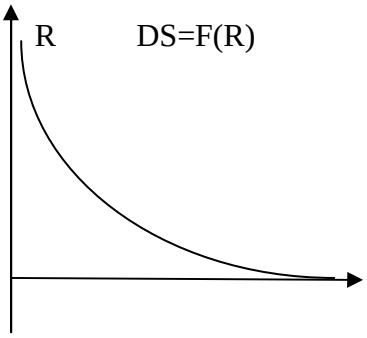


Figure (1-6-b)
The curve of speculative motivated

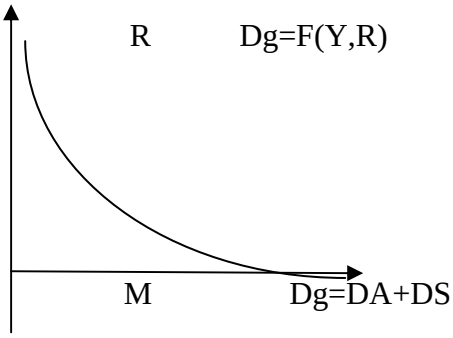


Figure (1-6-c)
The curve of total demand for mone

As for how to determine the equilibrium of the interest rate by Keynes' analysis, it is determined at the point of intersection the curve of total demand for money (dG) (The liquidity preference curve) and the curve of supply for money (OO), as shown in figure (7).

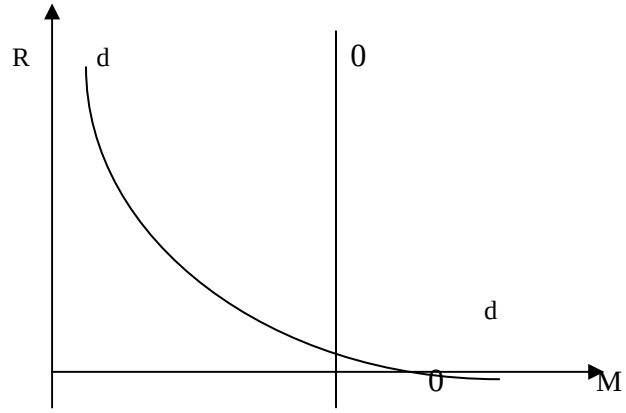


Figure (1-7); the equilibrium of interest rate in the theory of monetary preference

1.3.7 The contrast between my theory "Friedman and Keynes" to the demand for money:

The Friedman analysis to the theory of the demand for money has more comprehensive compare to Keynes analysis. So, it can be briefly explain the most important differences between Friedman and Keynes analysis (Simatele, 2004).

1- Multiple asset in building the function of demand for money: the function of demand for money at Friedman included a lot of assets as substitutes for money, he used the financial assets (stocks and bonds), and real assets like machinery, material goods, and human capital. On this basis, the multiplicity of assets leads to a multiplicity of interest rates that entrance in the function of demand for money, while Keynes has used only one type of interest rate, which is the fixed income (interest rate) on the bonds. The reason that Keynes resorted to collection of financial assets (non-cash) in one type is a great bond and then the interest rate is expected on the bonds will be a sufficient indicator of the expected returns on other financial assets (Simatele, 2004).

2- The importance of physical assets: Keynes neglected the real assets in his building the theory of demand for real cash balances. Hence the indicator of the return on the physical assets has disappeared, while Friedman considered the commodities as substitutes for money, and the individuals can choose between acquiring money and possession of material goods when they decide the amount of real cash balances that they want to keep. That is why Friedman has entered the rate of expected return on material goods compared to the return on the money, and assuming that the material goods and money substitutes for each other. If the

individuals find the return on money is less than returns on goods they convert part of cash balances in their possession to the real goods, and spend money in the purchase of material goods. So, Friedman has reach result, which is changing in the total spending can be interpreted directly by changes in the quantity of money(Salah E, 2008).

3- Expected return on money (role of the interest rate): The return of money in the Keynes analysis to the function of demand for money is always constant and equal to zero, due to consider that money as currency has no material return. While Friedman when he build the function of demand for money he did not take the expected return on the money, he believes that when the interest rate increase in the credit market, the banks will achieve greater profits, and bring in more deposits. The banks are raising interest rates on deposits so that they can increase the size of their loan new profitable. Since the competition between banks to attract deposits to make high profits, but if these profit disappeared the gap between the interest that earned by the loans granted by the bonds in its possession, the interest rates on bonds and interest paid by deposit tend to decrease. This means that the high interest rate as a return on bonds combined with raising almost the same percentage return on your money. Friedman deems from this analysis that the stable amount between return of bonds and return of money has economic importance. The Keynes analysis based on the interest rate as an important tool in influencing the demand for money (liquidity preference), where the demand for money is highly flexible to changes in interest rates(Tahir Latrsh, 2007).

4- Stability the function of demand for money: Keynes believes in his analysis that the volatility of interest rates accompanied by a change in the speed of rotation of the money in the same direction, because of the instability the function of demand for money. The relationship between the speed of rotation of the money and the interest rate is positive relation, which mean when the interest rate increase leads to increase the speed of rotation of the money and vice versa. While Friedman suggests that random fluctuations in the demand for money is small, and the demand for money can predict accurately by the function of demand for money. Friedman believes that the supply for money is primary determinant of cash income, and it is the same assumption, which the traditional theory of the amount of money mentioned. In fact the Friedman theory is reformulation of quantum theory, and it leads to the same result on how to interpret changes in total cash spending, and then cash income. This result was not accepted by Keynes, he deems that changes in income and the volume of employment can be interpreted to changes in the demand for money(Volker, 2005).

5- The independence of the money supply for the demand for money: Friedman makes formula for the amount of money equal to the demand for money, and separated from the money supply, because he never exposed to the banks and credit forms. On the basis that is part of the money supply and not the demand for money, and this theory is contrary to Keynes' theory, which worked on the lack of separation between the supply and demand for money. Also, Friedman did not differentiate in the function of demand for money between the active and inactive of demand for money, where he considers both of them as active money (Wall Street Journal, 2006).

Section four: The interest rate of overall balance in the economic system:

The national economy can be divided into four markets, which are production market, money market, labor market, and stock market. The total balance achieved at the level of the national economy as a whole if balance in all markets at the same time. If the balance has achieved in only one market it is consider as a necessary condition to achieve overall balance but not sufficient. Also, as the relation between the production and money market is strong, so we will explain their relation in this study. The overall balance is achieved when equilibrium is achieved in both markets at the same time. In the following will be exposed first of overlap between the two markets, then to production market (goods and services), and how to derive the IS curve, and then study the money market curve with how to derive LM (Yoshikawa, 2001).

1.4.1 Overlap between production market and money market:

The inability of partial analysis to reach the overall balance through partial balances is imposed an objective necessity to study the economic balance. For example, suppose that the money supply has increased while demand remained upon constant and partial analysis in money market by imposing a lower interest rate, but if we look at the indirect impact, which is the impact of income to this decline in the market for goods and services we note that the lower interest rate would lead to an increase in the demand for money for transactions as well as increased investments, the income will rises governed by the multiplier and this would affects the interest rate. The classical theory showed that the interest rate is determined by the intersection of savings with investment, but within a vicious circle between the level of income and the interest rate and it did not lead in the end to determine the interest rate. While Keynes believes that the interest rate is determined by the demand and supply for money when the level of income has been known, but knowing the level of income requires knowledge of the volume of investments, which depends on the interest rate to reach to the

same vicious circle between the interest rate and the level of income (Zainab Hussain Awadallah, 2008).

From the above it is clear that theories divided between real variables and monetary variables, which the classical theory considered that the interest rate achieved by the real powers for savings and investment, while Keynes deems that the interest rate is monetary phenomenon related to favoring liquidity and money supply and he considered that the relationship between savings and investment is determine the equilibrium level of income (Zainab Hussain Awadallah, 2008).

1.4.2 Balance in the market for goods and services:

With the stability the level of general price the balance in the market for goods and services will achieved when parity of total demand and supply in this market.

- Total demand: national income= private consumption + private investment + spending (on goods and services) + exports

Yd = C+ I+ G+ X ..... (1)

- Total supply: national income= consumption+ savings + tax + imports

Ys = C+ S+ T+ M..... (2)

Total supply = Total demand: YD = YS => C+ I+ G+ X = C+ S+ T+ M

To make it more easily we assume: - A balance of budget => T = G

- Closed the economy => X = M we will get investment = savings, S = I

Assuming that investment demand for interest rate is elastic (r), so the function of investment or marginal efficiency curve of investment shows the relationship between the demand for investment and the interest rate, as shown in figure (8).

The equation can be written (assuming all other factors affecting stability in the investment function) as follows: I = I (r) 3

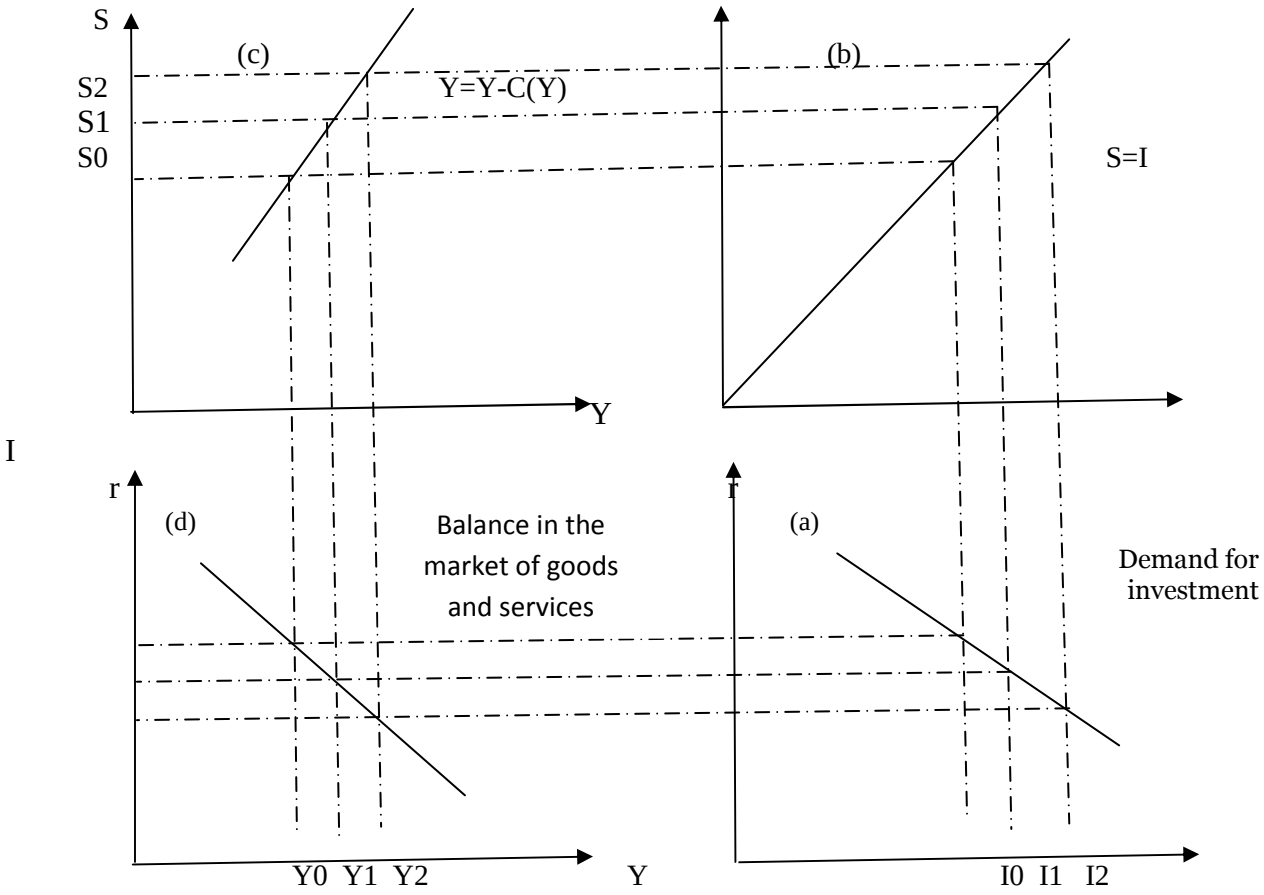


Figure (1-8); illustrate the balance in the market for goods and services savings S

The savings (S) depends on the level of real income, the consumption function withheld constant of all other factors is as following: C = C (y) 4

Then the function of savings is as following: S = Y-C (y) 5

This means that the condition of balance in the production market (goods and services) is the equality of planned investment (I) and planned savings (S) as it described mathematically: I (r) = Y-C (y) 6

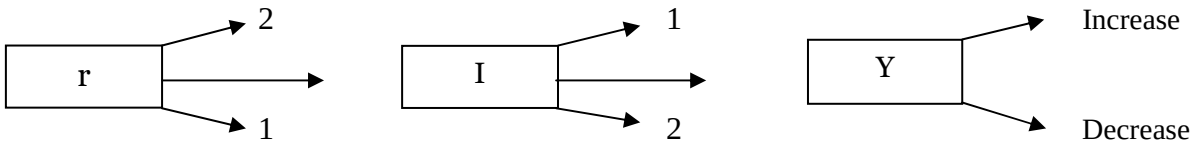
The equation (6) represent the requirement of balance in the market for goods and services, as it assumes that the interest rate (r) as well as the level of real income (y) at an appropriate level to achieve this equation. Where figure (8) showed that when interest rate given (r0) achieved investment (I0) and at the certain level of income (y0), and decline the interest rate (r1) and increase the demand for investment to (I1), and the level of equilibrium income (y1) at the value determined by multiplier of investment spending. We can observe a equality between savings and investment planned in part (b) in figure (8), while part (c) shows the relationship between savings and volume of real income, and finally part (d) represents curve

(IS), which represents the appropriate values, and then possible to have relationship between real income (y) and the interest rate (r) and achieved parity between savings and investment planners and curve (IS) is a balance in the market for goods and services (Robinson, 2000).
From the curve (IS) we note the following:

- The curve (IS) represents the total demand for goods and services with the stability the level of general price level, and at different levels of interest rates.

- In figure (8) the curve (IS) has negative slope to express the negative relationship between interest rate and the level equilibrium of income, because of negative relationship between the interest rate and investment demand and positive relationship between investment demand and level of income. So, when savings and investment elastic rise lead to intensified the marginal propensity to consume for the interest rate whenever decline the curve of (IS) and it would be less steep (Robinson, 2000).

If we symbol of the rising by number (1) and decrease by number (2) we could explain previous relationships as follows:



- As the IS curve was derived from the shape of the function of demand for investment and function of saving, when the marginal is elastic to invest for the low interest rate, the flexibility of the curve (IS) for the interest rate will be too weak. This is because the weakness of flexibility will make the change in the income corresponding to the change in the interest rate. On the other hand, the tendency savings function affects its relationship with slope of the curve (IS) in absolute terms (Neftci S, 2000).

If the investment expected improved that mean the efficiency curve marginal of investment will move to the right, which makes IS curve moves also to the right the with same level multiplied by the multiplier of investment. Also, if saving function moved to the right as a result of changing consumer behavior and their expectations in a positive direction the savings curve (IS) will go right to the same level multiplied by the value of the multiplier savings. The previous analysis was in a closed economy and a balanced of budget and closer to reality, which is imbalance budget $G \neq T$ as well as added to the government spending G to investment and exports X, and it would be (I+G+X). While function of savings become after adding imports (S+T+M). Although, this expansion in variables makes the curve (IS) expressed about the level of interest rates and the corresponding levels of real income and

that leads to achieve a balance between total demand and supply for goods and services in the national economy (Rodrik, 2003).

1.4.3 Balance in the money market:

The equilibrium in the money market is achieved when balanced of total demand and supply. Thus, the balance interest rate can be determined; either the demand for money (MD) depends on the level of cash income and the interest rate, while the money supply (MS) is determined by the monetary authorities (the central bank).

The condition of balance in this market is MS = MD, and the demand for money either be for transactions (L1), or may be for speculative (compactness) (L2), it can formulate mathematically as follows:

L1+L2=MD=L2 (r) +L1 (y)

The condition of balance would be:

MS = MD = L1 (y) L2 (r)

The previous relationship refer in case of steady the supply for money, there is specific related between the level of real income (y) and the interest rate (r) and this relation express the condition of balance in the money market, which showed in curve (LM), in figure (9);

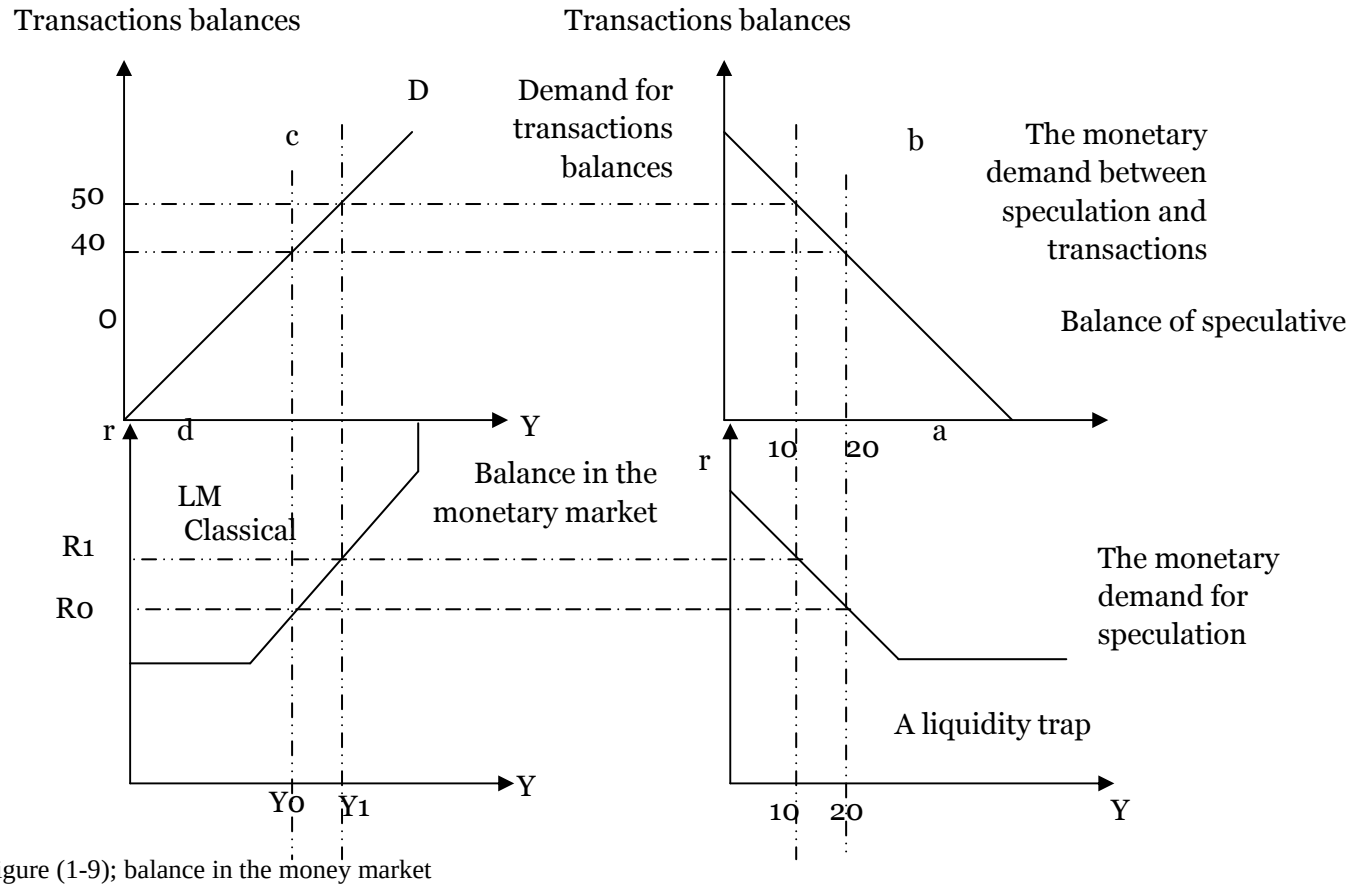


Figure (1-9); balance in the money market

The previous figure (a) shows the negative relation between the demand for money for speculation and the interest rate (r). While part (b) shows how a split the supply for money between transactions and speculation, if the supply for money reached 60 billion monetary unit and allocated to speculate at level of the interest rate (r1) and amount of 10 billion monetary unit then the remaining transaction is 50 billion of monetary units. If interest rate reduces to (r0), the speculative stocks will rise to 20 billion of monetary units, but the transactions balances reduce to 40 billion of monetary units, and so on. In part (c) illustrate the positive relation between the level of real income (y) and the demand for money for transactions as it showed in line OD (Muhammad G, 2004).

When determining the income real (y0), the distance between the level of real income on the horizontal axis and the OD Line describes the demand for money for transactions at this level of income. By known the available funding for transactions in the (b) is determined by the level of income needed to achieve balance in the money market. The interest rate (r0) remain the balances of transactions 40 billion and monetary units in previous example to achieve equilibrium in the money market, and then the level of real income must be (y0), but when the interest rate increased to (r1) the level of real income should be rise to (y1). Part (d) shows the relationship between real income (y) and the interest rate (r), which achieved the condition of equilibrium in the money market and the goal of the curve (LM) (Muhammad G, 2004).

From the curve (LM) we note the following:

a - The shape of the curve upward and it has positive inclination to reflect the positive relationship between the level of real income (Y) and the increase in the demand for money for transactions, and assuming constant of supply for money the interest rate will lead to decrease demand for money for speculation;

b - The curve (LM) depends on shape in the form of a curve demand for money for transactions as well as the shape of the curve demand for money for speculation, we find the curve heading off to infinity and elasticity is infinite and parallel to the horizontal axis at low levels of income because the demand for money for transactions be low, and it lead to increase the demand for money for speculation, and then decrease the interest rate until it reaches to lowed point that the interest rate does not decline after this point and it’s called a liquidity trap or trap Keynes. This part of the curve (LM) is like the perception of Keynes that prevailed global depression in 1929.

c - At high levels of income in the right side of the curve (LM) it becomes parallel to the axis vertical, because the supply for money is sufficient to cover the demand for money for transactions. The interest rate continue to rise until it disposal of assets speculation and it's called the traditional name of the area (Classical) because traditional theory imposes the demand for money for transactions only and there is no relationship between the demand for money and the interest rate.

d - Between these two cases Keynesian and classical the curve (LM) increasingly with positive relationship at the level of income to represent the overall situation.

e - The increase in the supply for money means imbalance in the money market and in order to return to balance must increase the demand for money and this is not only by reduce the interest rate or increase income, but also need to transmission of the curve (LM) to the right and vice versa in the case of the assumed decline in the money supply.

1.4.4 Market balance in goods and services and money:

To study the balance in both markets we must make relation between the real parts of the economy (real sector) which involves the activities and processes such as real income, investment, savings, and interest rate (real market) (Cho, 1990).

(Curve IS) and cash parts (monetary sector) which involves on the supply and demand for money and the interest rate (curve LM) as previously noted and as a representative in the following figure:

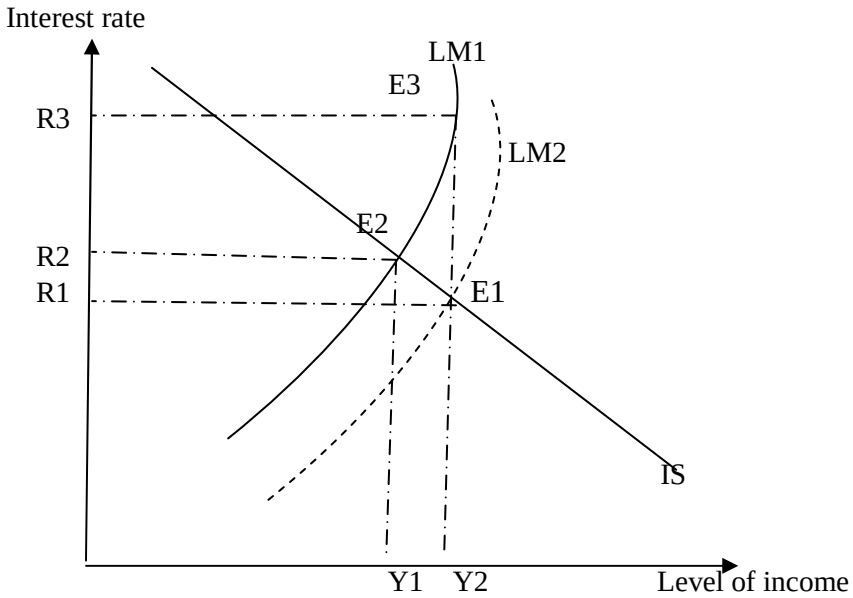


Figure (1-10); market balance in goods, services and money

From the previous figure we observe that the point (E2) at an interest rate (r2) and the level of income (Y1) it represents a single point for the balance of the two markets (LM1) and (IS) for proof that we assume the following hypotheses:

a - The equilibrium of interest rate is (r1) and the equilibrium of income contrast is (Y2), it means the (E1) supposed to be at the point of balance in both real and monetary, where (E1) located on the curve of (IS) to achieve a balance in the market of goods and services, while it does not achieve balance in the money market because it does not located on the curve (LM1). Conversely, at the level of (Y2) the income is assumed to be the interest rate equilibrium (r3) at a higher level of (r1) and this means there is a surplus in the demand for money, which pays the interest rate to rise up to (r1), but increase in the interest rate leads to reduce the investment and make surplus in savings for investment, which decrease the real income to (Y1) offset by a single interest rate (r2) at the equilibrium point (E2) (Bassam, 2003).

b - The equilibrium of interest rate (r3) and the level of real income (Y2) the point (E3) is the point of balance between these two real and monetary markets, but occurrence of this point on the curve (LM1) lead it to achieve a balance in the money market, and it does not achieve balance in the other market, and then observe desirable surplus in goods, services and investment at the point (E3), which makes the level of real income decline and lead to a weak demand for money for transactions. Therefore, the interest rate tends to decline until it reaches the equilibrium point (E2) at equilibrium level of income (Y1) and the equilibrium of interest rate (r2) (Duraid Mahmoud al-Samarrai, 2004).

Clearly, from the above hypotheses the point of balance between the two markets for goods and services is the point (E2) that intersection curve (LM1) and (IS), while if increased supply for money from (LM1) to (LM2) the point (E1) becomes a point of economic balance between the real and monetary market, which means the balance has achieve in two markets at the same time.

1.4.5 Mathematical model of the balance in both the real and monetary:

A - From relation of real market, we find:

- Consumption Function =>

C = C0 CYd..... (1)

Yd: disposable income, which is a national income (Y) minus taxes (T):

Yd = Y-T..... (2)

C0: initial consumption without income.

- Function of taxes =>

T = T * t Y..... (3)

T0: limited value, t: tax rate.

- Function of investment =>

I = I0-Vr..... (4)

I0: the initial investment (limited value), (V): it is slope of investment demand function for the interest rate, (r): interest rate.

The balance condition in the market for goods and services is a equality between total supply that represented in the income and sum of all of consumption, investment, and government spending, so the condition of balance would be as follows:

Y = C I G..... (5)

B - From money market relationships also we find:

- The function of demand for money => dM = L0 KY-mr..... (6)

The demand for money (dM) consists of a demand for money essential (L0) plus the slop function of demand for money for income (K) multiplied to income minus the slop function of demand for money for interest rate (m) multiplied by the interest rate (r) and this is due to the positive relationship between the demand for money and income, while it has negative relationship with interest rates (Duraid Mahmoud al-Samarrai, 2004).

- The supply for money (SM) is a constant value (M *) and the central bank can change:

SM = M *..... (7)

The balance in the money market is the equality of the demand and supply for money:

dM = SM ..... (8)

C - The conclusion of the balance equation (curve IS)

By compensate the equation (2) (3) in equation (1) we get:

C = C0 + C (Y-(T * + t y)) = C0-CT * + C (1-t) Y..... (9)

Also, by compensate the equation (4)(9) in the equation (5) we get:

Y = C + I + G = C0-CT * + C (1-t) Y + I0-Vr + G..... (10)

Divide both side of equation to (V) to get the interest rate in terms of income:

Y / V = (C0-CT * + C (1-t) Y-I0 + G) V-r

The equation of balance in the real market (curve IS):

r = (c0-ct * + I0 + G) / V-(1-c (1-t) V) Y…… (11)

This last equation is in a closed economy to assume that the economy is open and it added exports (X) and imports (M), and transfers to individuals (R) we get equation of balance in the market for goods and services (curve IS).

r = ((c-Ct * + CR + I0 + G+ X-M) / V) - ((1-c (1-t) V) Y)

The previous equation of (IS) represents the interest rates and income levels and that reached a balance in the market for goods and services, and as noted that it has negative slope for income, an indication of the negative relationship between interest rate and investment spending, and leads to make negative relationship between the interest rate and income through multiplier. (- (1-c (1-t) V)

D - The conclusion equation of balance in the money market (LM).

If we compensate the equation (7) (8) into the equation (6) we get:

M * = L0 + KY-Mr

And calculate the interest rate terms of income =>

Mr = KY-M * L0

Then, equation of balance in the money market (LM curve) is:

r = (K / M) y +1 / m (L0-M *)…… (12)

E - To conclude the equation of national income in the balance between the real and monetary markets. It needs to take graph of the balance in the following markets.

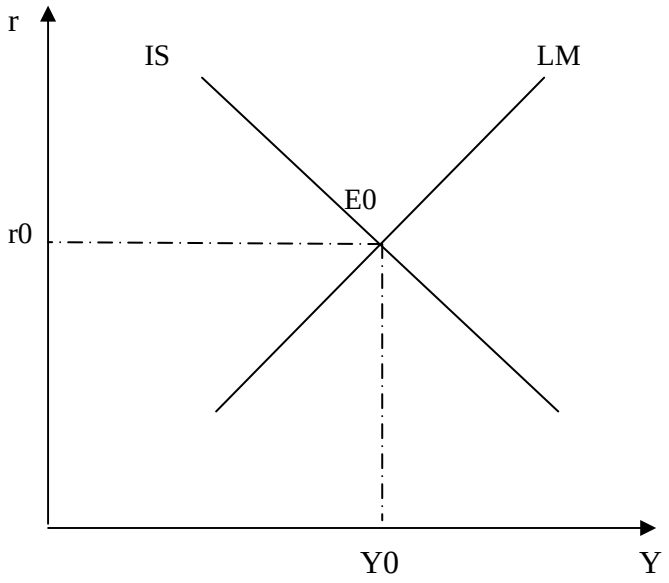


Figure (1-11); the balance in both real and monetary markets

Clearly, from the previous figure that the point (E0) the condition of balance has achieved the two markets and that means equality between curve IS and LM, no equality between the two previous equations (11)(12) and we get:

((cC T *+ I0+G) / V) - ((1-c (1-t) Y / V) = (k / m) Y+ (1 / m) (L0-M *)) =>

Y = (1 / (1-c (1-t)+(vk / m)) x ((C0-CT *+ I0 +G0 (V / m) L0+ (V / m) M *)…….... (13)

This equation (balance of income) to an open economy, we get the equation of income in the market of goods, services and money.

When adding all of the exports (X) and imports (M) of the equation and transfers to individuals (R) we will get balance of income equation.

Y = (1 / (1-c (1-t) (VK / m)) x (C0-CT *+ CR+ I0+ G+ X-M-(V / m) L0+ (V / m) M *)

From the previous of mathematical model we conclude the economic policy that available for the state to intervene in economic activity and equilibrium level of the national income is three, the first and second relating to fiscal policy (government spending (G) or size of tax (T)), and the third is competence of monetary policy where the central bank can change the size of money (M *).

1.4.6 The effect of changing the general level of prices:

The previous analysis the balance of overall economic assumed stability of the price, but if the general level of price changes, it would affect the level of economic balance through the influence by two effects, which are:

First; Impact of the interest rate on LM curve:

The decline in the general price level (P) leads to increase the supply for real monetary, which make curve (LM) moves to the right, then increase national income (Y) and reduced interest rate (r). If the investment of the interest rate (r) was sensitive that means it will increase, which leads to increase national income, and increase in investment leads to increase the production as long as it leads to improve economic situation. So, after this level any increase in the real monetary will lead to increase the prices and thus inflation. In the case of increase the prices it will be contrary any decline in national income with increase in the interest rate (r), which leads to reduces investment and it's used (Chuah, 2004).

Second; Impact of the real monetary on LS curve:

The decline in the general level of price (P) leads to increased consumption (C) and investments (I) and thereby increase demand, which makes the curve (IS) moves to the right and hence an increase in national income and vice versa when increase in the general level of price (P) (Chuah, 2004).

Chapter two: Economic reforms and deregulation of interest rate policy.

Introduction:

Since the World War II to the nineties was debated about the reasons that were some countries in well-being while others still as were. Due to the adverse effects of the great depression, and weakened confidence in the traditional liberal approach, this prevailed applied during the twentieth century on the principle of free trade in the domestic and international markets. The economists pushed by the emphasis on the failure of market mechanisms and the need for conscious intervention of governments to overcome economic backwardness. The economies of developing countries are not able to employ monetary and fiscal controls to support the internal process to abandon its interventionist policy, after a series of bank panics and financial meltdowns.

In the nineties it became achieve the budget balancing has gained importance beyond its importance in the sixties, when popularized that the governments adopted the theory of Keynes. Developing countries wishing to be free or whose economy suffers deficit, do not have any credibility in persuading internal or external dealers that they are able to finance their deficit without leading to inflation, which means without issuing a surplus of their local operation. Especially these countries do not have clear financial markets monuments to market government bonds directly to the public or non-bank entities, and then the deficit of public sector usually funded directly through the banking system of these countries.

Section one: Economic reform programs and monetary policy:

Centered reform process in the monetary and financial sector in interest rate liberalization, where governments work in this area to the interest rate becomes expressing the real price in the market, in order to achieve the objectives the balance of overall economic. To achieve these requires it needs removal of restrictions on determining credit and remove the rules that govern it, and need to eliminate subsidies for the production units of the public sector and the private sector (Kamal Hashish, 2000).

2.1.1 Content of monetary policy and objectives:

The monetary and fiscal policies consider as the most important tools for achieving economic stability, and then the balance of overall economic.

1 - Definition of monetary policy: it is the range of actions taken by the state to managing the money, credit, and organizes liquidity general of the economy. On other words, monetary policy is the set of rules and provisions taken by the government or its various organs to influence economic activity through the influence of the cash balance (Kamal Hashish, 2000).

Also, the monetary policy is procedures used by the state to influence the money supply to find the expansion or contraction in the size of the purchasing power of the community. So, the monetary policy is group of procedures, rules and regulations followed by the state for the purpose of influence and control over the credit line and achieve the goals of economic policy (Kamal Bakri, 2006).

2 - The monetary policy objectives of developing countries: the monetary policy objectives depend on the levels of progress, economic and social development of communities, systems prevailing economic conditions, needs and goals of these communities. In this framework many economists deem that the goal of monetary policy in developing countries has a lot of ambiguity and uncertainty (Maghawri S, 2012). The developing countries depend on the monetary policy to achieve more than one goal, and in this regard we find Arabic countries in their legislation provide for the objectives of monetary policy as follows:

- Encourage the economic growth, which combined with employment.
- Achieved the monetary stability to fight inflation.
- Ensure the viability of exchange and maintain the value of the currency.
- Support the economic policy of the state.

Generally, the objectives of monetary policy are as follows:

- Achieve the optimal rate of economic growth coupled with full employment.
- Work on monetary stability internally and externally.
- Controls the credit that can be commensurate with the current economic situation.
- The mobilization of savings and financial resources needed to finance investment programs.
- Work for the equitable distribution of wealth.

3 - The monetary policy as a weapon anti-cyclical: among the main objectives of the monetary policy objective of treatment cyclical that leads the national economy to suffering from inflation or deflation and mitigation. In other words, maintain the monetary stability, and through equality between savings and investment. In periods of recession leads to reduced investment for savings. In order to achieve a balance between the government resorted to raise the proportion of public investment (government) as well as resorting to monetary policy to stimulate private investment by taking actions that would facilitate credit conditions, among these actions increase the money supply and reduce the interest rate (McKinnon, 2005).

However, these measures according to the Keynes theory reduce the interest rate to encourage investment being made only in the case of the neared of sufficiently marginal curve of capital to zero (theory of trap liquidity). In this case, regardless of the interest rate of decline, even if it was less than zero it would not lead to increase in investment. While the monetary policy of anti-inflation policy is seeking to reduce the total spending, and may turn monetary policy desired by controlling the cost of borrowing (interest rate) and limit the ability of banks in the further expansion of granting credit. Many economists believe that the monetary policy becomes more a contraction and effective it need to increase the interest rate to high level, which cannot be ignored by investors and businessmen. So, increase the interest rate sometimes slightly the business to investing, as the expectations of financial institutions in more than the rise in interest rates in the hope of profit motive to sell bonds and provide more funds. As well as increased demand depositors to deposit their money with these institutions in order to obtain a high interest rate (McKinnon, 2005).

2.1.2 Monetary policy tools:

1 - The role of the central bank to implement of monetary policy: when the central bank was the central monetary authority in most countries, which raise a sharp debate and controversy over the independence of the central bank from government authorities. The central bank responsible for the conduct and regulate the money supply a set of tools and means, to achieve the objectives in monetary policy, in order to achieve the goals of economic policy, according to the situations facing the economy from inflation or recession. The achievement of the objectives of monetary policy depends on a set of methods and tools, which are necessarily, cannot achieve all the goals because those goals may conflict with each other. The measures of achieve and encouraging growth (an expansionist policy) is contrary to the measures to achieve monetary stability (contraction policy) (McKinnon, 2006).

In addition, the government uses the means of fiscal policy and a set of monetary policy instruments, including quantitative tools (traditional) such as restoring the discount rate (bank rate), and the open market policy and the cash reserve legal ratio, and qualitative tools that aimed at influencing the uses money supply to encourage the investment loans to consumer loans (McKinnon, 2006).

2 - The rediscount rate policy: it consider as one of the oldest tools used by its central bank to influence the liquidity and credit, as used in the year 1839.

In the case of inflation the bank raise the rate of rediscount (bank rate) to limit the ability of banks to expand credit in order to meet the conditions inflationary, and then turn the central bank to a policy of reducing credit with commercial banks who will raise the cost of credit, which represented in the interest rate and rises the funding cost. So, that lead investors to refrain from borrowing, and they may resorted to invest their money in the financial market and buy stocks and bonds, and thus money graduated from a liquidity trap. In the case of a central bank followed the expansionist policy, it reduce the rediscount rate and allows banks to deduct their amount in the commercial bank, or borrowing for expansion in the granting of credit. The investors on commercial banks will agree to get more credit at low cost. So, we conclude that there is a relationship between the price of the rediscount interest rate, especially in countries have development of financial markets and banking systems. Increasing the price of rediscount leads to increased interest rate, and vice versa, which mean they have positive relationship. The price of rediscount consider as independent variable and the interest rate as dependent variable (Gibson R, 2001).

3 - **Open Market:** it means a policy of open market access central bank money market in order to reduce or increase the size of the money supply by buying or selling securities of stocks, bonds. This is the most common means and used especially for developed countries. Friedman consider it as one of the most efficient and effective tools to influence the money supply. He deems that the policy of rediscount has only a secondary role. While Keynes consider this tool as more effective than tools of monetary policy because they affect direct influence on the money supply, then the volume of credit granted by banks, but it acknowledges that the use of this tool is not enough unless accompanied by other tools, especially those fiscal policy tools. In the case of the suffering economy from the phenomenon of inflation the central bank will interfere and display what it has of securities for sale, and then absorb the excess money supply as a result of the banks to buy those securities as substitutes for money, and reduced ability of commercial banks to expand in the granting of credit (Gibson R, 2001).

If the economy is suffering from the phenomenon of deflation, the central bank intervenes to encourage credit and provide the necessary liquidity for economic performance, offering more liquidity in the trading market for the securities business. When the central bank buying bonds, which means increase in the demand and lead to increase the market

value, and when the relationship between the values of financial assets (stocks and bonds) and interest rates was negative relationship, this would lead to decrease the interest rates, and then motivates investors more credit request. The success of the central bank to achieve its goals using this tool, over the development of the government bond market, treasury bills, and the volume of transactions in the financial market, and the extent of the organization and evolution of the banking system, these factors are almost limited in developing countries (Galenson, 1992).

4 - The policy of cash reserve legal ratio: the intervention of central bank by policy of cash reserve, and need for commercial banks to keep a certain percentage of deposits. This retention differs from cash balance that kept by commercial banks to meet possible withdrawal requests by depositors. The cash reserve ratio a legal consider as one of the factors of commercial banks in the events (create) money derived as multiplier credit. Central Bank uses this policy to make balance of domestic monetary. In the case of inflation, the central bank will raise the cash reserve ratio legal, and in the case of deflation reduces this ratio, even allow expansion of commercial banks in the granting of credit by raising the credit multiplier. Change in the policy of cash reserve legal ratio(compulsory) is easy to manage compared with other tools, and this tool more effective and efficient if the compulsory reserves is comprehensive for all types of deposits, as well as the assumption there is no leakage of cash (the hoarding) and the absence of other ways to commercial banks to reach cash resources from outside the central bank, and the responsiveness and flexibility of the productive sectors of these changes applied by the monetary authorities (Muhammad G, 2004).

2.1.3 Limits of monetary policy in developing countries:

All theories focused on the effectiveness of monetary policy and they had not been taken developing countries, but they had explained the periodic crises.

Also, Keynesian analysis and Friedman theory did not care about the developing countries, add to that, there are several factors used to reduce the effectiveness of monetary and credit policy in developing countries compared to their theories in developed countries.

1 - The vulnerability factors of monetary policy for developing countries: these countries suffer from an imbalance in the economic structure and credit structure. Then, examining elements of the effectiveness of monetary policy find the economies of developing countries that do not contain the elements of success such as:

- Developing countries have lack of the presence of the cash markets, as it is characterized by shortness of the scope of the financial markets, which leads to twice as effective rediscount rate policy and the impossibility to use the policy of open market on a large scale.
- As a result of weak role played by the central bank to influence the commercial banks, it precludes the commercial banks to played role to influencing the economic activity.
- The commercial banks in developing countries tend to provide credit to finance the trade sector (short-term financing), compared to the funding provided to the productive sector (agriculture and industrial), a financing (long-term), which is considered one of the pillars of economic development (Muhammad G, 2004).

- Lack of awareness monetary and banking, where moving individuals in developing countries to keep their property in the form of currency and not deposits or securities, which indicates the weakness of the role played by deposits in the marketing of payments, and then reduces the role of commercial banks to these countries compared to developed countries.
- The lack of stability in the political climate, and volatility in their balance of payments, and the failure of tax systems, which does not encourage foreign investment, and thus preclude the achievement of objectives of economic and social development (Maked Ali, 2007).

- The object of price stability consider as one of the monetary policy's objectives, although this goal was fits to economies of developed countries, it does not fit to the economies of developing countries, where it depends on inflationary financing, add to that the governments of developing countries often recourse to impose several stringent restrictions on imported goods to promote national products, which leads to raise the national commodity prices compared to external commodity price (Maked Ali, 2007).

- The concentration of income and employment in developing countries on primary production, with association with the large foreign trade, and this would expose these countries to economic fluctuations, as a result of fluctuations in the global demand for raw materials. The economic fluctuations experienced by developing countries returned to external factors, and the monetary policy cannot contribute to the funding or protecting economic growth.
- The cash trading in developing countries depends on cash material (especially paper money), but written money is still their role is limited as a tool for settlement of payments.
- The banking system in developing countries based on institutions that deal in the short-term credit, and the denial of important sectors of the national economy from a long-term credit,

and lack of banks and institutions' role in the collection and savings mobilization (Maked Ali, 2007).

2 - The conditions for the success of monetary policy: the success of monetary policy in any country and under any economic system depends on a variety of factors and conditions such as:

- An effective information system: the budget (deficit / surplus) the quality and nature of the imbalance, determine the rate of real economic growth, the quality of unemployment, economic capacity, and the balance of payments.
- Identify the objectives of monetary policy.
- The structure of economic activity: the status of the public and private sector, the government's policy direction of productive enterprises, foreign trade volume in the world market, and thus the freedom of foreign trade and price elasticity.
- Flexibility of the productive apparatus of the changes on the economic variables.
- Exchange rate system, effectiveness of monetary policy can be achieved in the economy with a more flexible of exchange rate.
- Investment Policy: the investment climate, the flow of capital, facilities accorded to local and foreign investors ..., and the sensitivity of investment to the interest rate.
- The availability of financial and monetary markets.
- The independence of the central bank to the government.

Clearly, the monetary policy cannot be relied upon alone in achieving the goals of economic policy, as a result of the foregoing clarification of conflict that may arise in the implementation of these goals, as well as characterized by economies of developing countries of attributes, which would prevent the monetary policy role assigned to pay rates of development. So, there was a need to; first these countries need to do an economic and monetary reform, which allows them to activate the monetary policy, second intervention of the government to support this policy (Ben Ali Belazzouz, 2008).

2.1.4 The International Monetary Fund and reform policy:

The needs to build the program of economic reform arise when countries suffering from internal imbalance and lack of balance between total domestic demand and supply, which is reflected on the balance of payments. If the external funding available, the expansion in demand may continue for long periods, but at the expense of growing external current account deficit, and disability to compete internationally, and inefficient allocation resources, and increase the burden of external debt. The continuation of this imbalance leads

country to lose its credit, external funding sources, and then impose economic reform. That can be done by intervention of the International Monetary institutions and this due to three reasons:

- The developing economy cannot function away from the global environment.
- Deepen internal imbalances, and the complexity of the causes of economic, social and political, which leads to substantial external imbalances.
- The international support for the economic reform program be necessary, due to the need for these countries for external financing to reduces the burden of the reform process (Ben Ali Belazzouz, 2008).

1 - The reform approach of the International Monetary Fund: it based on economic reform in order to interest rate liberalization in developing countries on three assumptions:

- The all external imbalance comes from a surplus in the total demand for total supply, as a result of increasing the amount of payment means more quickly than increase the amount of real goods and services.
- The reform of the imbalance requires a reduction in the nominal demand, and reallocation of factors of production in such a way leads to increase in the total supply.
- The reform of economic policies are not deflationary, its aim to reach a external balance at fully operational system by changing prices and the allocation of resources.

Based on these assumptions, the economic reform programs supported by the International Monetary Fund (IMF) to be implemented in developing countries aimed to achieving a set of interrelated goals, such as:

- When the balance of payments takes the right way it can reach to perform of the external liabilities.
- Achieve high rate of economic growth and maintaining an appropriate level of employment.
- Contain inflation or reduced to be equal to or close to the global average of inflation as well as to stabilize the exchange rate.
- Try to achieve justice in the areas; the distribution of income, education, health, and nutrition.

The IMF believes these are some way to achieve these goals such as:

- Appropriate between domestic demand and available resources in the short term through what has been known as the economic stabilization program.
- Pave the way for sustainable growth, and then price stability in the medium term, depending on economic adjustment program (Hamid Bouzaydh, 2007).

2 - The reform policies: The reform program supported by the IMF involves the integration of short-term stabilization policies, which aims to correct internal and external imbalances by controlling the level of aggregate demand (McKinnon, 2006).

While the structural of adjustment policies are longer-term aims to stimulate the supply side of the economy, in the following are presented below for both types of policies:

A - Stabilization policies: policies that affect both the level and the rate of growth of total domestic demand, which leads to achieve internal balance, and this internal balance consider as point of view of the fund requirement for an external balance.

The installation program consists of two main components; monetary policy and fiscal policy.

B- Monetary policy: IMF recommends following a deflationary monetary policy aimed at controlling the money supply, in order to reduce inflation, and correct the balance of payments, and to achieve that the IMF advisable to follow the tools of monetary policy as following:

- Placing ceilings on domestic credit: This tool will enable the central bank to expand in the granting of credit to the government or commercial banks, which automatically lead to restrict the money supply, reduced the level of government spending, and the demand for imports. On the other hand, if the decline in the money supply leads to rise in domestic interest rates, in this case it can attract more foreign capital flows, which leads to improving the balance of payments situation.
- Raise interest rates: interest rate plays an important role in balancing the internal and external balance and ensures the efficient allocation of financial resources in the national economy (McKinnon, 2006).

The IMF believes that the restriction of interest rates at low levels does not reflect the relative scarcity of capital element and inflation rates and then the nominal interest rates involving the negative real interest rates, which lead to:

- Excessive in the investments that has high capital-intensive.
- Weakens of the incentive to save, and thus deteriorating the size of the savings.
- The flight of capital abroad, especially with increase in the price of exchange rates.

That is why the IMF request for increasing the interest rate as it ensures:

- Transfer of financial resources from consumption to savings, and change the shape and pattern of distribution of savings in durable goods, real estate, precious metals and foreign financial assets, for the benefit of financial assets of local banking system, which allows

funding a larger volume of investments. The saving tends to the expense of consumption due to the high interest rate leads to a reduction in the speed of rotation of the money, and then at least the rate of inflation and increasing real income, which helps to increase savings and investment rates.

- The positive domestic of interest rates helps to consider policy of reducing the value of the national currency to reduce capital flight abroad and retain local savings. On the other hand, encourages attracting the foreign capital and increasing transfer from migrant workers to the inside, which leads to increase the balances of loans and reduced the deficit of the balance of payments.
- Even if the high level of interest rates will lead to a decline in the rate of investment as an inverse function of the interest rate, but they lead to increase investment investigator, as it directly related to the size of the resources available for lending.
- The liberalization of interest rates will allow the development of the domestic market for capital, which leads to use more effective market operations to influence the money supply.
- Finally, the excess liquidity, which accumulates at the commercial banks, will enable the authorities to borrow rather than the central bank, and that reduces the effects of expansion to finance the fiscal deficit (Mohammed Saleh, 2004).

2.1.5 The effect of monetary policy on the interest rate change:

1 - The limitation of monetary policy to influence the investment decision: some economists deem that ineffectiveness of monetary policy on the economies of developing countries due to the interest rate is very importance as a component of cost that takes businessmen and investors when they consider the investment cost. In this analysis, the effectiveness of monetary policy is limited so if resorted to increase the money supply in order to reduce the interest rate to stimulate investment, this will not affect the investment decision. The interest rate paid by lenders is not constitute only a small percentage of total production costs, especially if the interest on short-term loans. But if investments based on long-term loans such as investment in housing and public utilities, in this case the burden of interest amount can be taken into account, and the owners ineffectiveness of monetary policy and thus weak of the interest rate impact on the investment decision. There certain cases even in the case of a increase the interest rate the demand for investment loans will not decrease that granted by commercial banks, and this may happen in developing countries that do not have monetary and fiscal markets, where entrepreneurs resort to funding from unregulated markets (moneylenders), when the interest rates be much higher than the interest rates at

banking institutions and commercial banks. So, this happens when there is no source of lending from the regulated markets, but only those unregulated markets. Moreover, as the interest rates increase in the commercial banks it still reasonable compared to interest rates in monetary and unregulated financial markets (Maked Ali, 2007).

2- The difficulty and risks of using the monetary policy: it used for economic reform in the efficiency and flexibility to use these tools. Obviously, all these tools affect directly or indirectly on the interest rates, as they must be in balance with the exchange rate policies to reduce the volatility of short-term that may impede the process of economic reform and development process (Maked Ali, 2007).

3 - Mechanisms that influence the interest rate: it is easy to distinguish between the three mechanisms which influence the interest rate:

_ Preferential credit policies discriminate some sectors and activities that define a recession and shrinking at the expense of sectors and other economic activities. This can be done by funding the interest rate to reduce the cost of lending and encourage these sectors in order to influence the allocation of resources.

_ Policy funding the deficit in the public budget, it depends naturally on the level and size of the deficit that the country wants to fund.

_ Open market policy, many of developing countries resort to adopted the pattern of the market economy, and the countries that followed the economic reform policy of this mechanism in order to influence the quantity and size of money circulating in the community and the interest rate (Maked Ali, 2007).

Section two: Relationship between economic growth and interest rate:

2.2.1 The relation of the interest rate with used of capital cost and its impact on investment and consumption:

In an economy the wealth has direct relation with the factors size of production used in the production process. While the productive capital stock related with profitability, which related with return and the interest rate. If there was a positive difference between the cost-effectiveness of capital and a real bonus (the real of interest rate) on hiring capital, in this case the demand for productive investment prefers to financial investment. But, if profitability is weak (low), which means the difference between return and the interest rate is weak (low) the productive of investment will decline and the level of investment would affect by the return (outcome). When the interest rates increase that means the reward of hiring money in banks and securities will improve and result in the substitution of financial recruitment instead the productive of investment. Moreover, for any organization the interest rate considers as cost and thus it enters to determining its profit, which means the interest rate is the most important determinants for investment (Mohamed M, 2006). The company invests as long as the cost-effectiveness of the capital used in the productivity process is enough to cover the cost used in the production process and it is stop from investing when profitability equal to cost. So, as it showing in the following mathematical formula of demand for productive capital (the demand for productive investment) classical model:

$P_t * F_k(K,L) = z_t$

Where:

P_t= the price of product

z_t= the cost of capital used

$F_k(K,L)$= the marginal productivity, which is derivation of the production function for capital

The cost of using capital can be explained mathematically by the following formula:

$z_t = (r_{kt} + \delta) * P_{kt}^a$

Where: r_{kt} = the real of interest rate

δ = depreciation rate of capital

P_{kt}^a = the price of capital expected by investors

If the cost of using capital has changed the demand for capital will decrease and it can be explained by creating differential equation above for cost of the capital Z_t (Suppose that a fixed volume of employment):

$$\frac{\partial k}{\partial zt} = \frac{1}{Pt * Fkk(K,L)} \leq 0$$

The derived above is negative result of diminishing returns ($Pt * Fkk(K, L) \leq 0$) it result as decrease of money in the case of increasing the cost of capital used as the real interest rate is directly proportional with the using cost the productive of investment will decline as this price increase. But, regard to the relationship of consumption with interest rate the price reflects the income earned by individual owners of these bonds, or on the contrary, it is the price paid by individuals who receive loans. So, that means the real interest rate is determinant of the level of consumption, increase in the interest rate has two effects, positive impact by increasing the net wealth of the individual owners of the bonds and the negative impact of individuals who borrowers for consumption and the final outcome depends on the size of the two prevailed in the positive side leads to increase the consumption and vice versa. Then, any change in the interest rates has an impact on investment and economic growth. the increase in the real interest rate with other things being the same lead to lower output, but we do not know the size of this decline and dynamic in this settlement output, and for that we turn to some of the techniques in econometrics such as causal analysis and estimate multiple self-regression models (Mohamed M, 2006)

2.2.2 Interest rate and the impact of displacement:

The means of displacement is the impact of the change in the public spending (expenditure) G on the spending of private investment and consumption (I, C). When the public spending increased that leads to decrease the private spending as a result of increase in the interest rate. The final result of this effect is replacement of the expenditure (consumption and investment) as a result in increased the public spending and then changes the structure of aggregate demand for public expenditures at the expense of private expenditure. They cannot influence the interest rate only by applying fiscal or monetary policy and first policy allocated for all the decisions on changing the public spending or taxes, and second policy means changing quantity of supply for money. So, it is not easy to understand the impact of displacement only by explain the IS-LM model (Michael Juman, 2010).

a- Mathematical result of IS equation:

To simplify the analysis we assume that the closed community and has two sectors, the balance of income and output can be achieved when total demand is equal to total supply or savings equal to investment, and assuming that the consumption function is linear function in the income and it is not affected by interest rate, this function is given by the following formula:

$C=C_a + cY_d/Y= Y_d$

While the investment function is;

$I= I_a – gi/ g >0$

The equation of IS is the relationship between the interest rate and income when both the market for goods and services is in balance and it will proceed from the balance of real market to find this relationship, we either use identical of income or identical of leakage (injection), if we used the first identical we get the following:

$Y = C + I$

$\longrightarrow Y = C_a + cY + I_a – gi$

$\longrightarrow Y = \frac{Ca+Ia}{1-c} - \frac{g}{1-c} i$……..… (IS)

b- Mathematical result of LM equation:

The LM curve is containing both income (Y) and interest rate (i) where the demand and supply for money equal.

$\frac{M^0}{P} = \frac{M^d}{P}$

The overall function of demand for money (overall function for liquidity preference) is the sum of two functions: a function of demand for money for transactions and function of demand for money for speculation and therefore the function of demand for money depends on both the income and the interest rate, and it would be as follows:

$\frac{M^d}{P}= f(Y, i) = \frac{M_T}{P} + \frac{M_{SP}}{P} =kY + L_0 –mi$

The decline function of demand for money is affected by the sensitivity of demand for money for speculative to the interest rate, as this sensitivity was large whenever the demand curves closer to the equator in the case of the contrary it would be is almost vertical. The amount of income affects the status of this curve, when it change that leads to move the curve to the right in the case of increase and to the left in case of decrease. The demand for money for transactions and reservists be stable in the short term based on Keynes' theory and therefore

the function of demand for money affected primarily interest rate and the function be a decreasing at this price (Michael Juman, 2010).

The balance in the money market is achieved when equal amount of demand and supply for money:

$$\frac{M^0}{P} = \frac{M^d}{P} \Rightarrow \frac{M^0}{P} = \frac{M_T}{P} + \frac{M_{SP}}{P} \Rightarrow \frac{M^0}{P} = kY + L_0 - mi$$

c- The comprehensive balance (Total balance):

It can be reached a solution to determine both the level of income and the interest rate, which leads both real and monetary market to be in balance by (Hicks - Hansen) model or by (IS-LM). This model depends on each of the classical model, the commodities market, Keynes' model, and money market to reach a general equilibrium. So, we sufficient here to find a balance for the economy consists of two sectors and the same thing applies to the economy consists of three sectors or an open economy , to reach that we need the equations of (IS-LM).

$$Y = \frac{Ca + Ia}{1-c} - \frac{g}{1-c} i \quad \text{..... (IS)}$$

$$Y = \frac{\frac{M^S}{P} - L_0}{k} + \frac{m}{k} i \quad \text{..... (LM)}$$

So, we conclude that the condition of balance is;

$$\frac{Ca + Ia}{1-c} - \frac{g}{1-c} i = \frac{M - L_0}{k} + \frac{m}{k} i$$

The algebraic solution of two pervious equations gives us the value of income and interest rates, which achieved the balance in both markets goods and services and the money market. We express (i) instead of (Y) in equation (LM) and then compensate it in (IS) equation:

$$(LM) \Rightarrow i = \frac{k}{m} Y + \frac{L_o - M_o}{m} \Rightarrow Y = \frac{Ca + Ia}{1-c} - \frac{g}{1-c}\left(\frac{k}{m} Y + \frac{L_o - M_o}{m}\right)$$

After shortcut we get the following:

$$Y = \frac{m}{(1-c)m + gk}(c_a + I_a) + \frac{g}{(1-c)m + gk}(M_0 - L_0)$$

The relationship above shows that there are two factors lead to expansion the income.

1. Investment multiplier (independent multiplier of spending) who pushing income for expansion when one of the components of independent expenditure increased, such as independent of investment or public expenditures, the value of this multiplier is equal to:

$$K_G = \frac{m}{(1-c)m+gk} = \frac{1}{(1-c)g\frac{k}{m}}$$

If we compare this multiplier with simple Keynesian multiplier $\left(\frac{1}{1-c}\right)$ we find that the merge of the money in the Keynesian model leads to decline the value of the multiplier. The decline in the multiplier is directly proportional to the (g) and (k) and inversely with (m). The monetary has no affect in case of the investment has no sensitive to interest rate (g) or sensitivity of the demand for money for speculative (m) is very high.

2. The monetary multiplier or monetary driving force is supporting independent spending multiplier, which is equal to:

$$K_M = \frac{g}{(1-c)m+gk} = \frac{1}{k+(1-c)\frac{m}{g}}$$

This multiplier is directly proportional to the g and c and inversely k and m.

Finally, the (IS-LM) model shows through the pervious multipliers that monetary policy can be an alternative for fiscal policy to support the economic recovery. The both multiplier for spending plus money reached to highest value when the investment and monetary have no sensitive on the interest rate, and thus is equivalent to lack of interest rate, which leads the income to reach its highest level when the demand components is not related to the interest rate, as requests cash transactions only and not for speculation and these cannot be achieved only if the interest rate equal to zero (Michael Juman, 2010).

2.2.3 The expected impact of inflation and deflation on the price of interest rate and income:

The decline in prices has several positive effects on income, including its impact on the curve (LM), which moves to the right and lead to an increase in income. The lower prices result in the so-called Peugeot impact (Arthur Pigou) and interpreted by this economist that cash balances are part of the wealth of individuals and therefore the lower price leads to higher real balances and the consequent rise in consumption because consumers feel they are richer than ever before and so they spend more. According to this analysis, the function of consumption is as follows:

$$C = C_0 + c(Y-T) + b(M/P) / b>0$$

The high consumption leads to transmission curve of (IS) to the right, which leads to increase the balance of income. If lower prices have these effects that means the economy has the ability to self-settlement (automatically entered to full operation), but economists reject this analysis due to effects of other factors on income that we have not covered previously (Fred Ragheb, 2010). If we separate in our previous model between the real and nominal of interest rate and consider the investment as a part of aggregate demand with the real interest rate, and demand for money related with nominal interest rate, so we will get the following relation:

$$i = r + n$$

The above equation is called the Fisher equation relative to (Fisher 1867-1947). It indicates that there are two reasons lead to change the nominal interest rate, which is changing the real interest rate and the inflation. This inflation increase when the supply for money based on the quantity theory of money. The impact of inflation on the nominal of interest rate called Fischer impact. So, based on Fisher's relation we get the following:

$$r = i - n$$

Due to the lack of knowledge of the future inflation rate when determining the nominal interest rate there are two concepts for the real interest rate, which are nearly and dimensionally interest rate (Fred Ragheb, 2010). The banks set the nominal of interest rate based on expected inflation rate in the future and therefore the real interest rate (a nearly) is the nominal interest rate minus the expected inflation rate, while the real interest rate (a dimensionally) is a nominal minus the actual inflation rate:

$$r_{exante} = i - n_a$$
$$r_{expost} = i - n$$

The investment is affected by the real interest rate(nearly) because the real interest rate (dimensionally) is not known through the investment process and thus model of (IS-LM) becomes as follows:

$$Y=C(Y-T)+I(i-n_a)+G_0$$
$$\frac{M^0}{P} = L(i, Y)$$

n_a= expected inflation

The curve (IS) depends on fiscal policy also depends on expected inflation, any change in this inflation leads to transmission of the curve. If expected inflation is zero, it means that the general level of prices is fixed and therefore the expanded form will change into a normal model of (IS-LM) (Fred Ragheb, 2010).

Suppose that agents of economists expect lower prices, the expected inflation would be negative and increase its impact dimensionally real interest rate at each level of the nominal price, which negatively affects the investment and the consequent transition curve (IS) to the left, which leads to lower income.

The economic interpretation of the pervious analysis is as follows; the expectation to happen price deflation in the future by the producers is discourage those to borrowing for investment because they expect to pay amounts borrowed value is greater than its original value. Therefore, the level of investment is decline and adversely affects aggregate demand and then the total income, and also decline the demand for money, which leads to a decrease the interest rate, as this decline is less than the expected inflation. Based on the above we reach the important result: if the cause of deflation is low money supply, the monetary authorities are contributing to the worsening economic situation and low income even though the real money supply remained unchanged on the addition to the high real interest rate (Fred Ragheb, 2010).

Since the nominal interest rate is determined on the basis of the expected inflation the equation of (LM) become as follow:

$$\frac{M^0}{P} = L(i + \pi_a, Y)$$

The expectation of rising prices leads to increase the nominal interest rate and the consequent decline in the demand for money, if the money supply stay as it is the price will increase and then increase the interest rate. The size of the investment is not affected because the real interest rate does not change much due to increased inflation and nominal interest rate at the same time. Finally, in the presence of the interest rate, the expected price deflation leads to a reduction of income, and the expectation of rising prices lead to higher nominal interest rate, while the inflation price has a negative impact on the aggregate demand, and then on income. Under a system based on the interest rate, monetary policy whether expansionary or contraction contributes in the worsening economic situation (Fuad Hashim Awad, 2005).

Section three: The relationship between interest rates and some economic variables

2.3.1 The relationship between the interest rate and the inflation rate:

Fisher believes that the real interest rate is determined by the real powers of savings and investment that means the real interest rate is the exchange rate between the present and future goods. However, this price is not necessarily to be price that borrowers get. So, the borrows borrowing from the market price or nominal price for the interest, which is exchange rate between present and future monetary, in the absence of inflation and when all exchanges of money and the real and nominal interest rate are identical, but the nominal interest rate is influenced by the expected inflation rate, and the views of economists disagreed on the quality of the relationship between the nominal interest rate and the real interest rate. The analysis done by Fisher is an extension of the analysis done by Gibson in 1923, which called (Gibson Contradiction) (Hassan Awad, 2007).

It is based on non-natural discrimination between the real interest rate and the current interest rate and it has been shown the low interest rates associated with the high level of price because decrease interest rate leads to increase investment and this results in increase the demand for loans and an increase in the quantity of money and then increase the prices. If agents of economists predicted a rise in prices, the supply and demand curves for cash balances available for lending will moved to up, and the difference between the real price and the nominal current price is expected to inflation (Chuah, 2004)

Fischer assumes that the real interest rate is independent of the inflation rate that means the demand for money as a determinant of demand for cash balances available for lending and related to the real interest rate. While (Mendel-1963) believes that the real cost of cash collection is the nominal interest rate. In this case, whenever inflationary expectations were high leads to increase the nominal interest rate. However, studies conducted by both (Feledesten and Elstein-1970) in America show the truth of what was explained by Fisher in the long term, as the real interest rate is actually independent of the rate of inflation. So, the expected in inflation at a nominal rate of interest will create a difference between the productivity of investment and income from savings and this difference is equal to the rate of inflation. Also, in case of inflation the interest rate should rise as level of the inflation increase to maintain equality between savings and investment (Hassan Awad, 2007).

2.3.2 The relationship between the interest rate and investment:

It is known that the large part of the investment spending does by the productive sector or the business sector, which consists of borrowed units. The investment in the economic modern usually depends on the own sources of funds only due to the large amount of investment on the one hand and inadequate sources on the other hand. The classical theory provides an inverse relationship between investment spending and interest rate is based on the theory of capital formation because the concept of the real investment is a process during which consists of capital accumulation of capital goods, such as; buildings, machinery, and equipment. Therefore, the behavior of investment spending depends on what happens to the productivity of these commodities in the process of accumulation on the one hand and on the cost of financing investment spending on the other. Also, the classics deem that the interest rate in the market always tends toward a level that achieves a balance between savings and investment (Maghawri S, 2012).

2.3.3 The relationship between the interest rate and the demand for money:

Many economists especially monetarists reject that the demand for money has very flexibility to the change of interest rate. While Friedman deems based on statistical studies that took place in the United States of America that there is no experimental ideas in school about the impact of the interest rate on the real demand for money, but there is no agreement on whether if there is a close relationship in the long or short term between the interest rate and liquidity preference. Although, almost all conclusions showing that inflexibility in response the demand for money for a change in the interest rate even in the long term, where it found that change in real income or wealth is the most important factor to make a change in the required amount of real money, and not change in the interest rate (Graff, 1999).

The conclusion drawn from the function of demand for money at Friedman define by three variables: wealth, opportunity cost to keep money and returns and tastes, and order preferences, as it is known that within these changes the interest rate includes different concepts. Moreover, even if the interest was not the primary variable in the equation, but it cannot be denied or ignored its impact on the function of demand for money. Especially that Friedman does not want to separate between the monetary sector and the real sector, he believes that the interest rate is not only a monetary phenomenon determined by the demand and supply for money, but it must be consider that the interest rate that depends on the real indicators and entrance test confirms that the change cash have a significant impact on the

real sector. The result reached by Friedman is that the output rate of the function of demand for money will allow happening desirable between the real of economic analysis, and then inverse relationship between interest rates and the demand for money and therefore we cannot say that the demand for money has great flexibility and sensitivity to the interest rate (Ceglowski, 2005).

2.3.4 The relationship between the interest rate and exchange rate:

The role of the interest rate to achieve a certain level of the exchange rate is one of the important and complex issues for many economists, as rising interest rates in some country would lead to increased demand for local goods and thus improve the value of the national currency. This response requires a lot of conditions such as; (the investment climate, flexible between the interest rates and investment, flexibility in the productive apparatus, the stability of a lot of economic variables ...etc.). For example, when the currency is weak the central bank adopts the policy of interest rate to compensate for the high risk of a currency collapse (Maghawri S, 2012).

Section four: The expected impacts of interest rate liberalization policy on the economy of developing countries:

In this section we will study what caused deregulation and unexpected effect of interest rate policy on the economy of developing countries.

2.4.1 The impact of the interest rate on the economic sectors:

1 - The impact on debts of the banking sector: the main problems posed by rising interest rates is the negative impact on debts sector of banking system, where increase of these debts may lead to faltering borrowers to repay their debts, which displays the entire banking for crisis, especially as this debt is not only part of the deposits of individuals with the banking system. Some others economists deem that the interest rate role in economic life as a method of monetary policy, it affects the banks and financial institutions that influenced their activity by the interest rate. So, decrease in the interest rate leads to reduce their profits, which also lead to compensate the credit, while increase in the interest rate lead to reservation and preference for government bonds at this time. The change in interest rate affects the value of cash and real wealth in society and that lead to affect the individuals' decisions to increase or decrease consumer spending. Also, the interest rate has impact on the financial market because of the relationship between the money market and the financial market, rise in interest rates in the monetary market leads to reduces the possibility of proposing new versions and marketing of securities as a result of lower prices, and the direction of individuals to deposit their money in banks rather than buying them, but decrease the interest rates leads to a rise in the value of stocks and bonds, which affects the investment (Maghawri S, 2012).

2 - The impact on business investment: based on some other study they confirmed that raising the interest rate a significant reduction in the rate of investment, but at the same time improving in the productivity of investment spending. So, raising the interest rate leads to raise the cost of capital, which leads to increased inflationary pressures and reduce overall investment demand, the result may be a state of stagflation in the economy after an increase in the interest rate and thus increase in the savings with recession in the investment demand. It is worth mentioning that the high real cost of capital with increasing burdens of interest rate will lead to higher inflation resulting from the increase the costs, which will lead the interest rate to further increase according to the methodology predicted of the interest rates (Greiner, 1995).

2.4.2 Impact of the interest rate on the balance of payments:

1 - The role of monetary policy in controlling the balance of payments: the monetary policy plays an important role in the achievement of both the internal and external balance and holds the balance of payments (external balance) one of the monetary policy goals. According to the monetary approach to the analysis of developments in the balance of payments it in an open economy, the balance of payments is a monetary phenomenon, which means the relationship between the demand and supply for money are responsible for creating these imbalances. For example, when increase the supply for money more than demand for money community members resort to increase the demand for goods and services, and when the developing countries were characterized by poor flexibility in productive the individuals tends toward to buy goods for export, which leads to decrease exports and increase the imports, as well as demand to invest in foreign securities, resulting in a deficit in the balance of payments (Ceglowski, 2005).

Thus, monetary policy can play an important role to treating these imbalances in the balance of payments, in the case of disability the central bank can intervene by raising the price rediscount, and then the commercial banks resort to raise the interest rate on the loans, thereby reducing the volume of credit and increase the domestic demand for goods and services, which will lead to lower domestic prices, and this decline in prices will also lead to encourage export and reduces the citizens demand to buy foreign goods and reduce imports, in addition affects primarily on current accounts, and balance of payments. The high interest rates within the state, will work to encourage foreign citizens or residing abroad to deposit their money in national banks, which would allow for the entry of more capital into the country, and have a clear impact on capital account capital and thus reduce the deficit balance of payments (Greiner, 1995).

2 - The positive impact of interest rate on the balance of payments: It is known that the balance of payments includes current account and the balance of capital transactions. Also, the current account associated with gap of local resources in terms of:

$$AC = S\ D\ G - I\ D\ C \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ (1)$$

AC: surplus or deficit in the balance of current transactions.

SDG: gross domestic of savings.

IDG: gross domestic of investment.

The increase the deficit in the current account means either an increase in gross domestic of investment or decrease in gross domestic of savings. While the balance of capital account explains the financial flows from and to the country, whether in the form of direct investment or in the form of loans. Also, it funded the deficit the balance of current transactions (Ceglowski, 2005).

According to the rule of double-entry to the balance of payments we get the equation:

$$AC = AK + DAR = 0 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$

AC: surplus or deficit in the balance of current transactions

AK: surplus or deficit in the balance of capital transactions

DAR: the change in official reserves

In our study of the positive impact of real interest rates on the balance of payments, we care about the balance of capital transactions and the change that occurs in the official reserves. Generally, there are two main reasons pushing money to flow into the country:

-Increase the difference of interest rate applicable to the local currency, with the stability of the exchange rate of its currency against other currencies.

-External factors related with the economy that flows from the capital, such as the decline in interest rates in the United States of America, as well as the recession, which coincided with the exit of the capital of the United States of America with the flow in Latin American countries.

However, the flow of these funds to the country has reflection and they are especially in the following points:

_ Increase in foreign demand for the country's currency leads to increase the its value and improve its own exchange rate against other currencies. There is no doubt that improved this exchange rate is one of the factors of health of any economy, but it could lead to become the country's exports more expensive on the world market,and then to contraction, and to the accumulation of deficits in its trade balance. Also, leads to doubt that country's ability to meet foreign obligations, or so-called lack of creditworthiness of that country.

_This money is flowing lead to domestic liquidity, the central bank intervened by one of its tools that are sterilized those funds. This procedure can lead to increase in the fiscal deficit as it will include a high rate of domestic debt (Hussein Ali, 2007).

_ The money flowing in short-term could lead to encourage long-term investments, but any procedure that might prejudice confidence in the government policy would lead to the escape of those speculative money, and then the invested money.

_The continued flow of capital to the country and the continued realization of the surplus in its balance of capital transactions may lead to achieve a surplus in the overall balance of payments and accumulate with its official reserves. These precautions have an important role to face the external deficit.

Finally, we conclude that the rule of positive of the real interest rate accompanied stability in the exchange rate, which leads to flow of foreign capital in short-term within the state, especially if there were not actual differences between the return on the funds in local currency and the return on the money in foreign currencies (Hussein Ali, 2007).

2.4.3 Impact of the interest rate on exchange rates:

1 - The risk of financial liberalization on the exchange rate: allowing to growth bank accounts in foreign currency within the country, it can be justified on the basis of beneficial short-term - such as encouraging the owners of the capitalists to convert their currencies into the country, as accumulation of foreign currency within the domestic financial system, it becomes as the economic ticking bomb as Jacob Frenkel said. The internal financial policies, as well as reduce the real interest rate and the flow seeding to lend to new investments can also drop the quality of the investment by instability in the foreign exchange markets. In Gleb's an experiment on 36 of developing countries, they may reach average of annual growth by 2% between the two periods, and the reason for this are:

-Increased volatility in the exchange rate and the collapse of the commitment to fixed exchange rates after 1973.

- The exchange of trade, such as increase in oil prices.

- Rigidity (curb) the largest domestic financial and higher inflation and lower interest rates on deposits.

-Decrease the average of real interest rates on deposits from -2% in the period (1965-1973) to -5% (74-85), and this decline in the interest rate by 3% does not explain less than half of the decline in the level of growth rate.

- The (Sebastaban Edwards-1989) in his a study of 23 developing countries reached a negative relationship between the average rate of GDP growth and viability of the real

exchange rate to change. Also, concluded that the possibility of change in the real exchange rate increases when inflation is high and unstable.

- In the end of eighties and early of nineties appeared a new trend in Latin America, where governments continued to resort to the banking system to get the most of available funding, where it was obliged to pay the positive of real interest for these debts to banks, where the result was an accumulation great of government domestic debt in developing countries (Argentina and Brazil), which overthrew the productive of investment.
- Maknon deems the achievement of financial liberalization with retaining control of monetary his real return and internal stabilize of the level of prices without resorting to forcing limitation of price and keep interest rates on deposits, and then on loans, are all consider as essential points to the success of economic development (Hussein Ali, 2007).

2 - Set the procedures of the exchange rate: it is very important for the experts of monetary to look at the exchange controls as an integral part of financial management, and should not be lifting those restrictions on international capital flows, but only after taking real procedures of monetary financial and tax, and other related to foreign trade. The central bank (the government) has to impose controls on exchange in currency because without government involvement the market of exchange in currency will has deficit in liquidity and unstable. The substitution of direct and indirect local currency (demand deposits) with foreign currencies represents as reason to reduce the exchange rate as it happens within the domestic financial system with the trend of individuals to deposits rather than cash prevailing. So, the unrestricted of international financial to the nominal interest rates on domestic deposits and loans will increase as response to lower the expected of exchange rate (Hussein Bakhit, 2007).

3 - The relationship between interest rates and exchange rates: tended some countries to liberalize restrictions on financial transactions foreign exchange stabilization were encouraged competition for many local and foreign financial institutions to work in the local market and reduce rates of reserve and liquidity, as well as allowing pay interest on bank reserves and prevent the allocation of credit or provide preferential prices.

When choose the instruments of monetary policy must take into account the implications of the internal and external variables and their trends in the future.

Therefore, the role of the interest rate to achieve a certain level of the exchange rate is one of the important issues for many economists. The relation between them depends on other

variables, and we can give a picture abstract and brief between the interest rate and exchange rate (Hussein Bakhit, 2007).

- The increase in the interest rate leads to decrease demand for other currencies that have low interest thereby reducing the exchange rate of the currency against the currency which increased its price whether actual or expected price.
- Exchange rate is also influenced by the purchasing power of money resulting from the deficit or surplus in the current account of the balance of payments as well as the country budget. When these balance get surplus and purchasing power tended to increase the exchange rate will increase against other currencies.
- Based on the above that the interest rate and purchasing power of money affect the exchange rate and in this case we can said that the real interest rate is the basic influence in movements of exchange rate.
- So, if the increase in the interest rate is considered in some cases evidence of a significant increase of inflation, it may be combined with a decline in the exchange rate of the currency.
- The follow these steps of the strategy the economy of developing country can moving in the right way to improve their economy. Therefore, to change the local market for capital between the interest rates for both deposits and bank loans, and the real exchange rate that reflects the economy's inability to control balance of trade with the movement of cash flow (Hussein Bakhit, 2007).

2.4.4 The impact of the interest rate on the country budget:

The interest rate practiced impact on this variable through treasury bills and their role in the accumulation of internal debt to repay from the country budget, in addition to its impact on the rest of the items of internal debt (Kamal Bakri, 2006).

1 - The impact of the interest rate on treasury bills: treasury bills are considered as recommended tools in the framework of the monetary reform process so as to provide the bank liquidity. It also works to stabilize the exchange rate.

The central bank can begin conducting public auctions of treasury bills on a monthly basis, but it must be associated with the management of local government debt.

So, these debts have negative impact, they are:

_ Impacts on investor behaviour toward establishing or contributing to the establishment of new projects or finance existing projects. The consequent is losing of real investment opportunities with a better return to the economy of developing countries.

_ Developing countries face the problem of internal debt service resulting from the issuance of treasury bills and of course, fulfil the value of debts required from the country follow the most important policies such as:

1-Impose new taxes to try to increase government revenue, which includes the redistribution of national income, as well as set forth in that the impact on final demand.

2-Transfer proceeds from the sale of public sector companies to pay the interest of these bills (debts), which explains the loss of the value of these assets.

3- The expansion of foreign borrowing with the problems that accompany it and that forced many developing countries to submit to the conditions of the IMF for debt rescheduling with creditors (Kamal Bakri, 2006).

2 - The interest rate and treating the fiscal deficit: the basic problem for developing countries is fiscal deficit, if they are not rid of this problem the process of liberalization may turn into an economic disaster. But if the fiscal deficit was financed by burden of inflation, there may be a serious problem in the evaluation in currency rate if the monetary authorities tried to control the domestic prices by reducing or install the exchange rate (Ceglowski, 2005). The best strategies could be proposed to managing the economics in the treatment of the fiscal deficit are:

- The authorities should be cancel the restrictions of interest rates and subsidized credit directed to a certain category of borrowers, or replace the unconditional support that appears directly in the accounts of the treasury.
- The movement of private capital in the world should be subject to controls of currency exchange or reserve requirements.
- If the minimum of domestic inflation exceeds that found in the major trading partners of the country, the exchange rate should be determined directly through a process of gradual of negative reduction (Ceglowski, 2005).

2.4.5 Positive real rates and their relationship to inflation:

The Extended Studies conducted on a number of developing countries established by assuming that the higher real and positive interest rates on the deposit leads to improves the quality of capital formation and real economic growth. However, pairing private between the nominal interest rate and inflation rates that determine their return to depositors can lead to a significant difference in economic performance (Cho, 1990).

1 - The policy of confrontation inflation: If the price level was stable, it can maintain real interest rates on deposits with a minimum of risk. In fact, it may be possible to achieve real financial growth and even when interfering government to put limits on interest rates on deposits and loans in the monetary system (monetary policy), when inflation at high level that means attempt to equivalent with increase the nominal price of interest can involve significant risks, especially when interest rates are completely free (Cho, 1990).

The stability of monetary that combined with the level of internal fixed prices supported by the commitment of the highest stable of foreign exchange rate, which was the main method achieved through the high real interest rates and financial development.

The instability in the level of price in the economy of developing countries it becomes necessary to use nominal interest rates to offset the expected inflation and to find a balance between supply and demand balances loanable in the capital market. Some economists deem that in the case of a high inflation, it can be equated with high nominal interest rates, especially if commercial banks were owned by the country, and then do not compete much with each other (Cho, 1990).

2 - The non-inflation financing policy: often developing countries resort the finance minister to raise the financial resources for economic activity to use subsidized credit. So, there are three attributes appear in developing countries on financing scheme.

- Large reserve requirements: often the commercial and savings banks reserves with a high proportion of their deposits with the central bank, where sometimes exceed 30% without real interest (Galenson, 1992).

- Specialization of credit agencies: due to the flow of large cash resources at the disposal of the central bank, it is through the channels to provide cheap credit to a number of specialized agencies, which in turn lends to low interest rates and lending investors, farmers and industrial projects that the government wants to support, and go directly to the Ministry of Finance to cover the government's budget deficit (Galenson, 1992).

- Limits interest on deposits and loans: the government resort in its monetary policy to determine the interest rate for lending commercial maximum formal (This is for commercial banks), while the specialized agencies often provide loans at low interest rates about 2 - 4% (Galenson, 1992).

Chapter three: The policy of interest rate and its impact on the economy of developing countries

Introduction:

The interest rate as a tool of monetary policy have effective and efficient on the variables of economic activity, especially in the Keynes' analysis, which depends on fiscal policy rather than monetary policy where it is affecting the demand for liquidity, and then its impact on the level of expenditure, operating and production depends on the level of investment and consumption, and investment depends on the adequacy marginal capital (expected of profit rate) and where interest rates were low that leads to increase the size of the investment due to the expected high return of profit.

Section one: Characteristics and advantages of the economies in developing countries:

The prevailing economic organizations in a developing country characterized by economies of the characteristics and advantages of economic, social and political those need to achieve economic development in their policies.

Although, the varying economies of developing countries in the degree of economic backwardness and economic structures, but they are characterized by optimum utilization of economic resources both material and human. So, the basic problem that facing the developing countries is needs to establish a production system that able to bring about economic development effective (Ali, 2008).

In this section we will discuss the general characteristics of the developing countries, and then run the reasons for the weakness of savings in these countries, without ignoring the nature of the banking system for the developing countries (Ali, 2008).

3.1.1 Characteristics of the economies of developing countries:

The economies of developing countries characterized several points we will summarize the most important properties as follows:

1_ the dominance of agricultural production and extractive and underdevelopment of the industrial production: the nature of the economy of developing countries is the control of agricultural production and extractive activity, while the shares of this activity increase in the overall national activity by 40%, but in developing countries it does not exceed 20%. On the contrary, the share of industrial production to developing countries at least 25%, compared to more than 50% in the developed industrial countries. So, it is the right to described developing country by agricultural or extractive, and the developed countries to industrialized countries (Chuah, 2004).

In this description in the economies of the developing countries leads to several conclusions on their economic systems, such as:

- Lack of diversity of professions and trades, which causes the concentration of the workforce in the agricultural sector.
- Low the productivity of both labor and capital in the agricultural sector because the agricultural work does not need to large capacity of training and experience, and does not require heavy capital.
- Most developing countries specialize in the production of one or two types of agricultural commodities or extractive for export, which leads to economic dependency to the industrialized countries (Chuah, 2004).

2_ rising importance of foreign trade: the economies rule of developing countries for the agricultural and extractive production, and their specialization in the production of one commodity or more are intended for export that push these countries to depend on foreign trade for the disposal of their primary and agricultural versus and import their needs of other commodities. This is expressed in high degree of openness economies in developing countries on the global market, which leads the economies of these countries completely related with changes and fluctuations economies of developed countries and international markets. In addition, these resulted in most developing countries suffer a deficit in their balance of payments, due to lack of export earnings and lack in the type of export production, and the low prices of these products, as well as higher imports of manufactured products and even agro-food products, add to that higher import prices compared with the price of exports (Faisal Al-Fakhri, 2004).

3_ **The low of national income:** as a result of the structure of the economies in developing countries and their nature of agricultural and extractive, with the result that exports and imports constitute a high proportion of national output, these reasons explain the low in national income and the accompanying decline in per capita income, and then the low level of consumption and saving. Despite, the low level of national income, the structure of income distribution is characterized by poor distribution of wealth. So, we find in these countries stationed most of the wealth in the hands of a few individuals, and the majority of members of the community get only a small share of this wealth (Fred Ragheb, 2010).

4_ The country intervention to make development: the process of economic and social development requires a change in the economic and social and politics structures in order to

create the development process, but to sustain and maintain these developing need the intervention of country by its various institutions to oversee all stages of their development plans.

Then, the intervention of country may explain the creation of the overall development, as well as to bring about a productive able to move all the energy material and human potential in the community, these cannot be achieved only through establishment of strong public sector and to rely on the system of the national plan (Fred Ragheb, 2010). The experience of planning in developing countries have faced many obstacles, including political and social conditions that require the establishment of a strong country that able to take the initial steps necessary for the development process. Finally, it can be said that the economies of the developing countries is characterized by the following characteristics:

- Lack of the flexibility on the whole production supply.
- The importance of major agriculture.
- The rareness in the capital
- Low level of national and per capita income.
- Unemployment concentrated especially in the service and agriculture sectors.

3.1.2 Vulnerability factors of savings:

The weakness of investment in developing countries is often explained by specialists weak in the savings, and returns it to the following reasons:

1_ the low average of per capita of national income: savings is what left of income after spending on consumer goods and services; it is based on the level of income.

2_ use non-rational surplus income: it cannot say lack of savings to developing countries, but they have savings even it was weak, then what is saved do not use commonly used sound and rational due to several reasons including: the phenomenon of negative savings, as expenditure of funds to purchase land and luxury housing, which takes several forms have money in the form of liquidity or buy jewelry or spend money in excess consumption (Fred Ragheb, 2010).

3_ Decline the institutions of savings and weak of internal market: in most developing countries there is a shortage in the number of installations savings such as commercial banks and savings banks and savings …etc. This is in addition to the inadequacy of the performance of its mission fully with the conditions of these countries (Faisal Al-Fakhri, 2004).

4_ inflation expenses of the country administrative: The analysis of the general budget for these countries indicates that the administrative expenses represent a substantial proportion of the total expenditure, unlike the case in the industrialized countries. The inflation of public expenditure that is unproductive to the country leads to weakening of savings and general surplus revenue. In addition, to this phenomenon there are bribery, corruption, theft that extends to public money, mismanagement, and delayed completion of public planned programs, but based on these and other reasons we find that the sacrifice of members of the community in developing countries in vain, and as a result it may cause disappointed to the community, which not leads to occurs interaction between economic policies and members of the community (Frenkel, 1998).

3.1.3 Banking system in developing countries:

We cannot know the conditions prevailing banking in most developing countries, without identifying their monetary and banking conditions during the period of colonization. In this regard has been organizing the banking system to suit the interest of the colonized country and to achieve the objectives of the colonizer the banking systems in most developing countries has characterized in the colonial period by the following characteristics:

1_ nature of the banking system in the developing countries in the colonization period: the banks of colonial countries have opened an extensive in their branches in the colonies and resulted in this situation that these banks are branches of foreign banks were subject to its credit policy, but these subject are not commensurate with interest economics to the colonies it aims to achieve their resources to the interest of the colonized country. Also, these credit institutions were only interest to provide loans to foreign companies for all those working in the extraction of raw materials or the exploitation of agricultural land or the foreign trade sector, while other sectors that called the traditional sector was deprived of any means of financing because they were mostly belongs to the indigenous people. The banking system has created several investment problems that the developing countries were to face at their independence (Maked Ali, 2007).

The most important of these problems were the issue of re-structuring the banking system to serve the economic interests, and the drafting of a new credit policy that allows providing the necessary funding for the development (Maked Ali, 2007).

a - spread in Algeria during the French colonial period, an extensive of foreign banks, especially French, to serve the interests of foreign colonizer, and the natives (the Algerians) did not have a chance to do so.

b- Various economic sectors, add to this the problem of the liberalization of the banking system of dependency and foreign domination.

2 - Characteristics of the banking system after independence: these characteristics represented in the central bank's relationship with the government, and the difficulties that faced by the work of commercial banks and lack of development and growth of the monetary and financial markets (Maked Ali, 2007).

A - Conditions origination of the central banks: after independence all developing countries create central banks in order to achieve country control over the banking system, and these central banks were owned by the country. The policy of these banks related to the policy of governments in achieving economic development, but the work of these central banks since their established to the present time they faced several problems and difficulties as a result of conditions and the role assigned to them. These problems can be summed up in how central banks participate in the development of the national economy, and how to coordinate the relations between them and the government. The participation of the central banks in the development of the national economy have resorted to facilitate the process of credit in order to create more money supply, also worked to achieve control and guide the commercial banks by forcing them to follow credit policy consistent with the objectives set to achieve the economic plan. Also, it worked on the creation of limited financial markets based on mainly treasury bills when buying them and compel commercial banks to keep a certain percentage of the liquidity in the form of bonds to the public treasury. Finally, it worked to achieve control over the movement of capital in order to prevent it to escape to outside the country. Therefore, coordinating the relationship between the central bank and the government, we find that there is independence granted to the central bank in many developing countries stipulated in the law, but this independence did not respect the terms of the fact, which leads government to resort to request more monetary issuance and this increase carries with it the risk of inflation. One of the difficulties that limit the effectiveness of the role of the central bank is the tendency of governments to impose their role on the central bank with regard to monetary policy (Frenkel, 1998).

B - the establishment of commercial banks: as regards the establish and role of commercial banks in developing countries after their independence, as it mentioned that most of

developing countries have inherited banks system that were branches of foreign banks, which their interests contrary with the interests of the independent country. While other countries worked to nationalize the entire bank, and then work to make a mixed banking sector and the country contributes in the capital of commercial banks, and other countries worked on the establishment of a national banking system through nationalization and to contribute to the capital of banks (the case of Algeria) (Khaled W, 2005).

The commercial banks in the developing countries faced several difficulties, including: weak deposits and competitive foreign banking institutions that allowed by some countries. Also, the concentration of banks in the rural areas, high levels of interest rates on loans due to lack of funds and the increased risk of loans and lack of guarantees provided by the borrowers, confusion between commercial banks and specialized banks set up by some developing countries to finance their planned programs, and set up to specialize in lending long and medium-term.

C - Decline in development of the monetary financial markets: the existence of the monetary and financial markets is very important not only to enable the central bank to control credit, but also represents a space for the development of the financial resources to fund various development programs and various investment (Khaled W, 2005). So, many developing countries worked to develop their markets that deal in cash treasury bonds. But this experience did not give only limited results, since the development of monetary and financial market depends on the availability of several conditions, such as:

- That will be regular offers of bank liquidity are lending faced by regular demand for loans, and the availability of this condition depends on the diversity of productive activities that require credit on a regular basis during the year.
- To re-regulate banks, so that the bank working on liquid exchange surpluses among themselves, and prevents transfer abroad to invest in foreign currency markets.
- The central bank has to be able to activate the market and control of cash and this requires coordination between governments and central banks (Khaled W, 2005).

Section two: The compatibility of monetary theories to the economy of developing countries

The various theories of the traditional monetary, which prevailed until the advent of the crisis of the global recession (1929_1933), and then monetary theory of contemporary Friedman's theory interest to interpret the factors involved in determining the value of money and the general level of prices. While the monetary theory of Keynes has interested in effect of the using money on the effective aggregate demand, the impact on the level of production, employment and national income (McKinnon, 2006).

3.2.1 The appropriateness of the monetary theory of traditional and contemporary:

1_ traditional monetary theory and circumstances of developing countries: it is already mentioned that the traditional monetary theory has essentially the interpretation of the factors and causes that interfere in determining the value of money, and then to determine the general level of prices. Where it has established a direct correlation between the quantity of money and the general level of prices under stability both rotational speed money (preferably cash) and volume of transactions (national income). The economists Ridolv and Chabert deem that this theory cannot be the subject of the application and interpretation of the conditions of underdeveloped countries, but if there is a set of conditions and assumptions, which means any increase in the money supply will sign the economy of those countries in inflation crisis and these economists are based on the following reasons:

- The developing countries characterizes of the structural to exercise the amount of money for their impact on the real quantities because increase in the money supply leads to increased demand, but the adoption of these countries on foreign markets, as well as the nature of their local markets and systems prices any increase in demand will occur inevitably increase in prices, and thus the existence of gaps inflationary, and then increase the amount of money with what is known of the high propensity for consumption in the developing countries, would necessarily make inflated market demand with market that has inelastic supply. Moreover, it would lead to increase the prices and it concluded that any increase in the quantity of money will be transformed into consumer goods and this form directly effect on prices and that the cause of increase the consumption propensity as a result of increasing the amount of money (Magdy M. Shehab, 2012).

- The tradition factor and simulations that are affected communities of developing countries would promote the idea of any increase in the quantity of money will make a direct impact on prices only without impact on any other factors.

- The assumption of employment situation does not apply to various countries that have high ratios of unemployment, and lack of using their capabilities of physical and human resources. Actually, some countries have achieved significant increases in the size of their real gross as a result in their economic development programs.
- The increase in the quantity of money comes from increased trade, increase the economy money and increase in population.....etc. That means the amount of money usually come after growth, and then it does not merely serve as a dependent variable and not independent variable it is derived variable. It cannot exert any impact on prices.
- The most of developing countries depend in their economy on international trade, where are the amount of money for payments of internal and external, and becomes the negative relationship. So, the prices of imports and flows of foreign goods and services are exerting their effects on domestic prices and determine the amount of money (Kandil, 2003).

2_ monetary theory of contemporary and its relevance to the situation of developing countries: the monetary theory of contemporary to the amount of money cannot be appropriate to the circumstances of the country economically backward. Friedman's theory and his followers from the owners' doctrine cash (monetarist), were mainly come to suit the conditions and variables of the economic systems of developed capitalism. Because of these reasons that this theory through its analysis clearly it has nature cash purely, where the interpretation of inflation, and thus higher prices on the basis that a monetary phenomenon, occurs when the growth rate of the money supply is greater than the growth rate in production, while explains of inflation in the developing and developed countries as a monetary and structural phenomenon. In addition, the monetary theory of contemporary looks at the relationship between the change in the quantity of money and the change in the level of price through what occurs to change in demand for money. Friedman interprets and analysis the determinants of the demand for money to conduct rational derived from the theory of consumer behavior. The individual has to determine his/her demand for money to keep them in the form of liquidity and choose between several alternatives according to the return achieved by each type of assets which are distributed of wealth (cash assets), financial assets, natural and in-kind assets, and human resources. This analysis is difficult to accept in developing countries that are characterized by fiscal and monetary narrow markets and weak transactions in stocks, which means double the activity and the limited diversification of financial assets and cash and low ratio of wealth, where it becomes only the alternative for money as a form of wealth is the real assets (Hussein Hani, 2002).

However, the monetary theory of contemporary to the amount of money's conditions cannot be work with the rule of developing countries of the country backward, but we cannot deny this theory because it has same interest as the quantity theory of traditional, especially the relationship that exists between the amount of money and volume of production, and this relationship cannot be neglected if we need to analysis of inflationary pressures that faced by many developing countries. So, the adoption of monetary policy as it deemed by the monetarists and applies on developing countries may have implications and stabilizing effects on the national economy of these countries (Hussein Hani, 2002).

3.2.2 The applicability of the Keynesian theory:

The Keynes theory in labor and money was as revolution in the world of macroeconomic (overall economic), which contributed to providing solutions to minimize the effects of that crisis that traditional theory failed to explain or find appropriate solutions. Here is question; to what extent the Keynesian analysis can be considered to the situation and circumstances of developing countries? On other words; does the Keynesian analysis can be used to solve the problems in developing countries? When we discussion of the Keynesian theory we have concluded that this theory came to explain and address the situation of the capitalist world in the depression, so this theory has made appropriate solutions to the crisis, based on fiscal policy rather than monetary policy (Magdy M. Shehab, 2012).

The interest rate consider as monetary phenomenon determined demand and supply for money (preference cash), and this price is a tool that determines investment, and the investment with the marginal propensity to consume determine the size of aggregate demand effective and spending. Therefore, the increase in the quantity of money at Keynes will lead to a lower interest rate, and then will increase the demand for investment, as a result of the multiplier which will increase income and increases in operating and production. So, Keynes deems that increase the amount of money does not directly lead to the increase the prices, but also lead to increased spending due to an increase in income because of increased investment.

According to this analysis, we believe that the circumstances and the economic and social characteristics of the developing countries can not apply to the Keynesian theory, which means that Keynesian analysis is not fit to interpret and deal with the economic situation of the developing countries due to several reasons such as:

1 - Funding policy of deficit: it provided by Keynesian analysis to solve the unemployment problem - for example - it is not consistent with the developing countries circumstances,

which suffer from low flexibility in supply productive. In reality, these countries do not need increase in spending cash to get out of the economic recession, but they need structural change in the production process through a process planned economic development that means the problem of these countries is not demand problem it is supply problem. Also, they need to raise the degree of utilization of productive resources available to raise the level of production of goods and services. Accordingly, in situations in the developing countries any increase in spending will direct lead to increase the price (Michael Juman, 2010).

2_ the relationship between the quantity of money and the interest rate in developing countries: the circumstances and conditions in developing countries in the field of monetary and financial make it difficult to accept the theory that a change in the quantity of money will reflect directly on the interest rate. So, most of the developing countries have two sectors monetary and traditional sectors inside each country's economic system, and even the modern sector includes the regulated and unregulated cash markets and this situation is usually called (bilateral financial) (Gibson R, 2001).

Where the regulator of money market consists of the central bank, the treasury, commercial banks, financial institutions quasi banking, savings, centers the current account, non-banking financial institutions such as insurance companies, social security, various lending institutions. Also, where it was present in urban areas are widely and works with a high degree of development, but it on the contrary in the rural areas. Due to the duplication of money and capital markets in the economy, it is difficult to control directly by the monetary authorities, which leads to heterogeneity in interest rates, and then it's hard to affect the decision of monetary authorities on the change in the quantity of money effectively on interest rates (Muhammad G, 2004).

We conclude that Keynesian theory does not apply to the different countries. Theory assumes the existence of a single interest rate that affected by changes in the quantity of money, which leads to affect investment, spending, production and operation. In addition, that the differing interest rates are not limited to differences in monetary markets regularly and irregularly even in the one money market the interest rates can be different. So, the interest rates in both markets are not united according to the forces of supply and demand, in the regular monetary market it is determined price of interest rate by central administrative. The central bank is responsible to make decision in determining the interest rate. Also, the diversity in the

structure of interest rate where change of interest rates in the regularly market by degree of risk, and by interest of the debtor and creditor, and the nature of those borrowers and depositors. While in the irregular of monetary and financial markets the determining of interest rates are subject to a number of factors and variables bonus risk, administrative expenses, the expense of opportunity, and the degree of monopoly power enjoyed by lenders (Muhammad G, 2004).

3 - Weakness range of money and financial markets: One of the reasons mismatch analysis Keynesian to the conditions of different countries, and it has great importance in the monetary analysis is particularly in the narrow scope of the money and financial market, which distinctive character of the underdeveloped countries, especially if we consider that the analysis Keynesian requires development and progress markets. The cause shortness of financial and monetary markets in developing countries and that is through trading and dealing in securities trading, but mainly due to the lack of dealing with those securities. On the other hand, limited dealing in regulated markets on commercial banks, especially in the treasury bills (Michael Juman, 2010).

The deal of government bonds represents a broader market in developing countries is noticed that most of the bonds traded on the market is held by the central bank, commercial banks, insurance companies, and social security. As for what related to bonds and private equity, there was a limited deal in financial markets and stock exchanges. So, the weakness of the scope of the money and financial market is lack of savings and cash, and the lack of transactions in securities trading and private and public financial, we emphasize that it is difficult to consider Keynesian analysis based on monetary and fiscal markets, where the change in the quantity of money directly reflected on the interest rate(Madani Bin Fame, 2008).

4_ relationship between interest rates and investment: we already mentioned in the Keynesian analysis that increasing the quantity of money would lead to lower interest rates, and then increase the investment, but in reality of developing countries and their economic situation may make the related between the interest rate and investment difficult, which is decrease the interest rate would directly lead to increase investment. As it indicated before that it is not necessary change in the quantity of money will reflected on the interest rate, and thus be reflected on the investment decision even if there was a reduction in the interest rate due to the increase of money supply (Madani Bin Fame, 2008).

Some economists believe that the decline in the volume of investments in developing countries is not due primarily to a rise in the level of interest rates. The solution to the problem of weak in investment does not necessarily require decrease in interest rate as it requires work to raise sufficiently marginal investment. The result, most economists do not bet on the appropriateness of monetary analysis of Keynesian conditions and economic conditions of the developing countries. So, the Keynesian theory found to put the appropriate treatment and interpretation required for conditions in the capitalist countries in limited situations (Madani Bin Fame, 2008).

Section three: The effect of skeptic current on interest rate:

The collapses of traditional monetary and new classical theories are unable to interpret and deal with the crisis of the global recession. Keynes left his ideas about the interest rate, which was deemed initially effective irreplaceable in the treatment of changes, as it was the reaction failed of the monetary policy, and hence it appears during periods of recession that the interest rate is ineffective to change the investment decision. Despite, the intervention of the authorities to reduce the interest rates to the lowest levels that Keynes expressed by trap liquidity, and then the raise of interest rate did not stand the growing of demand for credit. As a result of these lead many economists to belief that the interest rate may become a weak weapon, and that care and the importance given to it by the classical economists, including Keynes was misplaced. Some economists went to further and explicitly said that the interest rate cannot have any role in the monetary analysis and it cannot be considered as a tool of monetary policy instruments which influence economic activity (Omar Mohiuddin, 2009).

3.3.1 Mead Model and Abrcol Model:

The importance of the interest rate as a tool of monetary policy and its impact on the economic variables of the industrialized countries in general and developing countries in particular has been reduced; such research and studies are as following:

1_ we mean opinions and ideas of some economists capitalists, while the Islamists do not see the interest rate as an instrument of monetary analysis, which could affect the economic activity variables.

2_ the first research was of this group (Mead, Andrew Wilson) in October 1938, which included a large number of projects, then the same group had considered last in February 1939 and included 1308 projects of productive projects.

The second search was done by the U.S. economic Frchaelin Ibrcol from Harvard University in 1938. Refer to each of the expansion:

-Field by a group of economists and British researchers from the University of Oxford such as (T.Wilson-P.W.Andrey-J.E. Mead) and from the U.S.A (T.K.Ebersol), from the University of Hardvard during the period 1938 and 1939, on a sample of business owners in capitalist societies, to know the impact of changes in interest rates on the investment decision, and thus volume production decision. The results came a sudden and alarming to many specialists in the analysis of monetary and financial (Robinson, 2000).

- There is almost complete agreement that the interest rate in the short term does not directly affect the investment in securities, and in fixed capital. The reason is due to the installations do not borrow from the banks and in some cases the impact of the change in the interest rate does not make sense when compared to impact of profit change, in a few cases acknowledged by some economists that the interest rate may affect the decisions to purchase machines, but it does not affect in maintenance of a stock of goods. Also, some economists decided that the interest rate affects the stock, but it is not the only factor that drives to increase the stocks.
- Majority of economists deny the existence of any direct impact of change in interest rate in the long term on the size of the investment even though some of them acknowledge the importance of these changes for investment, especially if the interest rate is low and continued to decline for some time (Rebick, 2005).

Search has been criticized, both on the samples or how the questions are asked and content….etc. The economists who criticized the field study objected to the following points:
- They argue that the sample taken in search of Oxford or Harvard not suitable outcome to be replaced rule, where it is not reasonable in their opinion to study like this sample and circulate the results to say it represents the society.
- The data collection albeit by a group of economic professors of researchers interns to this process, but they are no longer prepared special to carry out this search. Many of them did not have an idea on the subject of interest rates, as it admit in Ibrcol's analysis (Omar Mohiuddin, 2009).

3.3.2 Interest rate is misleading index to developing countries:

It is known that each system constants and variables, and since the money and the banks considered variables in any system whatever it was economic and social situation. So, when the interest rate was as tool of the monetary policy and as variables that has doubts raised about its affect and usefulness in effect on the economic variables. There is a question

about the necessity and effectiveness of the interest rate in the contemporary economic systems, including underdeveloped?

We have proved the study that there are fundamental differences among economists about the definition and the concept of interest rate, not to mention its role and its implications in economic activity. We have completed that there systems tool considers harmful to economic activity, to be canceled or not be relied upon in making economic and monetary policy, in the socialist system. The interest rate is not encroached be a tool used by the bank to organize its relationship with various projects. The rigidity of the interest rate in such these systems did not leave any impact on economic life, and then the function and the nature of the interest rate in the system is just a tool regulatory administrative rather than economic function and cash. While, the interest rate was replaced between the difference capitalist schools of thought about the impact and efficacy without access or reference to cancellation or refusal. The interest rate in the capitalist thought is one monetary policy tools that can affect various economic variables private saving, investment, spending and production, but the difference was in the extent and degree of impact and feasibility (Timmer, 2000).

The professors J.Lezlir, W.Conrad, and L.Jonhson were reached on the basis of field studies to the fact that capital in contemporary economies had been abused dangerously allocated among sectors of the economy and the types of investments, because of the interest rate. The interest rate has been described as poor and misleading tool in the allocation of resources, discriminate mainly for large projects, and it was a tool to promote interest monopolistic trends.

While in small or medium projects that have higher productivity, and greater efficiency, these projects get loans much less of their needs with high level of price. On this basis, and even without serious study under the regime of fixed interest and secured in advance, does not accomplish investments feasibility and most profitable (return expected), due to the inability to finance that goes to projects that have less productive, and less need for external financing, but it has powerful of authority and more influential (Yoshikawa, 2001).

If this is the case of developed countries where prevail competition between large corporations, the reality of developing countries is not much different with them, but the need for these countries to projects of medium and small is the most important of the major projects that absorb as much of the funding, and be less effective, and this what happens to a lot of developing countries that have adopted the manufactured industries (development pattern of the States that have adopted the socialist system) (Yoshikawa, 2001).

Moreover, the field studies that already referred to confirmed the businessmen believe that the interest rate is not an important factor in determining the level of investment, which means the demand for investment is inelastic for the interest rate, due to two reasons; the interest rate represents the percentage of fraction of the expense of bringing new investment, and adoption of many of the projects on a self-financing, which makes expense implied impact on limited invested capital.

The opponents and doubters to use the interest rate in achieving the objectives of monetary policy, and then achieve the objectives of economic policy to following grounds:

- Raise the costs of debt service and the promise of increased tax burdens and income redistribution in favor of creditors who are supposed to better than the rest of society.

- Support the development of monopolistic sector, which has a better status allows it to increase in the cost of borrowing to consumers by raising the price of products.

- Damage to long-term investments, as the longer period to import loans make these investments zero gravity and then exposure to losses, as well as for investments in long-term bonds, where prices are low due to increase in the interest rate.

As a result of the above-mentioned reasons, the interest rates as a monetary policy tools proved its failure to influence the investment in times of crisis (whether inflation or deflation), which summoned to find another tool of monetary policy tools that can influence the investment (Yoshikawa, 2001).

3.3.3 The effectiveness of the policy of self-financing:

The negative effects of the interest rate on the capital formation process, and ineffective in addressing the imbalances and inflationary deflationary some economists deem that the interest rate is one of the most important factors of instability in the economies of contemporary countries in general and developing countries in particular. Friedman has wondered at the beginning of the eighties about reckless behavior, which causes unprecedented for the U.S. economy, responded to his questioning by saying: The answer that comes to mind is his reckless behavior disadvantages in interest rates. The fluctuations in interest rates directly affect the investment market, which makes it difficult to take a long-term investment decisions with confidence, or good planning for the future of the business. The applied field studies by the U.S. banking system have proven that there is a strong positive correlation between the level of investment and the level of profits. This is due to non-distributed profits that allow the project cash flow assisted self-financing. In the United States during the period (1977_1980) produced non-distributed profits, in addition to the

provisions for depreciation of assets in joint-stock companies, a important net monetary resource reported five times dividends of the total investment spending in non-financial companies in 1980. The relative share of internal funding was (87%) and about 4% increase in the capital, and the loan was share the rest (9%). So, we conclude that the profit is the primary force against the decisions of investors not only as a standard for attractive investment, but also because an important funding source (Yip, 2005).

Section four: Reflection of the real interest rate on the economy of developing countries:

Which is well known by researchers and professionals in the field of monetary analysis that the traditional monetary, Keynesian, and contemporary theories (Friedman's thesis) have not been accepted by economists in suitability with economic and financial conditions of the developing countries (Zainab Hussain Awadallah, 2008). So, the existence like this monetary theories that tried to interpret of the relationship between an independent variable of interest rate and other economic factors as dependent variables, and the views of these economic researchers based on the following principles:

- The reform process in the monetary sector and financial centered to the interest rate, where governments work in this area to become interest rate expressing the real price in the market, in order to achieve the objectives of macroeconomic balance, and to achieve this it requires the removal of restrictions on determining credit and remove the rules that govern it, and the need to eliminate subsidies for the production units of the public and private sector.
- The increase in interest rates on deposits leads to increases the flow of funds available for new investments.
- Making real interest rates on deposits to all forms of money high, the industrial and agricultural companies deprived weak return of direct internal investments, or keep balances unproductive to combat inflation. Also, we found small companies can directly investing in various fields in a way self-financing even if they cannot borrow from banks, and in this regard (Thornton and Bodial-1990) provided experience "Nepal" can related (linked) the stability of price to self-funded investments.
- The countries striving to reform may resort to deprive the institutions of bank credit as a useful tool to ensure control in the price level in the field of improving productivity to the capital in public institutions (Zainab Hussain Awadallah, 2008).

3.4.1 Contemporary forms of interest rate deregulation:

Before addressing the experiences of developing countries in the interest rate liberalization it should be noted some forms of contemporary that appeared in the mid-eighties of last century, which attempted to explain the effect of changing the interest rate on the growth of financial assets lendable, and the GDP growth.

1 - Alanai and Sarakojlo model: they commissioned by the IMF, during the period (1971-1980) they studied sample data of twenty-one developing country, to stand on interest rate policy on bank deposits and its impact on the growth of the real financial assets and GDP. The search was based on the calculation of the average real interest rate for one-month deposit of each country, where arranged countries on the basis of whether the average real interest rate on the deposit positively or negatively (Volker, 2005).

Table (3.1): The impact of the real interest rate on economic growth to a range of developing countries.

1_ country with positive real interest rates	Financial assets	GDP
Malaysia	13,8	8,0
South Korea	11,1	8,6
Sri Lanka	10,1	4,7
Nepal	9,6	2,0
Singapore	7,6	9,1
Philippines	5,6	9,2
2_ country with negative real interest rates somewhat		
Pakistan	9,9	5,4
Thailand	8,5	6,9
Morocco	8,6	5,5
Colombia	5,5	5,8
Greece	5,4	4,7
South Africa	4,3	3,7
Kenya	3,6	5,7
Burma	3,5	4,3
Portugal	1,8	4,7
Zambia	-1,1	0,8
3_ country with negative real interest rates largely		
Peru	3,2	3,4
Turkey	2,2	5,1
Jamaica	-1,9	-0,7
Zaire	-6,8	0,1
Ghana	-7,6	-0,1

Source: Bulletin from the International Monetary Fund, 2005.

Observed from the above table that there is a direct correlation (positive) between financial assets (M2) and the growth rate of GDP (P I B) (1)

Also they reached the countries that maintain positive real interest rates enjoyed the largest growth in their real financial assets.

2 - The Alan Gelb Model: The study carried out by Alan Gelb was more comprehensive than previous experiments, where he analyzed the relationship between the average interest rate on deposits for a period of three months to six months, and the average GDP real growth through financial statements compiled by each of Hatsoon and Neil from the 34 of developing country with over a longer period (1965-1985). The Gelb has divided the sample conducted by the research into two periods (1965-1973) and (1974-1985). Like the previous study for the International Monetary Fund; first, the order countries in terms of quality depending on whether real interest rates on deposits is positive or negative is somewhat or strongly negative (Abdul Rahman, 2011).

Table (3.2): the impact of the real interest rate on the rate of economic growth (Gelb model)

index (indicator)	(1965-1973)			(1974-1985)		
	positive	negative	Strongly negative	positive	negative	Strongly negative
Real interest rate	3,7	-1,7	-13,7	3,0	-2,4	-13,0
PIB growth rate	7,3	5,5	4,7	5,6	3,8	1,9
PIB / M3	28,9	27,0	29,1	40,3	34,0	30,5
M3 / real saving	18,7	12,7	6,4	16,6	8,2	-0,9
Inflation	22,2	7,1	40,1	20,8	23,9	50,3

Sours: these results were published in the report of the World Economic Development of the World Bank in 1998.

From the table we note that during the second period 1974-1985, the average GDP growth overall (PIB) 5.6% in countries that have positive real interest rates, while reached (PIB) 3.8% in countries that have negative interest rates, the countries that have strong negative interest rates the GDP ratio reached 1.9%., and it is the same results of the study carried out by the IMF. Gelb reached through this study that each 1% increase in the real interest rate offset by an increase of between 0.2-0.25 in production growth. Also, Gelb from his experience concluded that the efficiency of investment varying from country to country was closely linked with positive average of real interest rate. So, there is relative importance of the high savings family as part of the (PIB) in exchange for improved productivity of capital as a result adoption of positive real interest rates - see table (2). He has proven in (1989) that there is a strong positive correlation between the real interest rate on deposits and economic growth. How important is the impact of efficiency in relation to investment (savings) in the interpretation of the increase in the rate of real growth at the impact of high real interest rate? After statistical and mathematical studies Gleb has reached that the importance of the impact of efficiency was about four times more than the importance of investment in interpret of the differences in growth (PIB) included 34 developing country in the sample, which means the

higher prices for average of real interest on deposits have made major impact through increased the interest of investment more than accumulation of savings as part of the (PIB). Gleb deems that the positive relationship between the real interest rate and real growth looks strong, and from the quality and quantity of the investment clearly improved when the powerful brokerage (Abdul Rahman, 2011).

The Gelb believe that the advantages of monetary stability played by internal financial variables in order to increase economic growth. So, raising the real interest rate on deposits by reducing the rate of inflation is considered as strongest impact of each percentage point here versus a percentage point there that raise the nominal interest rate to offset the impact of continued inflation, and then there are limits to increase the nominal interest rate in a safe way in an inflationary climate. However, it must be careful when deciding on any internal or external change. The positive relations between the growth of financial assets and GDP does not show which change (internal and external) was the reason. Governments usually interfere to put a limitation on nominal interest rates on bank deposits, while at the same time determines the rate of price inflation, and then the real interest rate on deposits determined by one way or another the public policy of the country (Abdul Rahman, 2011).

3 - The R.McKinnon and A.Xu model: It known to many economists that there is a consensus to various monetary theories on the existence of negative relationship between interest rate and investment, while Makinnon and Shaw were against the policies that lead to reduce the interest rate to encourage investment. They have defined reduce of interest rate less than equilibrium level to phenomenon of braking financial (the level that is equal between the savings and investment). Also, they proved that the rule of this phenomenon will lead to reduce the savings rate than what needed to finance the investment (Abdul Rahman, 2011).

In time that Keynes has encouraged the money policy to make investment and thus reduce the rate of interest, but McKinnon asked to raise interest rates in order to improve the efficiency of investments where accompanied with rise in interest rates out inefficient project from the market. Moreover, the rule of decrease the interest rates mean that it will not be choosing the most efficient investment, or it will not be more privatization in order to arrange the rates of return on investment, but would intervene with other elements such as personal knowledge and the political influence of the selection of projects that get credit. Also, he cares about relationship between the interest rate and its impact on the rate of (PIB / M2), he deems that

the rise in this rate can lead to financial deepening, which leads to the increase in the rate of GDP growth (PIB), and this explains that the rise in real interest rates, and then increase in the rate and increases the flow of funds available for lending for new investments and finally leads to higher real growth rate (PIB). This has reached also by Gurley and A.Xu that there is a direct correlation between the degree of financial development of the economy and the level of growth, because without this financial growth and the growth in income will not be optimal developed and it will not reach its maximum growth (Abdul Rahman, 2011).

However, McKinnon returned and retreat from this position in 1991, where he refers that the editorial is not always the ideal situation for both economies, and by referring to the experiences of some developing countries. He also noted that interest rate liberalization improves be gradual and be preceded by creating specific economic structure, the most important measures to control inflation. McKinnon believes that the main reason leading to the slow growth of underdeveloped countries is lack of capital and weak financial markets, and based on that he asking for objective of monetary policy to be the development of financial markets (Amory, 2002). In addition, that money is the primary means which used to capital formation in developing countries; both the money and wealth are treated as complements and not substitutes to each other. Also, McKinnon expresses the function of demand for money, which highlights the role of the interest rate as follows:

MD / P = f (y, I / y, I, Pe)

Where: MD / P: the demand for real cash balances by M2.

Y: real income.

I / Y: the real rate of investment to real income.

I: the nominal interest rate on savings and time deposits.

Pe: the expected rate of inflation.

McKinnon and Shu believe to achieve fiscal balance requires definitive limits should be imposed on the policy of deregulating capital markets and commodities, and to stop work interventionist policy guidance and controls that restrict the movement of trade on the internal and external levels. The way that is arranges both monetary and fiscal policies should be subject to the logic of the gradual liberalization of the economy. Also, that the optimal approach to the liberalization of the economy McKinnon and Shu deem that when the real of interest rates is negative leads to low efficiency of investment, and this does not mean that increase in the interest rate will lead to raising the efficiency of investment, but this will make

choice located on the project more efficient both for the private or public sector (Mahmoud Younis, 2007).

The summary of this analysis can be said that McKinnon supporters idea of raising the nominal interest rate to expected and actual inflation, and that optimum of interest rates is equal to the rate of inflation plus (+) a reasonable return match wait and un-use of money, and this is the only way to increase savings for controlling financial braking.

4 - Maxwell Fry Model: he is from the University of Breneajm in Britain-1988 and he use data from different sectors in 22 of developing countries, he added Taiwan that were not a member of the IMF reached the same conclusion, that there is strong positive relationship when real growth attributed of the production to the real interest rates on deposits. Also, noted the positive impact of higher interest rates on the productivity of new investments. Therefore, Fry has displayed the model of McKinnon and Shu, where the model tested on seven Asian countries suffering from financial braking. It has been explained by Fry in the case of financial model of braking, as explained by McKinnon and Shaw that managing loan nominal interest rate, which makes the real price less than the equilibrium price. Fry reached that every increase in the interest rate by 1% leads to an increase in economic growth by about 0.5%. Also, the quality of the investment at a low interest rate to traditional investment the low return, as it is characterized by easy and secure. The Fry noted in his model, which is applied to the McKinnon and Shu Model in another study conducted on sixteen developing countries in the period between (1975_1990). He proved that there is a causal relationship between the real interest rate (independent variable) and the investment rate, where rising investment rates at low real rates of interest (Amory, 2002).

However, when Fry interpret the result that he reach from his study he pointed out that when the real interest rates are negative, there is no motive for the efficient use of capital. In this case, the idle power in the project become no cost, and the investors cannot use the whole of production capacity in the project, and under these circumstances, the balance becomes actual capital for the project is much higher than the effective capital stock in the project. He refers to the example of the standard of the study concluded that the actual capital stock in the project equal to 66% of the balance of the project when the real interest rate -15%, while the balances become equal when the real of interest rate becomes 5% (Cho, 1990).

3.4.2 Conditions apply the high level of interest rates:

McKinnon and Shu believe that the developing countries before eliminating inflated prices and before the opening the capital market for lending and borrowing and before working on the flow of credit and distribution of capital, and then capital market liberalization where it is lending and borrowing based on the positive real interest rates. The priority is to achieve fiscal balance central government. The control must precede financial liberalization through control the direct government spending as much as possible. In order to achieve the successful economic reform governments is to work on the development and its tax system to quickly regain revenue that may be lost as a result of giving up ownership of the means of production. In this context, the best when economic liberalization (transition from a socialist to a market economy), to remain several industrial assets and most natural resources are owned by the countries as resources income for the public treasury. Otherwise, the privatization process could create a deficit considering the budgets of public finances. The optimal liberation approach is representing to open market and a national capital allows depositors to receive as well as paid by borrowers rewarding effective interest rates, which can be adjusted according to inflation rates. But the process of lending cannot proceed without restrictions at the level of institutions or individuals unless proven price levels at a certain point. Also, it should not be editing the banking system and directed the government setting interest rates on deposits and loans only after putting financial controls (Hussein Bakhit, 2007).

The McKinnon and Shu idea was supported by Fry, Sebastian Edwards, and another group of economists. Without stability in inflation rates the volatility that cannot be predicted with respect to the actual interest rates, and currency exchange rates makes unlimited lending by the banks. McKinnon suggested the developing countries that followed the approach liberation and they followed a banking system centrally and owned by country. McKinnon and shu deem with financial system that suffers from financial distress (financial repression), the real prices of interest on cash deposits be as negative as it is difficult to predict when the inflation be great or unstable. In these cases the foreign currency exchange rates become highly unstable, and thus demand for the local currency, which includes savings, deposits, and current accounts wither away for the gross national product (Magdy M. Shehab, 2012).

The pressure on the financial system in developing countries would crumble the national capital market with causing adverse conditions for qualitative and quantitative of real capital accumulation, and on the following:

- Reduce the flow of funds that midwife to borrow through the formal banking system, which forcing borrowers to reliance on self-financing.

- Vary of the interest rates for bank lending of a distinct class (owners of monopolies) to another category is distinct from borrowers (small investors).

- Affects the process of self-financing within the projects and individuals, especially if real return on cash deposits and negative currency.

- It is impossible to make a significant financial deepening of the outside of the banking system when installations suffer from an acute shortage of liquidity, or when inflation is high and unstable.

- The foreign capital inflows may become unproductive when the local capital market in the case of disorder and it is impossible to predict the foreign currency exchange rates.

The contemporary model can be summarized to deal with positive real of interest rates. The Fry, McKinnon, Shu, and Gleb models refer that the way to the top level of investment and an effective way to raise the efficiency of investment is offset ceilings for interest rate to a level of equilibrium, any access to a higher level of investment and income. Also, to fighting inflation it must raise the nominal interest rate. The final result is that countries retained higher real interest rates and a more stable price level, generally achieved real economic growth and more powerful (Magdy M. Shehab, 2012).

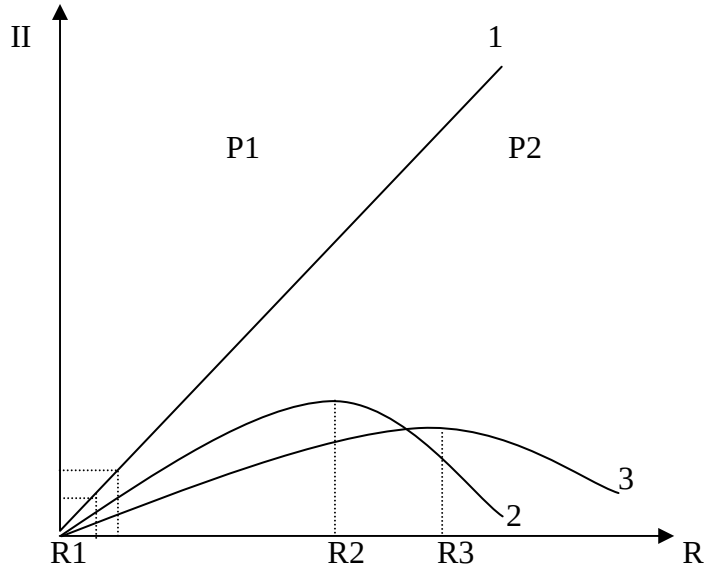
The McKinnon and Shu are not believe that reduce the interest rate to attract the investment and they believe that to raise the investment efficiency requires an increase in the interest rate and also Frey and Edwards were agree with them, as they proved that there is a causal relationship between the real interest rate (independent variable) and the rate of investment. This view is shared by Pollack when he reached almost to the same conclusion based on standard estimates for a kind of forty in developing countries during period -1965-1985 that increase the real interest rate ten percentage points raises the economic growth rate by about two to three percentage points, also concluded that the lower the real interest rate of less from its equilibrium level: 1% requires an increase in the rate of investment: 1% to maintain a constant rate of economic growth (Hussein Bakhit, 2007).

3.4.3 The risk of increase the interest rate:

1 - Reasons for dealing with low interest rates: That the very high interest rates above the inflation rate recorded as an indicator of the continuity of inflation and thus the failure of monetary stability program, and this would be supported by fears that inflation is not going to decrease. When inflationary expectations remain high and uncertain, it is when hiring any higher interest rate it increase from the normal price (10-20%), which determines approximate average of the real interest rate, the borrower must bet on what will be the rate of inflation. In this case, will accept a more serious project in the hope of getting a profitable return unless perish this revenue due to inflation, and then becomes unable to meet its obligations. The authorities should provide subsidized credit lines (formal reduction below the level of interest rates in the market) to commercial banks to help them avoid bankruptcy due to keep the old debt, where the debt outstanding (doubtful) often impede the full liberalization program for the banking system. The result is that policy of cash constraints depends on nominal interest rates and real high did not succeed (Magdy M. Shehab, 2012).

2 - The impact model of the interest rate on the selection of projects: the Stagelts and Weiss (1981) deem that the higher of real interest rate for any category of borrowers more likely to stop payment according to the loan contract. The borrowers may stop if they are exposed to extraordinary losses, and thus with increase in the interest rate can be observed the following:

- High percentage of borrowers who like adventurous while will decline safest borrowers and who are not likely to evade payment, and this is what Stagelts and Weiss call (option with opposing risks).
- Each borrower will be inclined to change the nature of the project (as long as the bank cannot censor minutes on all his actions) till makes a more risk and this call (phenomenon incentive) by Stagelts and Weiss, and both phenomena will pushing the bank to reduce the optional interest rate borne by any category of borrowers to get expected profit to its maximum.



Figure(3.1): A simplified model of the impact of the interest rate on the selection of projects and a case study of return banks

R: real interest rate on bank loans

P1: Secure, which manages projects a return of running back

P2: Projects carry runs a return of risk

P3: High-risk projects return

II: Expected real return for the Bank of $ one of the loan

The figure distinct three categories of risks in ascending order of the expected return and the expected change in the return on the borrower's project (Magdy M. Shehab, 2012).

Category 1 enjoy guarantees a completely safe, and with interest that borrower can repay, and due to the absence of the phenomenon of opposing choice-risk or (phenomenon motivation), the bank's profits increased with the interest rate on the loan over the line makes an angle of 45%. Category 2 the second curve covers projects that are most risk, as it is expected to get more return for a borrower, but P 2 located below and to the right of the line of 45% due to the phenomenon of motivation and opposing choice-risk. The bank profit (on every dollar $) increases slower than increase the interest rate on the loan, bank and gets the maximum profit when determining the interest rate on the loan R2. The fact that higher revenues of bank comes when restricted lending to category 3, all the borrowers who belong to the category 3 refrain completely despite the fact that their projects are the most projects productivity and the reason that the bank in the case of risk anti could not have contracted for lending under the interest rate fixed to get an interest rate high enough to cover the cases used cessation of

payments in category 3. The government can suppress this system to impose, without the need for that ceiling lower interest what set by the bank (R0), and urges this bank to turn the direction of its loans to borrowers unsuspecting completely, even if they are less productive, who belong to the category 1 and exclusion to borrowers of categories 2 and 3 with higher economically return. However, this procedure signs the economy in financial distress because of the imposition of benefits at lower level than is necessary to prevent risk selection with categories 1 and 2 (Magdy M. Shehab, 2012).

Then any bank enters the high-risk lending at high real interest rates in non-normal way, it holds one of the possibilities:

- To get good results in terms of successful borrowers to repay these loans with high interest, this leads to huge profits for the shareholders of the banks.
- In terms of bad results in cases of stopped payments lead to large losses for the bank, (but these losses may return to the banking system as a whole). It will be borne mainly by monetary authorities although the owners of the bank may lose their shares or property rights in the case of unsatisfactory results. Thus, the expected profits in advance of the risky lending process can be very high because the bank's profits have no limit in case related to achieve good results (Fred Ragheb, 2010).

The bank that is not subject to the regulations and does not have adequate precautions against loan losses have an incentive in the process of lending with high interest (loans risky, such as Khalifa Bank of Algerian) since it already knows that the economic results will return profit to it, and that it can get away from the heavy losses. Bank in this case treating as if it wanted to engage in risky, the expected profit is higher than those achieved by the bank who hate risk (subject to legal regulations), because deposit insurance (loans) covers any non-normal losses, and then with increasing disorder of economic conditions the bank who lender risk can determines the interest rate on the loan at a higher level and more risky, but the authorities attempt to reduce their losses expected as a result of its assessment of the deposit insurance, and it could force banks to litigation interest rates with much lower and safer loans (Fred Ragheb, 2010).

3.4.4 The optimal interest rate for developing countries:

If installed the price level was successfully (as happened in Algeria in 2000), What is the real interest rates on deposits and loans should be targeted by the government in order to maintain high real financial development while reducing the national banks unnecessary risk?. According to the experiment field by a group of economists on some developing countries the average of interest rate (nominal and real) to the medium-term deposit in those countries (5% -8%), and ranged from average interest rates on loans (7% - 12%). This rule which refers to the nominal interest rates seem viable in other economies that are being edited, and that are stable price levels, and its government does not need to resort to its bank to get cheap financing. If we assume no restrictions on interests, where the interests are free and determined through a competitive balance, and suppose that the rate of real and expected inflation is limitation. There is strong and positive relationship between the interest rate on loans and the nominal of inflation rate. While the relationship between inflation and the interest rate on deposits is negative relationship. The banks had to pay high nominal interest to depositors in order to maintain the deposit base of their own, and because of the burden of the reserve, which does not pay its interest, the interest rate on loans should increase greater value for commercial banks to continue to cover its expenses. So, when it leaves nominal interest rates free the inflation increases the difference between the interest rates for both deposits and loans. As a result, the more we control the rate of inflation whenever we were able to reduce the difference between interest rates on deposits and the interest rates on loans. In this case, the control inflation at very low levels 1%, the real interest rates on deposits ranging from (5% -8%), and real interest rates on loans between (7% -12%). In order to maintain the real financial growth without falling into the large risk to reach that must availability requirements, and procedures for interest rate liberalization, and its access to the optimal price that can be applicable to the economy of developing countries to maintain the necessary flow of financial resources in order to raise the economic growth rate (Abdul Rahman, 2011).

1 - Terms success of the interest rate liberalization: The liberalization of the interest rate does not mean leaving it treating to with the forces of supply and demand that lead to the disruption to the economic and monetary indicator, but interest rate liberalization means that the use of monetary instruments is directly working through the market and affect interest rates.

1 - The most important studies carried out in this area were Gleb, Shu, and McKinnon studies that previously mentioned. In addition, (Hyryche Akiyoshi, he is expert in the IMF) on some Asian countries including Japan and Taiwan.

2 - Since the controlled Algeria in the rate of inflation the real interest prices are debtor and creditor coincide with the proposed model. This requires a degree of monetary stability that can be modified the interest rate indication expansion and monetary and credit contraction. The process of monetary reform can be achieved in stages depend on degree and speed of the economic structure and development stage and the relative importance of each of the public and the private sector and their role in the national economy, in addition to the integration of the national economy with the global economy. A lot of economists in different schools deem that specifically forced to determine the interest rate works to reduce its role in doing its job in balancing and proper guidance resources and limits as well as from the development of the financial sector and monetary, and then price of interest has an important role and indication balance the internal and external economic and efficient allocation of investment and financial resources (Abdul Rahman, 2011). Thus, the big difference between the real interest rate that determines the free market, according to the forces of supply, demand, administrative price, and the interest rate determined by the monetary authorities that leads to difficulty in interest rate liberalization and achieving financial and monetary reforms. The liberalization of the interest rate is a necessary and vital to the operations of macroeconomic, and it needed to achieving efficiency and effectiveness of conditional and structural changes that are associated with the reform process in the financial systems and cash. Then that interest rate liberalization requires the availability of a set of important conditions such as:

- Ensure competition: The liberalization of interest rate requires cancellation of obstacles to the process of competition to try to avoid achieving wide differences between the interest rate on deposits and the interest rate on loans and preventing expansion in credit operations, as well as to ensure the response of the banking system to the directions of monetary and fiscal authoritie.

- Ensure of non-segmentation market: The direction of projects to deal with some financial and banking institutions without the other, as a result of owning these projects may lead banks to non-completion of the market. As well as the facilities should be given to the licensing and facilitate mergers and the opening of new bank branches (Kandil, 2003).

- Also must stay away from discrimination in credit operations and prevent provide lower interest rates than the rates prevailing in the market. Because the competition may leads to

rise in the interest rate that threatens to increase liquidity in the banking system. So, it must be corrected financial structures of these banks, and that the rest of the rationalization of competition in the banking system, and without these measures, the competition distortions may occur in the price and the structure of interest rates and the lack of response from the banking system to the financial prospects for the monetary authorities.

Moreover, the best policy in the financial liberalization should work to install the price level (inflation) and get rid of the burden of the reserve to commercial banks, and phasing out all kinds of subsidies and credit and it must remain banks regulated target secured (Frenkel, 1998).

2 – Procedures of interest rate liberalization:

- The monetary and fiscal policies that followed in developing countries recommended canceling more subsidies and regulations of interest rates and credit facilities, and allowing the central bank to use policy discount and open market policy, and that remains away with respect to flow normal credit market in domestic capital. The central bank must remain the last traditional lender in order to avoid financial crises at the whole level of the system.

- McKinnon said in the first phase of the transition to a more open capital market, it is best to completely rely on non-bank sources of financing and self-financing.

In the case of transition to a new banking system that is more competitive, it may cause problem, but in the short term the higher of interest rates on both deposits and loans allowing for new banks is loaded with any debt leads the more likely to the old banks' exposure to the bankruptcy. The pervious Loans will be at low interest rates (Matheson 1979), and the solution is to take the government to undertake this debt. Also, it can be used as credit for banks that keep them in exchange for the widening precautions landing and be recapitalized loans for commercial banks (Duraid Mahmoud al-Samarrai, 2004).

- There is a causal relationship between the real interest rate (independent variable) and the investment rate (dependent variable), with high investment rates at relatively low real interest rates.

- The experiences of some developing countries presented us with a wrong model in this case, it has proceeded on privatization of banks and canceled interest rate ceilings on deposits and loans with ease of supervision and government controlling on commercial banks. The process of insurance on deposits and loans might cause serious problems for monitors of banks in order to reduce entering into unnecessary risk by commercial banks, savings institutions, and credit. In a developing country does not have stock market (underdeveloped market) and it does not have standards of sophisticated accounting (Ali, 2008).

Chapter four: The modified effect of interest rates on the macroeconomic balance of Algerian

Introduction:

Algeria is the countries, which fought a new experience in the pattern of conduct of the economic goal of transition from a socialist economy to a liberal economy accordance to the principles and foundations of a market economy, and where they applied the experience of economic development model based on the principles and theories of the socialist system for three decades that prevailed during the completion of large investment projects in the seventies through fourth planned in the first and second manufactured industries, which require huge funds monitoring .

The adjustment of the interest rates for Algeria is intervene in the context of economic reforms, which fell for the applied since the mid- eighties, either voluntarily or by agreement with the International Monetary Institutions in preparation credit and economic reform programs expanded. In the context of this proposal, this chapter aims to study and analyse the impact of adjusting the interest rate on the economic variables, and then on the most important indicators of cash balances internal and external in light of the economic reforms. Especially the structural reforms introduced by Algeria in agreement with the International Monetary Institutions within the framework of the structural adjustment program, and this chapter would be divided into four key investigations:

Section one: The evolution phases of interest rates.

The economies of developing countries have been known before the eighties as phenomenon of financial braking, which means - the phenomenon - to set interest rates at levels below the equilibrium price. In order to increase investments that it does not reflect market forces, rather the rate of inflation, where the real interest rate on loans and deposits during this period is negative, which led to backfire on a lot of economic variables, especially at the level of savings and rationalize investments (McKinnon, 2005).

One of the greatest tasks that been done by banks whatever system and development model approach is the task of the economic finance and the mobilization of national savings, within the framework of sound economic policy to be one of the most important means interest rates, where it is cost to the capital, and therefore it should be develop a strategy in

determining their rates to ensure the rational use of the flow of investment and loans are allowing recovery the cost and profit (McKinnon, 2005).

4.1.1 Stability phases of interest rates.

This stage stretched from the date of independence until the oil crisis of 1986. The interest rate policy in Algeria was perfectly matched to the logic of a central economic planner, where the interest rates were set administratively, without regard to the scarcity and cost of capital or the cost-effectiveness of the money lenders. It was determined in a way that allows for dealers economists (public institutions) to get loans at the lowest cost for the purpose of the base necessary configuration for the economic development of the country (McKinnon, 2006).

4.1.2 Gradual liberalization phases of the interest rate.

The administrative management of the Algerian economy has led to keep banks out of its traditional functions, which is financing of the economy and the mobilization of savings within the framework of the economic policy to be the most important and means in its terms is the interest rates. Therefore, it plays an important role in finding a balance between supply and demand for capital. Indeed, the banking system's abandonment of the most important tasks so that banks have become mere windows implement the directives of the scheme, and both risk assessment and the allocation of loans became according to commercial criteria constitute secondary goals for the banks. This policy had negative repercussions on the performance of banks, institutions and the behaviour of savers and owners of capital. The monetary authorities did not pay attention to the seriousness of this approach only after the oil crisis, where it stood over the imbalances that befell all the economic and monetary indicators, and then it had no chance only adhere to reforms and amendments to the many economic variables. So, the most important laws were the loan, bank, the laws of the independence of the institutions, procedures for financial liberalization, the gradual liberalization of the interest rate, the abolition of direct funding decisions and subsidized institutions, re-consideration of monetary policy and its executive (the central bank), and open the way for private investment and foreign national (McKinnon, 2006).

The purpose of the interest rate liberalization is to achieve the following objectives:

- Raising the level of savings for various sectors, in order to provide the necessary funding for investments.

- Rationalization of loans based on its different types and maturities.

- Raising the productivity of the capital by select the most efficient of investments, in order to achieve real economic growth.

- Raising nominal interest rates that will limit the rise in inflation, and allow the rule of positive real interest rates, and then positive real returns to savers.

: In order to achieve these pervious objectives, the monetary authority adjusted nominal interest rates on loans, where the average interest rate to 7% from 2000 to 2003 - see table (7-1). It has thus become determine the level of the bank loan is subject to the requirements of the overall economy and not to the needs of institutions, and in May, 2003. The interest rates had been amended to raise its nominal price, also introduced flexibility in the structure of interest rates applied by banks (see table below) (McKinnon, 2005).

Table (4-1): The Evolution of the interest rate and the inflation rate from 2000-2010.(%)

Statement	2000-03*	2004	2005-07	2008	2009	2010
Discount rate to the end of the year	5	6	11,5	15	14	13
Interest rate ** Prompt (average)	7	8	12,8	18	18,5	17
Inflation rate	10	18	26	29	30	19
The real interest rate ***	-3	-10	-13,2	-11	-11,5	-2

Source: Statistiques Financieres Internationales .-FMI-Juin 2010- Banque D Algerie , Rap ,2010.– www.ons.dz
* Calculated period, 2000-2003, and 2005-2007, On the basis of the weighted average.

** Interest rate on the loan interest rate = direct interest rate + (2-5) points.

*** The real interest rate = nominal interest rate (directed) - the rate of inflation.

As a result of the existence of a negative real interest rate on loans and deposits during this period, these negative results have left their mark on the national economy and in the following manner:

- The direction of individuals to prefer real savings on the financial savings, which means lower attractiveness of individuals to financial savings.

- A waste of the state's financial capabilities, and weak the productivity of institutions due to low the real cost of capital.

- Individuals' preference savings in foreign currencies compared to dinar (theory of foreign currency substitution) and this phenomenon has left a number of negative effects that are as follows:

- The emergence of informal financial markets (the black market), which directly impact the exchange rate of the dinar for the Algerian compared to foreign currencies - especially - the French franc (before the advent of the Euro).

- Further deterioration in the balance of payments, for inspecting the state of the foreign currencies in order to do the banking system to pay interest on these deposits in the same currency.

Structure of interest rates: during the first phase (2000-2003) from the stage of gradual liberalization of interest rate the monetary authorities in Algeria have part of the interest rate structure to applied a preferential interest rates between the various sectors of economic activities as well as the traditional distinction between the collection periods of loans see table below (Mohammed Saleh, 2004).

Table (4-2): interest rates by sector and term of the loan,%

Type of loan sectors	Short-term loan	medium-term loan	long-term loan
Industrial and Commercial (trade)	05,00	05,75	05,75
Agricultural cooperatives and self-path (self-sufficiency)	04,50	05,25	04,00
Traditional agricultural	04,50	05,75	03,00

Source: Mourad Goumiri ,L offre de Monnaie en Algerie ,P96.

From the above table we observe:

The analyst for various interest rates convergence observed in the latter levels of the various sectors in the short term, where settled between (4.5% -5.0%) and (5.25% -5.75%) for the medium term. In the long term there is a discrepancy between the different sectors, which benefited the traditional agricultural sector (private sector) to reduce the significant interest rate of 3%, while the applied rate of 4% on the agricultural sector of the cooperatives. While the industrial sector and the trade not benefiting from this support. Moreover, the interest rate is lower in the short term in the agricultural sector compared to the commercial and industrial sector, which imply the country to direct investment loans to the agricultural sector and the same note found with regard to direct loans in medium-and long-term. In 2004 the differential interest rates has been cancelled and leave the simple margin to commercial

banks' policy to define the granting of credits by sector and term of the loan (Mohammed Saleh, 2004).

Algerian bank and rediscount rate policy: Before Law 10-2004 that related to the loan and cash, the bank did not exercise as part of the Algerian banking system any significant activity in the field of banking supervision, and his job in the rediscount only was as a tool to provide banks with the necessary liquidity and loans . Since 2004 the date of the Law of the loan and cash, which returned to the bank of Algeria's role and its importance, and allowed it to use rate of rediscount as a tool of indirect monetary policy and analytical important tool in that it is a standard real analysis of monetary policy applied by the monetary authorities (Galenson, 1992).

In this context, the stages of change in rediscount rate can be traced as follows:

- Rediscount rate stability before 2000 where it was at 3.75% level.

- Lower average one point from 1990-2000 to reach 2.75%, which is the period of application development schemes.

- Rising to 05.00% from 2000 to 2003.

- The high rate to 11.5% during the period 2005-2007, to reach a maximum of 15% in 2008.

- Low point average at the end of 2009 to become 14%, continuing decline in the rediscount rate to 13 % in 2010.

Return explanation lower the rediscount rate in recent years to the following reasons:

- Low in the inflation rate.

- A government austerity lead to contraction in monetary and financial in the country, which taken by the government in the context of the economic reform program underlined with the IMF.

- The government's desire to revitalize the national economy by encouraging public and private investment in various sectors.

4.1.3 The phases rule of real positive of the interest rates:

It requested from the followed governments to follow the model of gradual liberalization of interest rates, to reach a positive real of interest rate. By issuing a series of legal texts from

bank loan in 2000, to follow the law of 2002 relating to the independence of public institutions, including commercial banks, then the law of cash and loan in 2004, which return to its monetary policy and roles of the central bank to managing each of cash and the loan to allow the achievement of the objectives expansionist or deflationary goals. However, standby credit agreements 2003-2005 and expanded loan agreements in the framework of the structural adjustment program extended over the average from 2008-2010. The interest rate has liberalized on deposits of commercial banks in May 2003, which rose between October 2005 and April 2008 from 12% to 16% to 18.5% between April 2008 and December 2010, registering a maximum height. The interest rates on loans moved in the field of 15% -20% during the period October 2005 and April 2008, to continue to rise up to the area of 18% - 23.5% during the period April 2008. Whereas during this period, interest rates negative in real terms, the government has taken in the framework of the structural adjustment program supported by the International Monetary Institutions (Chance, 2004).

Table (4-3): The Evolution of the interest rate during the period 2000-2010, %

Statement	2000-03	2004	2005-07	2008	2009	2010
Discount rate to the end of the year	11,0	9,5	8,5	6,0	6,0	5,0
Interest rate Prompt (average)	15	10,5	9,5	8,5	8,5	8,0
Interest rate loans (average)	18	12,5	10,5	9,75	9,75	9,0
Inflation rate*	5,7	5,0	2,6	0,34	4,2	1,4
The real interest rate **	9,3	5,5	7,0	8,16	4,3	6,6

Source: Statistiques Financieres Internationales .-FMI-Juin 2010- Banque D Algerie , Rap ,2010.– www.ons.dz

* Given the rate of inflation, this was measured on the basis of the consumption index of Algiers.

** We calculate the real interest rate on the basis of the nominal interest rate (router).

By using simple model (Fisher Model): the nominal interest rate = real interest rate + inflation rate

With regard to interest rate-oriented (Interest rate D Director). The reference price is determined by the central bank to commercial banks in the acceptance of deposits and granting of loans the above table can be concluded the following points:

- Note that the average nominal interest rates rose at a high pace, moving from 8% in 2008 to a maximum of 18.5% in 2008.

This implies to the beginning of the actual application of the structural adjustment program, underlined with the IMF, and outstanding of the government austerity policy and phase in the finance and monetary contraction.

- The average interest rate decreased gradually until it reached about 10% in 2010 at the end of the period of the structural adjustment program, then continued to decline to settle at 8.5% during 2008-2009, then 8% after the central bank cut the rediscount rate at around 5%.
- Since the reform programs with the International Monetary Institutions to 2010 prevailed negative real interest rates despite the gradual lifting of the nominal interest rate on deposits and loans.
- Since that date Algeria has known the rule of positive real interest rates, which had reversed on the policy of savings and investment, on the performance of banking institutions, on balances economic and monetary internal and external, and this is what will be exposed to it later (Chance, 2004).

There are many researchers drawer on the grounds that the real interest rate is the difference between the nominal interest rate and the inflation rate. However, it means that the real interest rate is only function in the inflation rate, but the real interest rate in every function of the nominal interest rate and the inflation rate. So, there are more than formulas to calculate the real interest rate:

$$\text{Real interest rate} = \left(\frac{1+\text{nominal interest rate}}{1+\text{inflation rate}} - 1\right)^{*} 100$$

$$\text{Real interest rate} = \left(\frac{\text{nominal interest rate} - \text{inflation rate}}{\text{Price index}}\right)^{*} 100$$

$$\text{Real interest rate} = \left(\frac{100+\text{nominal interest rate}}{\text{Price index}} - 1\right)^{*} 100$$

Section two: The effect of interest rate on savings and finance.

The researchers in traditional monetary theory and the owners' monetary doctrine believe that saving is a function of a variable interest rate, where the change in the volume of savings has positive change with changing in the values of positive real interest rates. Also, the investment is a function of the variable interest rate, and they have negative relationship. When the identification of monetary financing for investment can be achieved only by comprehensive mobilization and each real savings for both savings in private sector (domestic), or saving the legal (institutional), or so-called public savings (savings of financial

companies and public institutions, savings deposits and banks), and as productive investments are financed with long-term resources to avoid inflationary pressures. So, the problems of financing economic activity is often asked to economists and specialists, which mean the evolution of growth in any country can only be achieved by providing the ability to finance. The implementation of the plan presupposes is needs all necessary resources for the benefit of specific objectives. Funding is an important tool to achieve economic development. Therefore, the treatments of funding problems are a treat or ask how to fill out the savings and materials and the means necessary to accomplish the funding capabilities (Magdy M. Shehab, 2012).

The funding, whether by saving (Deposit) or financing cash resources, or lending from abroad, it represents the fact that economic policy choice, the consequences will have an impact on other economic variables such as consumption, prices, interest rates and savings. Finally, before I explain the interest rate on savings, I should look first at the ways to fund economic projects in the framework of monetary policy through the stages of development of the national economy (Graff, 1999).

4.2.1 Fanancing policy in Algeria.

The subject of analysis funding and its branches phase is necessary to understand the monetary economy in Algeria. Although, the problem of financing planned investments for national companies and economic activities of different was the main concern of the monetary authorities and financial since independence to the present day, but in fact there is a clear contradiction between domestic savings to the various economic agents, and external debt flows (Chance, 2004).

1 - Funding of economic sectors in the construction phase of the national economy: pursue Algeria of socialism system after independence led to reach a distinct of banking system that can be respond to the requirements of the planned economy. So, we see that this phase was characterized by the establishment of a range of huge economic sectors, which led to the establishment of a financial and banking system, and also to establish a structures and financial monetary institutions and to mobilize national savings to finance various economic sectors especially industry and agriculture sector due to the contribution of the public treasury. Because of the bad situation in the economic and financial status during that period, and in front of the inability of local finance the authorities resorted to borrowing from foreign banks to ensure the continuity of the activity of these institutions (Gibson R, 2001).

2 - The stage of financial reform on the funding of planned investments: in front of the difficulties and contradictions faced by national institutions, and the lack of commitment by the commercial banks, it was necessary to work to fix the situation which required doing financial and structural measures to cope with the evolution of events and economic variables (Magdy M. Shehab, 2012).

This stage coincided with the start of implementation of the first program planned quartet (1999-2000) and the establishment of State for Planning in 1999. The essence of financial reform of 2000 came to the following principles:

- Forcing public institutions to collect bank accounts at a single bank , in order to monitor the banks indirectly financial operations of the companies.

- The all planned investments for the benefit of national companies have become through loans, after it was funded from the state treasury (to reduce the burden on the public treasury) . Thus was created the Algerian development bank to act as a mediator between the commercial banks and the central bank and the country treasury in financing investment projects planned (Graff, 1999).

- The text of Order No. 70-93 on the law of fiscal 2000 in the seventh paragraph: the financing of productive investments, guaranteed refundable loans, granted by national financial institutions or external loans. According to this law, financing of investments are three public institutions types of loans.

- Medium - term bank loans rechargeable Central Bank's discount.

- Long-term loans granted by saving resources collected by the treasury of relevant financial institutions.

- External contributions convened by the treasury or public institutions that related to the powers of the central body for planning and funding decision from the jurisdiction of the Ministry of Finance and this after the approval of the commission funding scheme.

Starting from the year 2003 has been a change in the investments of financing policy and ensures methods. The national companies no longer bear the financing of local structures and vocational training for workers, where the country ensured that the final contributions (final competition) and the other investments were funded by the National Development Bank in the form of long-term loans, with postponement of debt response during 4 and 8 years for

industrial projects, with the abolition of the interest during the time period of achievement (Abdul Rahman, 2011).

3 - The stage of the restructuring of the national institutions: the hardest stages of the financing of planned investments is a period of restructuring of the national institutions, where numbered after restructuring 384 institutions in 2002 where it was about 30 in 2000, this was requires the mobilization of additional financial resources where the authorities were not able to provide from the traditional resources (local savings), then it resorted to foreign financial markets.

4 - The financing policy reforms under the transition to a market economy: The oil crisis has reflection on the financing policy of the public institutions, where it has issued the new law in 1998 relating to the independence of public institutions in funding and needless the treasury for direct financing from its own resources to these institutions. Except that the law of the loan monetary 1999, separated definitively the possibility of recourse the public treasury to any form of funding for these institutions, where the separation between the central bank and treasury, and canceled the mandatory placement of treasury bonds and bank settlement. Also, put limit on loans and advances that can be granted by the Algerian bank to treasury, and has been raising the rediscount rate to reduce recourse to refunding (Abdul Rahman, 2011).

These actions have increased after agreements with the International Monetary Institutions , where the country was committed to implementing the terms of the agreement , which states expressly limiting the treasury finance unproductive public investments , as public health facilities , equipment, structures of universities, educational institutions, and social housing.... etc. In the context of these reforms the institutions had recourse to the banks that were returned with its traditional functions to negotiate with them on the terms of the loan as required by the work of these banking institutions on the grounds that it has become a commercial banking institution subject to the principle of profitability and cost-effectiveness. Under the procedures of establishing Stock Exchange (Stock Market) in Algeria, the law allows institutions that achieve good results for three consecutive years, the possibility of borrowing from the financial market (stock market) put 20% of its capital subscription, either in the form of bonds private (Sonatrach) or in the form of shares (Riad Setif, Saidal, Eurasian hotel ...) (Kamal Bakri, 2006).

5 - The funded of policy of the private sector: In the context of economic reforms on productivity institutions, especially to fund the investment of public and private sectors, the

private sectors benefited from the privileges that were not available in last two and a half decades. The Algerian law No. 25-88 is directed the private sector investments towards industrial activities and services that have priority for the country. The funding for private sector investments done through bank's loans and thus became the launching of economic reforms banks enjoy complete independence in decisions on granting loans. Also, it is benefited from reductions in the quality of customs, fiscal and other concessions in the framework of the national investment promotion (Gibson R, 2001).

4.2.2 The savings policy in Algeria.

The socialist economic model pursued by the Algerian authorities depends on finance investments that planned mainly on financing of budget saving, which collected from petroleum tax and the significant contribution of the central bank, as a result of the ease the treasury for central cash. Thus policy has negative effects on the true concept of the process of saving, where marginalized the family savings, which produce about the marginalization of large groups of community members in the financing of economic and social development. Since independence to the beginning of the nineties the savings of household sector did not represent only 6% on average of the total national savings (Kamal Bakri, 2006).

The weakness of family savings due to several reasons and factors such as:

- Weak of income, and lack of awareness of savings among individuals and institutions.

- Limitation the work scope of the banking and quasi-banking financial institutions that responsible for collecting and mobilizing domestic savings.

- The rule of negative real interest rates, because of inflation - even if inflation was repressed.

- Monetary and fiscal policy often the public treasury resort to refinancing with the central bank to get the necessary financial resources for the short-term financing. The finance planned investments of public institutions; it is in indirect ways by the Treasury on the road to the Algerian Development Bank. Where the Bank's obligations was a way from the true potential of financing domestic savings, which often depend on funding from abroad, the latter is in fact the most important means of financing (Hussein Bakhit, 2007).

The mobilization of domestic savings (internal) can be done by two main points:

1 - The savings of the household sector: the family savings is equal to the difference between the cash incomes for family and final depreciation, and the ability of the funding requirements is equal to saving the total family saving minus capital formation. In a way of process it can be measured by means of savings is deposited (compactness) which is equal to saving total household minus savings deposited in banks and current postal centers accounts and saving funds and reserves (Mohamed M, 2006).

It can be notes on the process of mobilizing savings for the domestic sector have gone through distinct stages:

A - The phase lasted from 1990 to 1992: There has been growth in the incomes of individuals increased by almost 50%, but this increase were not to reflect the economic and good social situation for the family sector, where it knew at the low level of family savings as a result low nominal interest rates on savings deposits for housing estimated by: 2.80% per year - see Table (4-4).

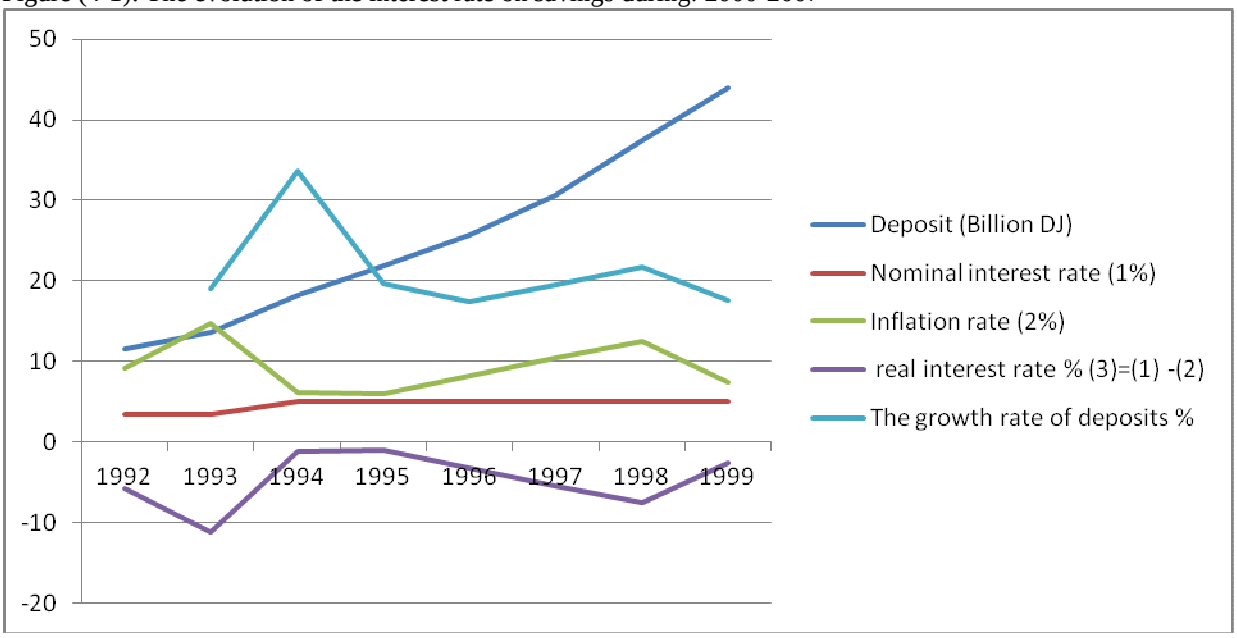
B - Phase lasted from 1992 to 1999: this stage coincided and amend the basic Law in 1993, also the interest rates has been known on deposits rising from 3.5% 1992 to 5% to the end of 1999., and despite the high cash incomes in nominal as remarkable as it doubled 8 times during the period of time, but the high marginal propensity to consume was at the expense of marginal propensity to save, where consumption has doubled during the same period almost at the same pace (10 times), which is not allowed to increase the size of the savings. The total savings mobilized by the savings fund and reserve, the actual savings is equal to the difference between the amount of payment and repayment amounts plus interest, may rate ranged between 30 and 60% during the period 1992-1999. In addition, the savings that is not deposited has ranged between 66% and 93% of the total gross savings, and this is conclusive evidence show the weakness of domestic savings mobilized by the Institutions of the National funding for the provision of reserves and current accounts center. Note of the figure (4-1), the growth rate of family deposits from 1992 to 1999 to the savings fund, remained stable at around 19%, with the exception of 1993 where risen to about 35%, and explain it to rise due to the establishment of the monetary authorities to withdraw the banknote 500 DJ of trading for the same year, which allowed depositing large sums of money were out of the banking market (Abdul Rahman, 2011).

Table (4-4): The evolution of family savings deposits during: 1992-1999

Data	1992	1993	1994	1995	1996	1997	1998	1999
Deposit (Billion DJ)	11.5	13.7	18.3	21.9	25.7	30.7	37.4	44
Nominal interest rate (1%)	3.5	3.5	5	5	5	5	5	5
Inflation rate (2%)	9.2	14.7	6.2	6	8.2	10.5	12.5	7.5
real interest rate % (2)- (1)=(3)	-5.7	-11.2	-1.2	-1	-3.2	-5.5	-7.5	-2.5
The growth rate of deposits%		19.1	33.6	19.7	17.4	19.5	21.8	17.6

Source: Statistiques Financieres Internationales .-FMI-Juin 2010- Banque D Algerie , Rap ,2010.– www.ons.dz

Figure (4-1): The evolution of the interest rate on savings during: 2000-2007



Source: Own drawing

C - Phase lasted from 2000 to 2010: this stage has changed in the institutional and structural at several levels as a result reforms extended concluded by the governments of Algeria with the institutions of international monetary order to deepen the reforms that fell for the beginning of 1990, to transfer from a centrally economy to a market economy. In order to alleviate the impact of external debt, and provide funding for economic sectors, public and private. Thus return to the macro-economic balances through greater control over the growth of the money supply and the stability in prices and exchange rates and raising the country's provision of foreign exchange to meet the requirements of economic and social development.

To achieve these goals the monetary authorities adjust interest rates in the context of gradual liberalization, increasing the latter to reach highs level in 2002-2003, which led to rule of real interest rates are positive for the first time in 2004 that allowing deposits to get positive

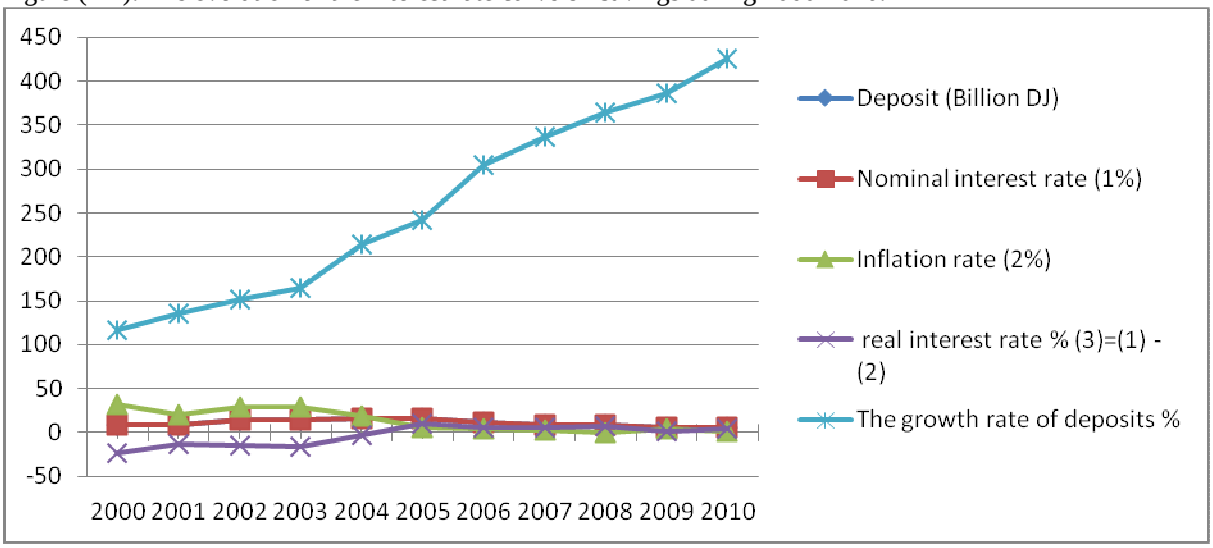
returns with prices positive real interest worth estimated at 10.5 % see table (4-5). The table below shows a rise in the growth of savings deposits for from 2004 to 2005 at about 29.8 %, 13.3 % and 26 %, respectively, due to the rise in nominal interest rates, which amounted to more than 16 % on deposits for 2004 and 2005 and then declined in 2006 to a level of 11 % , though this increase is weak relative to the total deposits, to be mobilized to support the financing of investment loans , the latter affected by the high interest in the opposite direction.

Table (4-5) The deposits evolution of family savings during 2000-2010, %.

Data	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Deposit (Billion DJ)	115.8	135.3	151.5	164.5	213.5	242	305	336	364	386	426
Nominal interest rate (1%)	8	8	14	14	16	16	11	8	8	6	6
Inflation rate (2%)	31.7	20.5	29	29.8	18.7	5.7	5	2.6	0.3	4.2	1.2
real interest rate % (3)=(1) -(2(	-23.7	-12.5	-15	-15.8	-2.7	10.3	6	5.4	7.7	1.8	4.8
The growth rate of deposits %		16.8	12	8.6	29.8	13.3	26	10.2	8.3	6	10.4

Source: Statistiques Financieres Internationales .-FMI-Juin 2010- Banque D Algerie , Rap ,2010.– www.ons.dz

Figure (4-2): The evolution of the interest rate curve on savings during 2000-2010.



Source: Own drawing

We observe from the table (4 -5), the decline in the volume of deposits growth for the year 2005-2010, despite increase its volume by numerical value, and the rule of positive real

interest rates. The interpretation of it was due to compete with the banks, which was adopted under the law of the loan and cash especially "Caliph bank" that was granted for interest rates to individuals and institutions reached twice as granted by national banks.

This period also marked by allowing the natural and legal persons to open accounts for deposits at banks and savings funds starting from the year 2001 see table (4-6).

Table (4-6) the evolution of the interest rate in Algeria on savings (LEL-LEP). From 01/01/2001 to 31/12/2010 %.

period		Interest rate%	
From	To	Saving L E L	Saving L E P
1/1/2001	31/12/2001	2,80	-
1/1/2002	31/12/2002	3,50	-
1/1/2003	31/12/2003	4,00	-
1/1/2004	31/12/2004	5,00	-
1/1/2005	31/12/2005	5,00	8,00
1/1/2006	31/12/2006	10,00	14,00
1/1/2007	31/12/2007	12,00	16,00
1/1/2008	31/12/2008	7,50	11,00
1/1/2009	31/12/2009	7,00	8,00
1/1/2010	31/12/2010	5,00	6,00

Source: National Fund for the provision and Reserve

This stage has opened foreign currency accounts in accordance with interest rates for different currencies and time structure of the deposits. Table (4-5), we note that there has been a steady increase in the level of domestic savings, but these savings did not play an active role in the financing of economic activity, it represent only a small percentage of fund accumulation, which consists mainly of the public treasury resources and resources of hydrocarbons (fuels).

2 - Legal Savings: The finance Law in 2000 did not explain a form of the mobilization savings, but it pointed out that the premiums depreciation reserves and national companies and public institutions of industrial and commercial nature must be deposited in the public treasury. The finance law in 2001 has identified policy to mobilize legal savings, and it allowed the treasury to lending from the internal market of the total reserve funds (social security, insurance ...) and money savings for the savings fund and reserve mobilization and underwriting compulsory for banks in treasury bonds. Accordingly, the law of the financial

year 1971 has the latest significant change, first in the form of Treasury bonds, becoming to be called bonds processing instead treasury bonds because it enters in the financing of investment programs planned. Secondly, the underwriting optional becomes compulsory on the social security institutions, insurance, saving funds and reserves.

What we can be inferred that the policy of mobilizing domestic savings (internal), has marginalized the relatively savings legal during the planned four I and II (2000-2007) compared to the savings of public treasury the savings legal represent only 27% of the total domestic savings, and the reason for this is the country depends on monetary financing (advances central bank) which accounted for 40% of total long-term financing, and the rest are foreign loans, so we can say that the origin of the foreign debt was due to borrowing from abroad to finance planned investments approved by the Algerian authorities. The results continued to improve at several levels, including low external debt and service debt. The stability of the price level is as a result of the absolute control of inflation due to the deflationary policy and fiscal austerity. Therefore, we can say that the liberalization of interest rates was a reflection on the level of development of the size of the money supply and the structure of its components, as well as at the level of the balance of payments, especially those related foreign debt exchange reserves, changes in exchange rates, and this is what will be exposed in the next section.

Section three: the impact of interest rate change on the growth of the monetary bloc.

The impact of the change in the interest rate on the evolution of the monetary bloc and its components takes several forms , it is theoretically enough to raise interest rates a point or half-point to reduce cash flow and credit expansion. Then change the interest rates on bonds and public treasuries put up for sale , and when the commercial banks are the main buyer that would affect the ability of banks to lend and to create more money writing , which has a direct impact on the money supply and the elements of the components of the money supply. To determine the extent of the impact of adjusting interest rates on the structure of monetray bloc and elements of components during 1999-2003 especially the expanded economic reform program with the International Monetary Institutions 2004-2008. First, analyze the indicators of monetary bloc and elements covered then the internal structure of the loans that have a direct relationship with interest rates special in permission and treasuries that can be posed in the case of the budget deficit, and serves as a short - term loans (loans on the country). Second, address briefly the impact of all this on inflation (Mohamed M, 2006).

4.3.1 The evolution of the growth of the monetary supply:

1 - The evolution of the concept of money in Algeria: despite repeated attempts at reform and until the issuance of loan and cash act of 2000, the monetary in Algeria was a mathematical phenomenon only, and it was not a strategic tool, and did not have any role in economic decision-making. The monetary in Algeria were not a tool for capital formation, but it was numerical phenomenon that allows the value of capital calculates to obtained monetary expression from the proceeds of oil.

The success of any economic system has become dependent on the effectiveness of monetary policy and fiscal policy that the country followed especially the banking system and its ability to finance economic development and the mobilization of financial resources. The Algeria wants to assess the economic development pattern steering central scheme, where are counted in the financing of investment programs of development bank loans by more than the version cash, and it was the public treasury is the real source of the issue rather than the central bank, the latter was like device implementation of these more than a policy that issuing institution and conduct circulation of the monetary bloc (Mohamed M, 2006).

This policy has produced an unstable situation, which resulted imbalance between the monetary bloc and the inability of public sectors of the economy and weak returns and productivity. The inevitable result of this approach is that the growth of the monetary bloc was always greater than the gross domestic product (GDP) through all stages of the development of the Algerian economy, as shown in the table (4-7).

Table (4-7): The Evolution of the growth of the monetary bloc and GDP from 1998 to 2006 %

Stages	The average growth of monetary bloc %	The average growth of GDP %
Stage from 1998-2000	17	8,5
Stage from 2001-2003	25,4	22,5
Stage from 2004-2006	19,1	16

Source: Retrospective Statistics-ONS- Algeria in Some Sales Resultats.2006 ONS-Ed 2007.

2 - Evolution the indicators of monetary bloc: One of the objectives of the installation program and structural adjustment, which entered Algeria with international monetary institutions during 2004-2008, is to control the growth of monetary expansion to serve the macroeconomic balances by raising nominal interest rates, with the aim of achieving reduction in growth rate of the monetary bloc from 21% to 14% during the program period.

Table (4-8): The evolution of the monetary bloc (billion dinars) for the period 2002-2010

Years	Monetary M1	Banknote (written money)	Representative money	Quasi money	Monetary bloc M2	Growth rate M2 %	GDP	Growth rate GDP %
2002	446.9	211.3	235.6	180.5	627.4	21.6	1189.7	10.7
2003	475,9	223,0	252,9	247,7	723,6	15.3	1487.4	25
2004	519,1	249,8	269,3	280,5	799,6	10.5	2002.6	34.6
2005	595,2	290,6	304,6	324,4	919,6	15	2564.7	28.1
2006	671,6	337,7	333,9	409,9	1081,5	17.6	2780.2	8.4
2007	813,7	390,8	422,9	474,2	1287,9	19.1	2810.1	1.1
2008	889,8	440,3	449,5	578,6	1468,4	14,0	3215.2	14.4
2009	1041,4	485,0	556,4	617,9	1659,3	13,0	4078.8	26.9
2010	1235,6	577,3	658,3	836,2	2071,8	24,9	4222.1	3.5

Source: Report 2010 - July 2010-Economic Evolution and monetary in Algeria.

From table (4-8) we note that the Algerian authorities' commitment to the terms of the agreement, the average rate of growth of the monetary bloc amounted to 14.9% during the period 2003-2007, this figure drops to 13% in 2009 this decline due to Algeria follows strict austerity policy during this period, and it was to reduce the budget deficit, freezing the wages of workers, devaluation and reduce the size of public spending to reduce the financing of public investments producer. The high volume of domestic liquidity for M 2 in 2010 to 2071.8 billion dinars compared to 1659.3 in 2009, the growth of the monetary bloc (24.9%), but explain that due to two main factors: the increase in net cash balances of foreign affairs - refer to the table (4-10) The breakthrough in the implementation of economic recovery program approved by the president in April 2009, which was allocated about 7 billion dollars (about 520 billion dinars) for medium extend to three years, starting from that year.

3- The impact of changes in interest rates on GDP growth: for adjusting the interest rate effect on the growth of gross domestic product GDP we note from the table that there is a fluctuation in results in 2003-2004-2005 those years have known by a sharp rise in interest rates that they have actual achieved high growth in gross domestic product (model McKinnon and Shaw and Frey, etc.), and is period which they exceeded growth of GDP. The growth rate of the monetary bloc, except that the return of its decline in 2006 (8.4%), especially in 2008 (1.1%) may be explained by lower oil revenues (2007), and rising again to 14.4% in 2008, to rise further in 2009 to the rate of 26.9% due to improved oil prices in foreign markets. However, the decline again unexpectedly in 2010 at 3.5%, despite the significant

improvement in fuel revenues, and lower nominal interest rates to 8.5% may pose more then a question of what the impact of adjusting the interest rates on economic growth? This leads us to the conclusion that changes in rates of growth in the monetary bloc and growth in gross domestic crude that have little flexibility for changes in interest rates. Of the structure of the monetary bloc as shown in the table (4-9) we note that there is a rise in deposits for the (quasi-money) it reached 40.3% in 2010, while the ratio was 28.8% in 2002.

The clerical money(written money) demand deposits has declined and they no longer represent only 31.8 % of the total monetary bloc in 2010, after they accounted for 37.5 % in 2002 , while the quasi- stability of representative money (paper money) during the period (2003-2009) , registering a slight decline in 2010, they no longer represent only 27.9 % of the total money supply.

Table (4-9): The structure of the monetary bloc (%) for the period 2002-2010

Designation	2002	2003	2004	2005	2006	2007	2008	2009	2010
Representative money (paper money)	33,7	30,8	31,2	31,6	31,2	30,3	30,0	29,3	27,9
Written money (clerical money)	37,5	35,0	33,7	33,1	30,9	32,8	30,5	33,5	31,8
Quasi-money	28,8	34,2	35,1	35,3	37,9	36,9	39,5	37,2	40,3
Monetary bloc	100	100	100	100	100	100	100	100	100

Source: Economic Monetary Evolution in Algeria Report 2010.

The steady growth of term deposits (quasi-money) is due to the increase in deposits dealers millions of public institutions and families as a result of the rule of interest rates, the values of a positive , stable prices for low inflation , allowing individuals and organizations to abandoned money liquid (Paper money and written money). The quasi-money did not exceed average ratio of 15% during the period 1995-1999 , while the total in 2010 was 40.3 %, and its interpretation is not related to efficacy of the banking system or change the economic behavior of individuals and institutions , as far as it relates to the procedures for the program of structural adjustment , controlling in the growth of the monetary bloc, decline in the rate of inflation, the stability of the dinar exchange rate, which was allowed to deal with positive real interest rates and then encourage the process of saving.

4 - The components elements of the monetary bloc: the coverage of monetary bloc has been known by gold and hard currency rise steadily. The net cash balances has reached of 26.3 billion Algerian dinars 2004 to multiply five times stands at 133.9 billion Algerian dinars per 2005 (Table 4-10).

Continued coverage of gold and hard currency on a steady rise is reaching its highest value during the period of implementation of the program 350.3 billion dinars in 2006. Then, it is retreated to 169.6 billion dinars the year 2008 due to the drop in fuel revenues and lower oil prices during 2007-2008. The net cash balances reached 1310.7 billion dinars in 2010, compared to 775.9 billion dinars in 2009, an increase of 68.9%, and it can be interpreted due to the improvement in the foreign exchange reserves and gold reserves. The change elements of the components of the monetary bloc has always been linked to the activity of the treasury and the activity of public institutions in addition to changes in fuel prices, as the dollar is the currency of an economic decision.

Table (4-10): The Evolution of the elements of the components of monetary bloc during 2002-2010, (billion dinars)

Years	Net cash balances	Domestic Debt	State debt	The economic debts	Net other operations
2002	19.6	748.1	527.8	220.3	-140.3
2003	60,4	774,3	468,5	305,8	-111,1
2004	26,3	967,1	401,5	565,6	-193,8
2005	133,9	1054,3	282,2	772,1	-268,6
2006	350,3	1164,9	423,6	741,3	-433,7
2007	280,7	1273,4	542,3	731,1	-266,2
2008	169,6	1593,8	658,7	935,1	-295,0
2009	775,9	1282,9	506,6	776,2	-399,5
2010	1310,7	1234,1	394,7	839,3	-473,0

Source: Retrospective Statistics- Algeria Some Sales Results 2009-2010 ONS Ed 2010 N = 30- Economic Monetary Evolution in Algeria Report 2010.

5- Structure of internal loans: from a table of internal debt structure can be deduced the following observations:

Table (4-11): The structure of domestic debt (%) for the period 2002-2010

Statement	2002	2003	2004	2005	2006	2007	2008	2009	2010
* The country's debt	70,0	60,0	41,5	26,8	36,4	42,6	41,3	39,5	32,0
**The economic debt	30,0	40,0	58,5	73,8	63,6	57,4	58,7	60,5	68,0
Internal debt	100	100	100	100	100	100	100	100	100

Source: Economic Monetary Evolution in Algeria Report 2011.

* The country's debt (Treasury loans) are short-term debt.

** Loans to the economy, which is a debt of medium-and long-term.

The stage of implementation of the program of structural adjustment has related with reduced considerably in the size of the debt on the treasury (short-term loans) stood at 32% in 2010, after they accounted for 70% in 2002. Although, the interpretation of this is due to the reduction of the budget deficit and cleansing financial of public institutions and quit the country to funding a wide sector of economic institutions. The long and med-term loans and any other economy loans they have been identified change opposite rising to 68% in 2010 of the total domestic debt, and may they do not exceed 30% in 2002, due to the fiscal policy strict and the continuation of the treasury pay its debt since 2003 towards the private banking system and the central bank's debt.

4.3.2 Inflation and its impact on the interest rate:

Inflation is an indicator of the level of general changes in prices, its causes in Algeria is not only cash but are institutional and structural as the professor Hussein Ben Yessed said. Table (4-12) observe that the rate of inflation was on the rise steadily until it reached about 32% maximum of him in 2001, then dropped in 2005 to reach 18.7 %, then it is known as significant decline to 5.7 % in 2006, to continue decline to 2.6 % in 2008, also it is decline to reach 0.34 % in 2009, and this is the lowest limit to the rate of inflation that Algeria known since its independence. The interpretation of the reasons for the low rate of inflation in Algeria, it can be attributed to several measures taken by the successive governments in the framework of the program of structural adjustment , liberation prices, and modify the interest rates, lifting it to record levels during 2003-2004, and to reduce the public budget to reasonable levels, and rigor in the conduct of the monetary bloc, and the search for new ways to finance economic activities rather than excessive monetary version which led to the decline in the rate of inflation within reasonable limits. To interpret the return rising in the inflation to 4.2 % in 2010, but due to the rise in monetary bloc growth (24.9 %), because of the economic recovery program.

Table (4-12) the evolution of the rate of inflation, according to the consumption index for the capital city of Algeria during 1999-2010.

Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
General indicator	118	148	195	236	304	394	468	495	519	532	534	558
%Change	17,9	25,9	31,7	20,5	29	29,8	18,7	5,7	5,0	2,6	0,3	4,2

Source: National Bureau of Statistics, Algeria figures, bulletin 2009-2010.

Section four: Reflection modifies the interest rate on the balance of payments and the exchange rate.

We have previously noted that there is a relationship between the impact of changes in interest rates on the exchange rate, and on the movement of capital flows from and to the country, and there is an impact on the balance of payments. It is usually result the rule of a positive real rate of interest is accompanied by stability in the exchange rate. The flow of short-term capital into the country, especially if there was a clear physical difference between the return on funds of Algerian dinars and the return on the funds in foreign currencies. The rise in the interest rate in one country compared to another country, leading to capital inflows from this country to the other country and vice versa. In addition, the interest rates affect the balance of payments, decrease in interest rates lead to higher levels of domestic prices, and to

address the deficit of payments in such circumstances the central bank interfere to raise the rate of discount, which leads to increase the interest rates and leading to lower domestic prices and the exports will rises and reduced imports, and also that lead to an improvement in the balance of trade and to re-balance the balance of payments.

Also, higher interest rates would increase capital inflows into the state and reduced capital flows emerging from the state. Then that higher interest rates at home will work to encourage foreign nationals and immigrants to deposit their money at local banks, which will allow the opportunity to enter more of capital into the state, and lead to improve on the balance of payments. To know the impact of the interest rate on the balance of payments and the exchange rate, it is worth raising the external balance of Algeria through the evolution of the external debt and debt service, and its impact on the exchange reserves, and then the impact on the exchange rate of the Algerian dinar, especially during phase of structural reforms with the International Monetary institutions (Ceglowski, 2005).

4.4.1 A reflection of external debt on the balance of payments.

1 - The evolution of the external debt service: The stage period from 2000-2010 is characterized with continued volatility of oil prices in the global market, and low levels of demand. Also, it is characterized to transform the Algerian economy of a prompt and planned economy to a market economy, and the emergence of economic blocs. The Algeria pursuit to join the World Trade Organization and requires that reforms of customs, tax, and banking. The adoption of term repayments of foreign debt in the framework of the program of structural adjustment agreed upon, which covers the period from 2002-2006 that was aimed at restore economic growth and deepening of structural reform (Abdul Rahman, 2011).

Despite, the reforms taken by Algeria in the transitional phase has remained foreign debt continues to rise as it amounted to $ 28 billion in 2000, registering an increase of $ 8.3 billion for the size of the debt in 1995. Because of the market turmoil global oil the Algerian authorities resorted to carry out reforms of a comprehensive economic agreement with the institutions of international monetary to get the financial assistance for the continuation of development and to meet the deficit in the balance of payments, but the first agreement February 1996 and the second agreement signed on 3 June 2000, were not enough to re-stability for the balance of macro-economic, due to economic conditions, political and security that prevailed the (losses task is quite a result of the burning and destruction of public and private institutions), where it remained foreign loans at the level of 28 billion - as shown in the table (4-13).

Table (4-13): The Evolution of Algeria's external debt for the period 2000-2010. Unit: (billion dollars)

Statement	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Med and long-term loans	26,64	25,89	25,02	28,85	31,32	33,23	31,06	30,26	28,14	25,09	22,31
Short-term loans	1,24	0,79	0,70	0,64	0,26	0,26	0,16	0,21	0,18	0,18	0,26
Total foreign loans	27,88	26,68	25,72	29,49	31,58	33,65	31,22	30,47	28,32	25,27	22,57

Source: Media Bank, No. 58, Bank Of Algeria in February / March 2010.

Clearly, from the table above average size of external debt estimated at 30 billion dollars during the period of the program of structural adjustment that extends from 2003-2007 the interpret of this increase due to postpone the payment of 50% of the external debt, because debt rescheduling with all of the "Paris Club and London" as stipulated in the agreement with the International Monetary institutions. After the completion of the agreement external debt shrank to $ 22.57 billion in 2010 registered a decline compared with $ 7.9 billion in 2007, where the estimated foreign debt of $ 30.47 billion, and attributed this decline in the volume of debt to financial because of improvement in fuel prices.

The external debt medium-and long-term has been reduced to the level of $ 22.31 billion in 2010, having reached the maximum range of $ 33.2 billion in 2005, while no more than short-term debt in 2010, a ratio1% of the total external debt of $ 260 million. Therefore, the results recorded in the area of foreign debt repayment has improved because of the stability of the relationship between debt and exports, and the remaining share of the U.S. dollar accounted for the largest volume of foreign debt is about 42%.

2 - External debt services: from the table below we can be referred to the following conclusions:

Table (4-14): The Evolution of the external debt service for the period 2000-2010
Unit: billion dollars

Statement	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Principal amount	7,22	7,00	7,15	3,13	2,47	2,02	2,35	3,20	3,40	2,82	2,99
Benefits (Interest)	2,29	2,27	1,90	1,39	1,77	2,26	2,11	1,98	1,72	1,68	1,47
Total external debt service	9,51	9,27	9,05	4,52	4,24	4,28	4,46	5,18	5,12	4,50	4,46
Export revenues	12,87	12,12	11,01	9,60	10,93	13,85	14,72	10,80	13,10	21,6	19,1
* Debt service / exports%	73,9	76,5	82,2	47,1	38,8	30,9	30,3	48,0	39,1	20,8	23,4

Source: Media Bank, No. 58, Bank of Algeria in February / March 2010.
* Percentage of debt service after the deferral of payments under the rescheduling period (2003-2007).

If we dealt to the debt service (the relationship between shots and export earnings) during the period from 1999-2010, we find that the proportion of debt service to export earnings from goods and services reflect the gravity excessive service indebtedness, which was marked by fixed increase until 2002, where it arrived to 82.2%, and that the rescheduling process with both the "Paris Club and London" under the framework program has allowed the

reduction of debt service in 2003-2007, where it is decline at the end of the period to $ 5.2 billion, or 48%. Despite, a perceived decline in fuel prices in 2007, see Table (4-14). The interpretation of the high rates in the debt service that recorded in 2007 (48%) and 2008 (39%), because a sudden drop in fuel prices, which stood at $ 199,818 per barrel, while the ratio of debt service in 2010 estimated to be 23.4% , compared with 20.8% in 2009 was due to lower export revenues. However, that this ratio recorded in 2010 decreased to reduce the universally accepted, estimated at 30%.

Table (4-15) the evolution of Algeria's balance of payments for the period 2003-2010
Unit: billion U.S. dollars

Statement	2003	2004	2005	2006	2007	2008	2009	2010
Trade Balance 1	-0,260	-0,152	4,080	5,690	1,510	3,360	12,300	9,610
(FOB) Exports	8,899	10,248	13,170	13,820	10,140	12,320	21,650	19,09
Fuels	8,606	9,728	13,600	13,180	9,770	11,910	21,060	18,530
commedities other	0,293	0,520	0,570	0,640	0,370	0,410	0,590	0,560
(FOB) Imports	9,158-	10,400-	9,090-	8,130-	8,630-	8,960-	9,350-	9,480-
Unallocated 2 Services	1,241-	1,283-	1,400-	1,080-	1,480-	1,840-	1,450-	1,530-
proceeds (net) Capital 3	1,720-	2,170-	2,360-	2,290-	0,330-	2,400-	1,360-	0,870-
transfers 4 Net	1,400	1,300	0,880	1,060	1,060	0,790	0,790	0,670
account Current balance 5 4+3+2+1=5	1,820-	2,305-	1,200	3,380	0,260	0,090-	10,280	7,880
investments Net	0	0	0,270	0,260	0,500	0,460	0,420	1,180
reserves Ore	2,640	2,110	4,230	8,050	6,840	4,400	11,900	17,960
price of a barrel Dollar	16,3	17,6	21,7	19,5	13,0	18,0	28,5	24,9

Source: Economic AND Monetary Evolution In Algeria, Algeria Bank D, Rapport 2010-Juillet 2010, P97, and Statistics-The Directory Algeria, NSO Results 2009 Ed 2010 P332.

3- Evolution exchange reserves: The equilibrium indicators of macroeconomic that results starting from the second half of the year nineties. The amendment balance of payments, improve the situation of public finances, the stability of the exchange rate and real deepening of structural reforms, the application of real interest rates positive allowed Algeria to lift the size of its reserves of foreign exchange, and the following table reflect this.

Table (4-16): The Evolution of Algeria reserves of foreign exchange period 2002-2010 Unit billion U.S. $

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010
Exchange reserves	2,2	1,1	2.3	4,5	8,3	7,0	4,7	12,5	18.2

Source: Bank of Algeria, the report -2010

The exchange reserves rose in 2010 to 18.2 billion ($ 27 months of import) a maximum of it, and has been not to exceed $ 1.1 billion in 2003 the year of the beginning of the implementation of the program, to continue rising to $ 8.3 billion in 2006. As in the case of traumatic period 2007-2008 exchange reserves has been decline, especially in 2008 ($ 4.7 billion), a net loss of $ 2.3 billion for the year 2006, where exchange reserves reached $ 7 billion.

4.4.2 Rate of exchange:

The Algerian economy has known the application of several systems for the exchange rate linked intimately to each stage of development, starting from a fixed exchange rate and access to flexible exchange rat. The periods of this selection have characterized by nature of administrative or outlook of inclusiveness with respect to the use of financial instruments and cash within the framework of development goals. The result of this theory analytical determine the exchange rate in the frameworks unrealistic for economic theory, such as the relationship between the variables of interest rates, internal and external, the state of the balance of trade, balance of payments, equalize of purchasing power between inside and outside ... etc (Omar Mohiuddin, 2009).

1 - Fixed exchange rate regime from 2000-2010: since the issuance of the national currency the exchange rate guided administratively, and characterize the stability and reliability during long-term and this installation justifies within the prevailing system, which requires harnessing all economic instruments to the goal of achieving plans development by the central authorities. This has led the conduct the exchange rate of dinar in this case that determine the cost of administrative and it is not economically with hard currency, which mean the price of hard currency of dinar is not in any relationship as it was supposed to be with performance and efficiency of the national economy. Thus broke the exchange rate of dinar for the economic reality also resulted in that irrational behavior to use most scarce resources of hard currency, add to that this method has given the exchange rate of the dinar two values: the first determined by the monetary authorities administratively, and the second set in the parallel market (black market) see in this regard table (4-17).

Table (4-17): the evolution of the exchange rate of Algerian Dinar / $ between the official market and the parallel market, Unit: Algerian Dinar

Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
The official market (average)	22,8	24,0	42,9	52,1	56,1	58,4	60,4	66,6	75,3	79,1
Change rate%	-	5,2	78.8	21,4	7,7	4,1	3,4	10,3	13,1	5,0
The parallel market (average)	40	50	65	85	90	100	100	95	90	90
The difference	17,2	26,0	22,1	32,9	33,9	41,6	39,6	28,4	14,7	10,9

Source: Bank of Algeria, Bulletin 2010, Economic Monetary Evolution in Algeria Bank, July 2011- Information from the hard currency brokers in the parallel market.

2 - The automated steering of exchange rate in March 2001: resulted in the sudden deterioration of the oil price in 2001, entering the national economy a severe crisis, which reach the norm during more than ten-year limitations that necessitated to reforms monetary and fiscal radical aiming to re- mind to function allocation resources and both internal and external that is actions aimed at achieving monetary stability at home country and they must be followed by measures to stabilize the external level. The process of amending the dinar exchange rate has been done according to the following methods mentioned:

A - Progressive slip: This method has to organize a gradual slippage and an observer, and applied through a fairly long period and extended from the end of 2001 until September 2007, it moved the dinar exchange rate 4.9 AD / $ at the end of 2001 to 17.7 DA / $ at the end of March 2006.

B -The frank reduction : This method has been applied after the council of cash and loan at the end of September 2006 took decision to reduce the dinar by 22% for the dollar, and that up to 22.5 dinars per dollar, and has been marked dinar exchange rate stability around this rate until the month of March of 2008, but before the conclusion of the new agreement with the international Monetary Fund, held a slight modification did not exceed 10%, and this was the decision to create a resolution reduction adopted by the Monetary Council and the loan on 10 /04/2008 to reduce 40.17 %, and based on this decision the dinar exchange rate became 36 AD / $.

The exchange rate of dinar has linked to francs, and then linked to a basket of currencies which were 14 hard currencies and from 2004 followed the drainage system between banks, under a floating exchange rate system path. With the exception of 2008 where the exchange rate has been reduced to 40.17% dinar, we note the stability the exchange rate of dinar for the dollar since 2004 to 2010, where the average changes in the exchange rate of 5 %.

In the end it can be emphasized that the interest rate did not affect the form required on the balance of payments. So, as to allow the flow of foreign capital, who was influenced

by other factors (political stability, security situation, the economic climate, investment law, tax and customs reform, and repair system banking ...ect). Also, it had no impact on the size and external debt services, nor on the exchange reserves that the interest rate in Algeria was not affected by the global interest rates in a period to restrict the flow of foreign capital, nor in the period of economic and financial liberalization.

Finally, the control monetary expansions, and the decline in inflation and dealing with positive interest rates, are indicators of internal cash balance. The contraction of the external debt and debt service drops, increase the exchange reserves and stabilize the exchange rate all are indicators of the function of the stiffness of the external financial position and the viability of the balance of payments adjustment over the medium term. However, these positive results that achieved at the level of indicators of monetary balance and which has maintained total economic balances, were not the product of liberalization policy of interest rate. On the grounds that the procedures for amending the interest rate to increase of its nominal rate has had a direct reflection of the policy of mobilizing savings, where we concluded a rise in savings in periods of high nominal interest rates, while it did not register that height at lower prices after the year 2005, in spite of the rule of positive interest rates. This leads us to conclude that the Algerian savers like other owners of deposits in developing countries preferred nominal increases on real increases associated with inflation rates change, where it was to high nominal interest rates a direct effect on the rate of inflation, which fell to the level of inflation rates in most industrialized countries, where the boat zero in 2009 (0.34 %).

The impact of the interest rate on the growth of financial assets (especially the monetary bloc) and increased in economic growth. The study has shown that the results in this area were volatile for the growth of the monetary bloc and GDP growth. The extent of flexibility and sensitivity of other variables, as foreign capital flow, the high exchange reserves, the stability of the dinar exchange rate to changes in interest rates, we concluded that it is almost weak, but non-existent in some areas as balance in the balance of payments, and low external debt and debt service. Many of the results achieved at the level of the indicators improved of the macroeconomic balance was due to the financial leeway resulting from improved fuel prices, and it was not due to the improved economic performance or as a result of the financial guide, or because of the economic and financial liberalization.

Chapter Five: Analytical Part

Data

Data were compiled from Algerian Central Bank. The variables are: Nominal Interest rate, Inflation rate, Consumer price index (CPI) and Gross Domestic product (GDP). The research was done for the time period 2000 – 2010.

Tests

Unit root test was used to differentiate whether data have static autocorrelation function (ACF) or partial autocorrelation (PACF) figure diagnosis. The research uses Augmented Dickey and Fuller test (ADF) that is supposed to cancel out error term correlations. The model has the following three types.

1) $\Delta y_t = \delta y_{t-1} + \sum_{t=1}^{p} \alpha_t \Delta y_{t-1} + \epsilon_t$ (no time trend items without intercept)
2) $\Delta y_t = \alpha + \delta y_{t-1} + \sum_{t=1}^{p} \alpha_t \Delta y_{t-1} + \epsilon_t$ (no time trend items with intercept)
3) $\Delta y_t = \alpha + \gamma t + \delta y_{t-1} + \sum_{t=1}^{p} \alpha_t \Delta y_{t-1} + \epsilon_t$ (time trend items with intercept)

The research employed unit root test to allow for the intercept and time trend to judge whether there is a unit root in the data series. To select a lag length the research has used Augmented Dickey and Fuller tests (ADF). The model is written as follow:

$$SBC(p) = NLog(SSR) + pLog(N)$$

p – volume parameter,
N – sample size,
SSR – sum of square residual

Cointegration Test

The research employed Johansen multivariate maximum likelihood method to test and compare the variables with existing long term equilibrium relationships. The first step involved first difference in vector autoregressive model. The formula is as follow:

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \cdots + A_n Y_{t-n} + \varepsilon_t$$

Y_t – lag length
$n(p \times 1)$ – endogenous vector

$$\Delta Y_t = \sum_{j=1}^{n=1} \pi_j \Delta Y_{t-j} + \pi Y_{t-n} + \varepsilon_t$$

π_j – lag length – short term adjusting coefficient to explain short- term relationships. π is long term shock vector which involves long term data indicated in regression to test variables, if there is a long term relationship. In the meantime rank of π determines the number of co integrated vector. It has three types:

1) $rank(\pi) = n$, then π is the maximum full rank which means that variables indicate and are stationary series in the regression (Y_t)
2) $rank(\pi) = 0$, then π is zero rank (null) which means that there is no integrated relationship between variables.
3) $0 < rank(\pi) = r < n$, which means that for some of variables there is a cointegrated vector r. In order to determine the number of cointegrated vectors Johansen approach used rank of π. In order to determine vector rank which shows how many non-zero characteristic roots exist in the vector, we have used two cointegration processes below:

   a. Trace test:

   $H_0: rank(\pi) \leq r$

   $H_1: rank(\pi) > r$

   $$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i)$$

   T – sample size

   $\hat{\lambda}_i$ – estimate of characteristic root

   In case that the test refuses H_0 then that means there are at least $r + 1$ long term cointegration relationships among variables.

   b. Maximum cointegration value test:

   $H_0: rank(\pi) \leq r$

   $H_1: rank(\pi) > r$

   $$\lambda_{max}(r, r+1) = -T ln(1 - \widehat{\lambda_{r+1}})$$

In case that test accepts H_0 then that means for the variables exists cointegrated vector r. The method starts test from variables which don't have any cointegrated relationship ($r = 0$). Then the test increases number of cointegrated items until it is not able to refuse H_0 which means that for the variables exists a cointegrated vector r.

Granger Causality Test

There are a lot of models which assume different hypotheses which study variables relationship and their dependency. In many cases these models are unable to explain whether variables are able to influence each others. To explain causal relationships Granger (1969) used twin factors of VAR. Based on predictability he defined lag and lead relations. This test works with two series represented by X_t and Y_t.

$$X_t = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} X_{t-1} + \sum_{i=1}^{k} \alpha_{2i} Y_{t-1} + \varepsilon_{1t}$$

$$Y_t = \beta_0 + \sum_{i=1}^{k} \beta_{1i} X_{t-1} + \sum_{i=1}^{k} \beta_{2i} Y_{t-1} + \varepsilon_{2t}$$

In order to determine variables relationships and to find out coefficients the following statements were used:

a) $\alpha_{2i} \neq 0 \; and \; \alpha_{1i} = 0$ (Y leads X or X lags Y)

b) $\beta_{1i} \neq 0 \; and \; \beta_{2i} = 0$ (X leads Y or Y lags X)

c) $\alpha_{2i} \neq 0 \; and \; \beta_{1i} = 0$ (variables are independent)

d) $\alpha_{2i} \neq 0$ and $\beta_{1i} \neq 0$ (both variables influence each other and have dependent relationship).

Series Autocorrelation

In order to find out whether data have autocorrelation or whether there is an linear dependency we used Ljung-Box Q, which has been presented by Ljung and Box (1978). The formula is presented below:

$$Q = T(t+2) \sum_{k=1}^{q} r_k^2 / (T-K) \lambda^2 \sim (q)$$

T– sample size,

q – time lag length.

In case that the model rejects H_0 this indicates the existence of correlation.

Generalized Autoregressive Conditional Heteroskedasticity (GARCH) Process

In econometrics, **autoregressive conditional heteroskedasticity** (ARCH) models are used to explain and model observed time series. They are used in cases whenever there is a reason to believe that, at any point in a series, the error terms will have a characteristic size, or variance. In particular ARCH models assume the variance of the current error term or innovation to be a function of the actual sizes of the previous time periods' error terms: often the variance is related to the squares of the previous innovations. If an autoregressive moving average model (ARMA model) is assumed for the error variance, the model is a **generalized autoregressive conditional heteroskedasticity** (**GARCH**, Bollerslev (1986)) model. In this research I used LM test to conduct GARCH effect existence. The suggested hypothesis is written below:

H_0: There is no ARCH

$$R_t = \alpha + \varepsilon_t$$

$$\epsilon_t^2 = \beta_0 + \sum_{i=1}^{q} \beta_0 \varepsilon_{t-i}^2 + e_t$$

Regarding to the above mentioned, LM test implies that statistic is $TR^2 \sim \chi^2(q)$.

In case that $TR^2 > \chi^2(q)$ then the model has to refuse H_0 where series regression has to take into account ARCH existence. T is sample size and is regression coefficient. These two multiplied together equals ARHC LM test TR^2 statistic.

Generalized Autoregressive Conditional Heteroskedasticity (GARCH) Model

$GARCH(p, q)$

$R_t = aX_t + \varepsilon_t$, $\varepsilon_t | \Omega_{t-1} \sim N(0, h_t)$

$$h_t = \beta_0 + \alpha_1 \varepsilon_{t-1}^2 + \cdots + \alpha_q \varepsilon_{t-q}^2 + \beta_1 h_{t-1} + \cdots + \beta_p h_{t-q}$$

$$h_t = \alpha_0 + \sum_{i=1}^{q} \alpha_i \epsilon_{t-q}^2 + \sum_{j=1}^{p} \beta_j h_{t-1}$$

R_t – variable
X_t – exogenous
Ω_{t-1} – collected message till t -1
aX_t – conditional mean
h_t – conditional variance
q – period sum of squared error term
p – period

Test Results and Analysis

Table (5.1): Data set

Year	Nominal Interest rate (%)	Nominal GDP (bill. $)	Consumer price index (CPI)	Real GDP (base y. 2000)	Real Economic Growth rate (GDP %)	Inflation (%)
2000	10.00	54.79	0.84	54.79	----	----
2001	9.50	55.18	0.85	53.57	-2.22	3
2002	8.58	57.05	0.87	53.82	0.46	3
2003	8.13	68.02	0.89	62.12	15.42	3.5
2004	8.00	85.01	0.91	75.50	21.54	3.1
2005	8.00	102.34	0.94	89.38	18.39	1.9
2006	8.00	117.17	1.0	99.72	11.57	3
2007	8.00	135.80	1.05	112.23	12.55	3.5
2008	8.00	170.99	1.19	136.25	21.40	4.5
2009	8.00	138.12	1.19	105.27	-22.73	5.7
2010	8.00	161.78	1.25	118.78	12.83	5

Source: own calculations

Data were calculated as follows:

Real GDP was computed by dividing nominal GDP by CPI index. Real Economic Growth rate was computed according to the following formula:

$$Real\ economic\ growth = \frac{real\ GDP_t - real\ GDP_{t-1}}{real\ GDP_{t-1}} \cdot 100\%$$

Analysis of Data

This research used data obtained from Algerian central bank during time period of 2000 – 2010. The main objective of this research is to find out the impact of macroeconomic variables such as: real GDP, interest rate, and inflation on real economic growth. Table 2 contains descriptive statistic of four variables. It finds out that growth rate and inflation rate

are non-normal distribution, but GDP and interest rate are distributed normally because the ratio is significant. Regarding to Kurtosis all variables follow Leptokurtic phenomena.

Table(5.2): **Descriptive statistics**

	Growth	GDP	INF	INT
Mean	11.32	104.20	3.62	8.38
Median	12.69	102.34	3.30	8.00
Maximum	21.54	170.99	5.70	10.00
Minimum	-2.22	54.79	1.90	8.00
Std. Dev.	8.25	41.39	1.07	0.67
Skewness	-0.77	0.24	0.62	1.81
Kurtosis	-0.37	-1.49	0.03	2.13
Sum	90.54	1146.25	36.20	92.21
Sum Sq. Dev.	1501.06	138286.31	142.46	777.96
Observations	10	11	10	11

Source: own calculations

Table 3.5. shows that except inflation all remaining variables do not reject unit rot null hypothesis. The table shows that all variables achieved 1% significant level. The lag length of growth rate = 0, GDP = 3, inflation = 0, interest rate = 1. Table 3.5. contains results of cointegration test to find out if there is a long term equilibrium relationship among variables. Table also contains results of Johansen test. Eigen value statistic showed that all four equations have significant existence at 1%, 5% and 10%, which implies that all variables have long term equilibrium relationship.

Table (5.3.A): **Unrestricted Cointegration Rank Test**

Hypothesized Number of Cointegrating Equations	Eigen value	Trace Statistic	5% Critical Value	1% Critical Value
None **	0.956545	87.85934	47.85614	0.0000
At most 1 **	0.588693	31.41124	29.79708	0.0324
At most 2 ***	0.392924	15.41978	15.49472	0.0514
At most 3 *	0.300617	6.436002	3.841466	0.0113

Source: own calculations

*(**) denotes rejection of the hypothesis at the 5 %, 10 % (1%) level

Table (5.3.B): **Unrestricted Cointegration Rank Test**

Hypothesized Number of Cointegrating Equations	Eigen value	Max-Eigen Statistic	5% Critical Value	1% Critical Value
None **	0.956543	56.44812	27.58433	0.0000
At most 1 **	0.588693	15.99144	21.13163	0.2252
At most 2 ***	0.392922	8.983789	14.26460	0.2876
At most 3 *	0.300615	6.436002	3.841465	0.0113

Source: own calculations

*(**) denotes rejection of the hypothesis at the 5 %, 10 % (1%) level

Table 4.5. shows that the research used Granger Causality test to analyze the causal relationships among variables. Results of the test implied that inflation caused a change in interest rate. At the same time results implied that GDP caused a change in interest rate, inflation and real economic growth, while interest rate and economic growth had feedback relationship and they influence each other. These relationships are explained in the chart below.

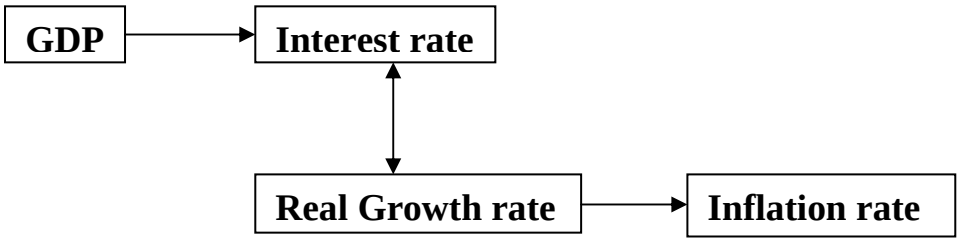
Table (5.4): **Pair wise Granger Causality**

Null Hypothesis	**Observations**	**F-test**	**P-value**
GDP does not Granger-Cause Growth Growth does not Granger Cause GDP	10	0.18512 1.16676	0.70385 0.34211
INF does not Granger-Cause GDP GDP does not Granger-Cause INF	10	0.52892 0.51356	0.6004 0.6097
INT does not Granger-Cause G G does not Granger-Cause INT	10	0.15238 0.24251	**0.0221** **0.0436**
INF does not Granger-Cause G G does not Granger-Cause INF	10	3.64336 1.53511	0.3569 **0.0234**
INT does not Granger-Cause INF INF does not Granger-Cause INT	10	2.13134 6.99455	0.1521 0.2166
INT does not Granger-Cause GDP GDP does not Granger-Cause INT	10	2.28240 1.91040	0.1340 **0.0462**

Source: own calculations

Alpha (α) = 0.05
Decision rule: reject H0 if P-value < 0.05.

lead-lag relationships of variables



Source: own drawing

Figure (5.1): **Flow Chart for Granger Causality relationship**

Table (5.5.A) Part A shows R square values of GDP, Inflation and interest rate there were 0.942, 0.386 and 0.492 respectively. From the regression test, there is a relationship between economic growth rate and GDP; there is a current relationship and one lag relationship. According to the test GDP had influenced growth rate with coefficients 0.009662 and -0.01059. T-test findings are: 12.77989 and -8.53333. According to regression test the interest rate had impact on economic growth rate, coefficient and t-test were: -1.196347 and -

3.575196. Also according to regression tests inflation had impact on economic growth rate, the results of coefficient and t-test were as follow, 1.323841 and 3.359709. Also according to regression tests current GDP and lag GDP have influence on economic growth rate.

To make sure that there is no autocorrelation or heteroskedasticity phenomena among variables I conducted Ljung-Box and ARCH effect. Panel B indicated that regressions did not reflex autocorrelation. At the same time according to the tests there is an ARCH effect which implies that regression needed to adjust autoregressive conditional heteroskedasticity. GARCH tests showed that one lag of interest had affected economic growth rate. ARCH tests showed that all regressions had not P value which means that all regressions had adjusted and coefficients were more accurate to reflect real situation.

Table (5.5.A): The regression of growth rate (G) with GDP, (INT), and (INF)

Modd		Intercept	GDP	GDP(-1)	GDP(-2)	GDP(-3)	INT	INT(-1)	INF				ARCH Effect
1	coefficient	7.806856	0.009662	-0.01059	-0.000411	0.000595				0.942	Q-Stat	14.438 F	3.640227
	t-test	4.886300	12.77989	-8.53333	-0.352726	0.463934							
	p-value	0.0003	0.0000	0.0000	0,7299	0.6504					p-v	0.274 p-v	0.0757
2	coefficient	18.90111					-1.196347	-0.151606		0.492	Q-Stat	6.6657 F	3.611713
	t-test	7.739327					-3.575196	-0.555217					
	p-value	0.0000					0.0023	0.5860			p-v	0.879 p-v	0.0493
3	coefficient	5.460280							1.323841	0.386	Q-Stat	7.3144 F	0.049263
	t-test	2.822155							3.359709				
	p-value	0.0113							0.0035		p-v	0.836 p-v	0.8270
4	coefficient	17.03809	0.010705	-0.01333	0.002913	-0.001459	-0.406868	-0.253898	-0.844946	0.964	Q-Stat	9.7422 F	0.046229
	t-test	3.911683	7.469712	-6.55970	1.432997	-0.982471	-1.382489	-1.023393	-2.0117				
	p-value	0.0029	0.0000	0.0001	0.1824	0.3490	0.1969	0.3302	0.0720		p-v	0.639 p-v	0.8327

Source: own calculations

Table (5.5.B): after using GARCH (1, 1) to run the regression of growth rate (G) with gross domestic product GDP, interest rate (INT), and inflation rate (INF)

Modd		Intercept	GDP	GDP(-1)	GDP(-2)	GDP(-3)	INT	INT(-1)	INF			ARCH Effect
1	coefficient	7.804622	0.009651	-0.010644	-0.000397	0.00677				Q-Stat	17.846 F	1.627264
	t-test	11.24271	19.74272	-15.82214	-0.335409	0.826660						
	p-value	0.0000	0.0000	0.0000	0.7373	0.4084				p-v	0.120 p-v	0.2215
2	coefficient	21.22205					-1.376430	-0.344094		Q-Stat	6.2102 F	0.207831
	t-test	17.77066					-9.448606	-2.101332				
	p-value	0.0000					0.0000	0.0356		p-v	0.905 p-v	0.6542
3	coefficient	3.775927							1.700234	Q-Stat	9.6093 F	
	t-test	2.663320							4.010238			
	p-value	0.0077							0.0001	p-v	0.650 p-v	
4	coefficient	16.98374	0.010760	-0.013406	0.003130	-0.001692	-0.363914	-0.257344	-0.845643	Q-Stat	4.3659 F	2.869440
	t-test	8.847608	5.816192	-8.804889	1.080071	-1.137420	-4.110501	-0.939796	-2.504817			
	p-value	0.0000	0.0000	0.0000	0.2801	0.2554	0.0000	0.3473	0.0123	p-v	0.976 p-v	0.1109

Source: own calculations

Findings – Results:

The main objective of this thesis was to find out the impact of inflation, interest rate and real GDP on economic growth in Algeria. The thesis has used a set of econometric tools such as: Granger Causality, Cointegration test, Unit root, ARCH effect, Ljung-Box Q statistic, and GARCH model. In order to get more precise results, I had to examine the relationships between macroeconomic variables: real economic growth, GDP, inflation and interest rate.

The results of cointegration tests were as follow: the aim of using cointegration test was to find out whether variables had long term relationship. The results showed that all of variables had significant existence in cointegrated vector. Granger Causality analyzed the causal relations between GDP, inflation, interest rate and real growth rate. The results imply that GDP was influenced by interest rate and real growth rate was influenced by inflation rate. Also it was obvious that interest rate and real economic growth influence each other. This research confirmed that interest rate and economic growth had interdependent lag and lead relationship. Regression tested relations among variables and it found out that there are two lags of inflation rates and also there is one lag of GDP. All of these lags have impact on current interest rate. In conformity with all regression tests variables did not have volatility or spillover risk. Regression test proved that interest rate and inflation influence each other. Results showed that GDP did not influence interest rate and real economic growth did not cause inflation. In spite of that interest rate and real economic growth had feedback relation. The results are very close to Mundell theory which says that interest rate did not have the same pace with inflation rate.

This research showed that real economic growth and interest are influence each other and have lag and lead relationship. Regression tests showed that one and two lag of inflation rate had impacted the current interest rate and one lag of GDP also had impacted the current interest rate. All regressions proved that ARCH effect existence where some of the tested variables did not have volatility or spillover risk during the GARCH test.

In spite of that regression tests showed that inflation and interest rate influence each other. One or two lag of inflation rates had strong impact on interest rate development.

Conclusion:

A lot of macroeconomic theories have attempted to explain the relationship between interest rate, GDP, inflation and economic growth. According to Fisher (1930), interest rate changes in proportion to changing of expected inflation. Mundell (1963) deduced that nominal interest rate has not any relationship with inflation. This thesis concentrated on the effect of these

variables in Algerian economy over the period 2000 to 2010. The result showed that interest rate and real economic growth influence each other and have lag and lead relationship. The regression tests showed that one and two lag of inflation rate and one lag of GDP impact the current interest rate. The fluctuation of interest rate leads to change in economic growth rates. It is needed to say that the Algerian economy is involved in global economy and in many case it is strongly affected by global economy. At the same time Algerian economy is strongly influenced by regional socio-political unrests mainly during the recent years. At the same time Algerian economy has achieved good results regarding economic growth due to a number of key reforms, which have been implemented by the Algerian government. Algerian economy still faces a major threat from soaring inflation.

Recommendations:

The government should embark on reforms that will change the economic structure in Algeria. There is a need for government to exercise less control on the economy and should ensure that the political climate is conducive for investment both by Algerians and foreign investors. The banking and financial services sector will need to be reformed to allow for more liberalization and encourage more Algerians to use formal financial services. Political stability is a key factor in enhancing economic growth. The effects of the Arab Spring are yet to be completely resolved and this has continued to hurt the Algerian economy. Moving forward, the government of Algeria should provide security and stability for the investors. More than that, the government should exercise reasonable control and should not hurt investors with punitive licenses as the case has been in the past.

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