CHAPTER ONE

INTRODUCTION
1.1 Introduction

The Iranian economy has suffered from high inflation since the advent of the revolution in 1979. The average annual inflation rate during the 1980s reached 19.8 percent, and during the 1990s was as high as 23.7 percent. Iran also has experienced a high unemployment rate, particularly in recent years as the younger generation, who were born during the “baby boom” of the 1980s, enters the job market. As a result, a drop in the inflation rate is crucial for increasing economic growth and employment rates in the country. Since 2000, the Iranian government has implemented a comprehensive exchange rate-based stabilization program to enhance investment and economic growth. As a result of this program, the average annual inflation rate during 2000/2005 declined to 15.1 percent. Although this reduction is considered a major achievement, it is accompanied by real appreciation of the currency and weakening export competitiveness of the manufacturing sector. In addition, the rate is still high relative to other countries and is expected to deteriorate in coming years. The basic monetary policies, which are available to the authorities, are categorized as money growth targeting, exchange rate targeting, and inflation targeting. An inflation-targeting policy is based on the assumption that low inflation is an appropriate objective of monetary policy. Under this regime, the Central Bank announces the predicted inflation rate for the year ahead and this commitment determines exchange rate behavior. Some countries, such as Chile, have maintained both an inflation target and exchange rate target policies to some degree. However, an exchange rate target is subservient to an inflation target when conflict between the two arises. The Iranian
The economy is heavily dependent on oil and gas exports for earning hard currencies and the government has a monopoly control on these resources. This revenue is constrained by the OPEC quota for oil exports and the price of oil determined in the oil market. At the same time, the oil industry is nationalized industry, so it provides government with a virtual monopoly power to supply foreign exchange and fix their value. This leaves very little in the way of a functional relationship between changes in the foreign exchange rate and the supply of these funds, making the supply inelastic with respect to the exchange rate. For nearly forty years (1970/2005), the value of oil and gas exports has constituted around 86 percent of the country’s total exports. Furthermore, more than 84 per cent of imports have comprised production inputs (raw material, intermediary and capital goods). Clearly, as exchange earnings have increased, imports have escalated. For instance, in 1973/74 (a period of high increase in oil earnings) the exchange revenues from the export of oil and gas increased by 100 per cent, while imports increased by 70 per cent. Also in 2001/2002, exchange revenues from oil and gas increased by 18 per cent and imports by 20 per cent. Since the major proportion of imports are production inputs and they have no near substitute from internal recourses, the elasticity of demand for imports with respect to exchange rate is also very low. The main sources of Iranian government expenditure are revenue from oil, and taxes. On average, oil revenue constituted more than 60 per cent of total government revenue in the period from 1970 to 2005. It can be seen that in periods of strong oil prices, this dependency is much higher than 60 per cent. For instance, from 1973 to 1977, the proportion of government revenue from oil and gas was more than 75 per cent. The supply of money plays a pivotal role in determining aggregate demand in the
economy. The supply of money, in turn, is influenced by the effect of changes in foreign exchange earnings on the foreign assets of the Central Bank (the monetary base). For example, during the oil boom period of 1972/1977, the ratio of average annual net foreign assets of the Central Bank to the monetary base increased by more than 100 percent. The government has made attempts to reform the economy within the framework of the two Five Year Development Plans since 1989/90, which established a relatively cohesive macroeconomic framework based on the consequences reached among government ministries and parliament on key economic issues. Growth objectives under the first Plan were ambitious and were anchored on expansionary financial policies, including public investment programs financed by monetary expansion and short term external borrowing, while maintaining the highly appreciated exchange rate and significantly negative real interest rates as well as other price incentives. These distortions further aggravated the degree of resource misallocation, inhibited sustained high growth and employment generation, and eventually led to inflationary pressure and balance of payments difficulties. The Second Plan focused on rationalizing relation with external creditors, lengthening the maturity of external debt, curtailing the total external debt stock, and reducing inflation. However, the economy continued to depend heavily on crude oil revenues, resulting in large implicit subsidies for energy products, appreciated exchange rate, and negative real interest rates. The combined effects of inefficient allocation of resources under a controlled system, declines in oil export receipts, and severe import compression adopted during 1995/96-1999/2000 to service the external debt, contributed substantially to lower economic growth in recent years (at an average of 3.2 per cent during 1994/95-1998/99,
compared with 8.1 per cent during 1989/90-1993/94) and a decline in the real demand for money. The government reinforced its reform efforts in early 1999/2000 to: a) establish a market clearing exchange rate in the Tehran Stock Exchange (TSE) to cover a significant share of current account transactions, b) introduce positive real interest rates, c) increase domestic petroleum prices, d) initiate steps to liberalize the trade system, and e) develop the framework to restructure the banking and state enterprise sectors. In the process, access to foreign exchange in the TSE market has been liberalized and the Iranian Rial has been allowed to depreciate in the TSE in response to market prices. As a result, the parallel market premium declined substantially to below 5 per cent by end 1999/2000. At the same time, exchange restrictions were liberalized, regulations relating to foreign exchange transactions simplified, and transparency in foreign exchange operations improved.

1.2 Statement of the Problem

Economic growth, inflation control and employment are the three important purpose of macroeconomics. Inflation is seen as an economic problem in developed countries in the second half of the 20th century. It is clear that in the nearly last four decades inflation is one of the important problems of Iranian economy. Inflation with effects on economic growth, employment, income distribution the entire dignity of a country. During the last three decades rate of inflation of Iran has been two digits.

The determinants of inflation rate are extremely important for policy makers, as when the causes of inflation are correctly specified
the appropriate policy change can be easily diagnosed and affectively implemented.

1.3 Objectives of the Study

The objectives of this study are to determine the effective factors of inflation in Iran during the period 1971-2005, utilizing econometric methods. Thus, the objectives of this study are as follows:

i) To investigate the major determinants of inflation in Iran using the data over the period 1971-2005.

ii) To investigate the effect of foreign trade performance on inflation in Iran.

iii) To investigate the effect of fiscal and monetary performance on inflation in Iran.

iv) To develop a macroeconomic model to do empirical analysis of inflation in Iran.

v) To investigate the effect of non-economic factors on inflation in Iran.

1.4 Hypothesis

In this study, the following Hypothesis tested for Iranian economy.

a) Increase in liquidity does not have a positive effect on Inflation.

b) Increase in real gross domestic product (GDP) does not have a positive effect on Inflation.

c) Increase in import price index does not have a positive effect on Inflation.
1.5 Limitations of Study

There are a few limitations in this study. First limitation is related to data. There is no quarterly data of variables of this study during 1971-2005 in Iran. Thus, we have only used CBI’s method to create quarterly data from annual data. Second, there are many different inflation theories that can explain sources of inflationary pressures. However, we have analyzed all of them, but we have only chosen the model based on condition of Iranian economy.

1.6 The Importance of Study

In the past two decades high inflation rate and related issues have been some of the most important problems in most of the developing countries. In Iran the inflation increased significantly following the 1979 Islamic revolution. It is clear that a high inflation rate causes many problems in the economic system. In Iran, the study of the inflation sources is especially important not only for its adverse economic effects, but also for possible social and political consequences. It seems that identifying the effective sources of inflation in Iran is the first step to control it. In fact, the study of inflation sources according to suitable scientific method can be effective for the control or elimination of the high inflation rate in Iran.

1.7 Data and Methodology

In this analysis, we use quarterly data. The quarterly data are obtained from annual data. The main source of annual data is from central bank of Iran (CBI). the variables comprise the consolidated
consumer price Index (CPI), Liquidity ($M_2$), Real GDP and the Import Price Index (IPI). The information is according to time series and the duration of the study is 1971:1 – 2005:4.

The first step in applying the co integration technique is to determine the degree of integration of each variable in model. The common practice is augmented Dickey – Fuller (1979) test.

In this study, from Johansen & Juselius (1990) Maximum likelihood is used as estimation method. In addition, Impulse Response Functions (IRF) & Forecast Error Variance Decomposition (FEVD) also are used to complete the analysis.

1.8 Chapter Scheme

This study comprises of Six Chapters and the following scheme is being adopted:

Chapter 1: Introduction

In Chapter 1, the overall of the study presented the main purpose of this Chapter is to clear structure of study. In this Chapter statement of problem, objectives, hypothesis, Chapter scheme, importance of study, research methodology, limitations of the study and definitions will be explained.

Chapter 2: Review of Literature and Empirical Studies

In Chapter 2 the literature of the study will be reviewed. This Chapter takes detailed literature review of the subject in general and especially for Iran.
Chapter 3: Monetary and fiscal performance of Iran

Chapter 3 provides details of monetary and fiscal performance of Iran and also discusses about details of trends of inflation in Iran.

Chapter 4: Research Methodology

Chapter 4 discusses research methodology in details. It explains model, source of data and estimation methods such as Johansen and Juselius (1990) Maximum likelihood

Chapter 5: Statistical Analysis and Empirical Results.

Chapter 5 provides statistical analysis and empirical results. The main purpose of this Chapter is to estimate the model and test HYpothesis by using Impulse Response Functions (IRF) and Forecast Errors Variance Decomposition (FEVP) method.

Chapter 6: Summary, Findings and Recommendations

Chapter 6 is the concluding chapter which summaries the study, presents main findings and gives recommendations which have policy implications.

1.9 Definitions

1.9.1 Consumer Price Index (CPI)

A consumer price index (CPI) is a measure of the average price of consumer goods and services purchased by households. The percent change in the CPI is a measure of inflation. The CPI can be used to
index (i.e., adjust for the effects of inflation) wages, salaries, pensions, or regulated or contracted prices. The CPI is, along with the population census and the National Income and Product Accounts, one of the most closely watched national economic statistics.

1.9.2 Inflation

In Economics, inflation is a rise in the general level of prices of goods and services in an economy over a period of time. The term "inflation" was referred to increases in the money supply (monetary inflation); however, economic debates about the relationship between money supply and price levels have led to its primary use today in describing price inflation. Inflation can also be described as a decline in the real value of money—a loss of purchasing power in the medium of exchange which is also the monetary unit of account. When the general price level rises, each unit of currency buys fewer goods and services. A chief measure of price inflation is the inflation rate, which is the percentage change in a price index over time.

1.9.3 Liquidity (M2)

Several definition of money supply has been given and therefore various measures/money supply based on them have been estimated. The main reason why money supply is classified into various measures on the basis of its functions is that effective predictions can be made about the likely affects on the economy at changes in the different components of money supply.

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Therefore it is believed that for monetary analysis and policy formulation a single measure of money supply is not only inadequate but may be misleading too. Hence various measures of money supply are prepared to meet the needs of monetary analysis and policy formulation.

The money supply is the most liquid measure of money supply as the money included it can be easily used as a means of making payments for transaction which is $M_1$.

$M_2$ is a broader concept of money supply.

$M_2 = M_1 + $Quasi money$

Quasi money = Interest free loans savings deposit + Term interest deposits (long run & short run) + Miscellaneous deposits.

1.9.4 Real GDP

Real GDP is a macroeconomic measure of the size of an economy adjusted for price changes and inflation. It measures at constant prices the output of final goods and services and incomes within an economy. The formula for its definition is \[\left(\frac{\text{Nominal GDP}}{(\text{GDP deflator})}\right) \times 100\], however, it is not calculated in this way. Real GDP is calculated as prices in the "base year" time's quantities in the current year, such that production is held constant for the value of currency.\(^2\)

Real GDP for a given year is the given year's nominal GDP stated in the base-year price level. Real GDP growth on an annual basis is the nominal and abnormal GDP growth rate adjusted for inflation and expressed as a percentage.

\(^2\) http://www.politonomist.com/gdp-deflator-and-measuring-inflation-00491/
1.9.5 Import Price Index

An import price index measures changes in the prices of imports of merchandise into a country. The index numbers for each reference period relate to prices of imports landed into the country during the period.  

1.9.6 Regression Analysis

In statistics, regression analysis is a collective name for techniques for the modeling and analysis of numerical data consisting of values of a dependent variable (also called response variable or measurement) and of one or more independent variables (also known as explanatory variables or predictors). The dependent variable in the regression equation is modeled as a function of the independent variables, corresponding parameters ("constants"), and an error term. The error term is treated as a random variable. It represents unexplained variation in the dependent variable. The parameters are estimated so as to give a "best fit" of the data. Most commonly the best fit is evaluated by using the least squares method, but other criteria have also been used.

Regression can be used for prediction (including forecasting of time-series data), inference, hypothesis testing, and modeling of causal relationships. These uses of regression rely heavily on the underlying assumptions being satisfied. Regression analysis has been criticized as being misused for these purposes in many cases where the appropriate assumptions cannot be verified to hold. One factor contributing to the

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misuse of regression is that it can take considerably more skill to
critique a model than to fit a model.\textsuperscript{4}

1.9.7 Cointegration

Cointegration is an econometric property of time series variables.
If two or more series are themselves non-stationary, but a linear
combination of them is stationary, then the series are said to be
cointegrated. For instance, a stock market index and the price of its
associated futures contract move through time, each roughly following
a random walk. Testing the hypothesis that there is a statistically
significant connection between the futures price and the spot price
could now be done by testing for a cointegrating vector. (If such a
vector has a low order of integration it can signify an equilibrium
relationship between the original series, which are said to be
cointegrated of an order below one.)

Before the 1980s many economists used linear regressions on
(de-trended) non-stationary time series data, which Clive Granger and
others showed to be a dangerous approach, that could produce
spurious correlation. His 1987 paper with Robert Engle\textsuperscript{5}, formalized
the cointegrating vector approach, and coined the term. For his
contribution to the technique's development Clive Granger shared the
2003 Nobel Memorial Prize.

\textsuperscript{4} R. Dennis Cook; Sanford Weisberg "Criticism and Influence Analysis in Regression", Sociological Methodology, Vol. 13. (1982), pp. 313-361