Chapter 1: Introduction

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1.1 Introduction

The budget deficit in Iran has been alarming during last two decades. Between 1963 and 2002, Iranian government has had a budget deficit. Government revenue is dependent on the oil revenue and tax revenue forms small proportion of total government revenue. In addition, the large size of government in economy and the large state subsidies on essential food items, fuel and public services have increased budget deficit in Iran. The budget deficit was around -12.4 per cent of the GDP during the period of 1992-1997 and the average rate of inflation were 29.02 during the same period.\textsuperscript{1} Masson et al. (1997) claim that in developing countries the Central Banks are often required to automatically finance budget deficit. In fact, monetary policy may be determined by Central Bank, but the overall formulation of policy is heavily dependent on the fiscal decisions made by the government. Central Bank of Iran (CBI) has not chosen freely instruments for monetary policy. Iran has experienced the financing of government budget deficit through CBI between 1980 and 2002. Thus, we have observed huge government budget deficit, high growth of liquidity (M2) and double-digit inflation rates in the last two decades in Iran. Over the period 1989-2002, net debt to government and the total private sector liquidity (namely the M2 measure of money supply) grew by average annual rates of 22.1 per cent and 26.6 per cent, respectively. So, budget deficit can explain some part of inflationary monetary policy. However, the relationship between budget deficit and inflation not always definite, but since Iran has experienced both high inflation rates and huge budget deficit, thus forming an interesting case study for the relationship between the two fundamental indicators. It seems that identifying the effective sources of inflation in Iran is the first step to control it.

\textsuperscript{1}World Bank, World Development Indicators (2000).
1.2 Need for the Study

In past two decades understanding the relationship between government budget deficit and inflationary process has been one of the most important economic issues in the most of the developing countries. In both the pre and post-revolution periods, Iranian government mostly faced to budget deficit. In addition, during these periods the Iran’s economy has experienced double-digit inflation rate. Usually, fast and long-run inflation lead to the damaging of historical, economic, social and cultural societies. Therefore, the determinants of inflation rate in Iran is extremely important for policy makers as when the causes of inflation are correctly specified the appropriate policy change can be easily diagnosed and effectively implemented.

1.3 Objectives of the Study

The objectives of this study are to examine the effect of budget deficit, liquidity (M2), official exchange rate and political factors on inflationary process in Iran during 1963-2002. First, we primarily focus on macroeconomic policies and performances in Iran over the period of investigation. But this should not be taken to mean that we regard political factors as of secondary importance. Clearly, there are complicated linkages and interactions between economic and non-economic factors which have to be taken into account. To make that judgment, we analyse public sector deficit, monetary development, and inflation with consideration of political factors such as oil shocks, revolution, war and other factors. Second, we estimate an econometric model to determine the effect of the government budget deficit, liquidity (M2), official exchange rate, and political factors on the price level in the Iranian economy. Thus, the main objectives of this study are as follows:

1.3.1 Macroeconomic Policies and Performance

- To study the public sector deficit.
- To study monetary development.
- To review the inflation trend.
- To study structural changes of the economy.
- To understand the socio-political factors and their effects on public sector deficit, monetary development and inflation in Iran.
1.3.2 Developing a Macroeconomic Model to Empirical Analysis

- Measure and analyse the impact of budget deficit on price level in long-run and short-run.
- Measure and analyse the impact of liquidity (M2) on price level in long-run and short-run.
- Measure and analyse the impact of exchange rate on price level in long-run and short-run.
- Measure and analyse the impact of political factors on price level in long-run and short-run.

1.4 Chapter Scheme

Generally, this study comprises of Six Chapters, and the following scheme is being adopted:

Chapter 1: Introduction.

2: Review of Literature.

3: Macroeconomic Policies and Performance.

4: Research Methodology.

5: Statistical Analysis and Empirical Results.

6: Conclusions, Recommendations and Future Study.

1.5 Hypotheses

In the empirical analysis of this study, the following hypotheses are tested for their long-run and short-run effects:

a. *Increase in the government budget deficit has a positive effect on the price level.*

b. *Increase in liquidity (M2) has a positive effect on the price level.*

c. *Increase in official exchange rate has a positive effect on the price level.*

d. *Political factors, such as oil shocks, revolution, war, and the economic reform programme after war have a positive effect on the price level.*
1.6 Research Methodology

1.6.1 Developing a Macroeconomic Model

There is an extensive theoretical literature about relationship between the government budget deficit and inflation. Furthermore, extensive empirical studies have been developed to examine the relationship between the government budget deficit and inflation in both developed and developing countries. After reviewing the theoretical and empirical literature, a macroeconomic model for Iran will be developed in this study.

The model developed focuses upon the relationship between the government budget deficit and price level. However, model considers the effect of money and exchange rate variables on price level.

1.6.2 Data

This study would use annual data for the selected sample period: 1963-2002. Different sources for the data were researched to find the nature of the available data. It was found that all variables are available as a complete series. To ensure all the annual data used in this study covering the sample period of 1963-2002 have been taken Planning Data System (PDS). In general, data on time series are monitored carefully and thoroughly by the best institution. Thus, access to these data is not problematic, which makes the analysis easier and, at the same time, more reliable.

1.6.3 Estimation Method

As was mentioned earlier, we want to study the relationship between price level, budget deficit and other variables and survey the role of fiscal, monetary, and exchange rate factors. We want to know: How price level responds to changes in these variables. In order to answer this question, we will build a statistical model, using the econometric estimation methods. Following recent advances in the econometrics literature, the methodology is based on the multivariate and univariate

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2. Planning Data System (PDS) is created by Institute for Research on Planning and Development (IRPD) in Iran. This institute is dependent to Management and Planning Organization of Iran.

3. We use these time series data to estimate econometric model. However, we use many macroeconomic data to analysis the fiscal and monetary policies in Chapter 3 “Macroeconomic policies and Performance”.
cointegration techniques and the Error Correction Model (ECM). Now we would like to emphasize the major steps in approaching the final version of the model tested. There are detailed below.4

The first step in applying the cointegration technique is to determine the degree of integration of each variable in model. In fact, this step is to test the data for stationary. Broadly speaking, a stationary process is characterized by a constant mean and variance over time. Furthermore, the covariance between the two time periods should not depend on the actual time at which it is computed. The assumption that data used in the model are stationary is very important. Stationary of regressors is assumed in the derivation of standard inference procedures for regression models. Non-stationary regressors invalidate many standard results and require special treatment. If, for instance, one ignores this assumption and uses non-stationary data it can be misled by obtaining spurious regression, showing extremely high R². But in fact this kind of regression is unlikely to reflect true degree of association between the variables. We will test stationary using the conventional Augmented Dickey-Fuller (1979) and Phillips-Perron (1988) Tests. If, these tests reject the hypothesis of stationary then we will take first differences of the data and check them for unit roots. If differenced series happen to be stationary then it is possible to run regressions in differences. In this case the original time series are integrated of I (1).

The next step is to test for cointegration. Simply put cointegration indicates the presence of long-run equilibrium among time series date. In our case it is quite possible that the price level, budget deficit, and other variables are cointegrated, that have a long-run relationship. Technically, cointegration implies that even if the individual variables are non-stationary, a linear combination of these variables may be stationary. It is this linear combination that we call cointegration equation.

This study involves Johansen and Juselius (1990) maximum-likelihood approach to multivariate cointegration test. In addition, it involves Autoregressive Distributed Lag (ARDL)5 and Phillips and Hansen (1990) approaches to univariate cointegration tests. Finally, this study develops an ECM to estimate the short-run coefficients of

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4. We emphasize in more details the model and estimation methods in Chapter 4.
model. At present, with the presence of software such as *Microfit (4.0)*\(^6\), we can test multivariate and univariate cointegration easily.\(^7\)

1.7 Limitations of the Study

We use time series data to study the relationship between price level, budget deficit and other variables. But, there are a few limitations which are as follows:

First limitation is related to data. There are not monthly and quarterly data of variables of this study during 1963-2002 in Iran. Therefore, we are constrained to use only the annual data for our analysis.

Second, many researchers argued that the size of government and its deficit are much larger than the official data indicate in Iran.\(^8\) The difficulty is that Iranian government typically has some expenditures and debts that are not reflected in their official accounts. For instance, in Iran (one of the oil-producing countries) where the government owns the oil resources, energy is subsidized by setting a low price for the raw oil. In this way, the subsidy becomes implicit and is not reflected in government spending or in its revenues from domestic oil sales. Another example is food subsidies that are sometime financed by a multiple exchange rate system, whereby an overvalued exchange rate is applied to the foreign currency that the government uses for food imports, as in Iran (before its exchange rate unification). In that case, the proceeds from the sale of foreign currency recorded in the budget are artificially low and offset the unreported subsidy on food imports. So, examination of size and nature of Extra-Budgetary Funds (EBFs) is beyond the scopes of this study. Therefore, government expenditures and revenues, and calculation of budget deficit in this study is confirmed to official data on government position that reported by Central Bank of Iran (CBI).

Third, Iran has been experienced different exchange rate systems since 1963. While analyzing all of them, we will use only the official exchange rate in our model.

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\(^6\) *Microfit (4.0)* is an interactive econometric software package written especially for microcomputers, and it specifically designed for the econometric modeling of time series data by Professor M. Hashem Pesaran and Dr. Bahram Pesaran in 1997.

\(^7\) However, we can use other software such as *Eviews* (6.0) for analyses.

1.8 Definitions

1.8.1 Consumer Price Index (CPI)

The Consumer Price Index (CPI) measures the cost of buying a fixed basket of goods and services representative of the purchases of urban consumers. The CPI is used to measure in the rise the cost of living. The percentage change in CPI between any two years gives a measure of inflation.

1.8.2 Inflation

According to Pigou⁹, “Inflation exists when money income is expanding more than in proportion to increase in earning activity.”

In the current literature on the subject, according to Samuelson¹⁰ “Inflation denotes a rise in price.” The persistent inflation and the problems associated with inflation have claimed more attention of the economists than any other macroeconomic problem.

Inflation is a sustained increase in the general price level. In other words, it is the rate at which prices are increasing. It can usually be measured monthly, quarterly or annually by the Retail Price Index (RPI).

1.8.3 Government Expenditures

The term refers to government spending (or outlays) made to fulfill a government obligation, generally by issuing a check or disbursing cash. Expenditures can be both capital and current.

Government’s current expenditure refers to the spending on recurring items. This expenditure includes salaries and wages that keep recurring monthly; expenditure on consumables that are used daily for goods purchased or services provided. Government capital expenditure refers to the spending on investment items that last for a period of time, such as hospitals, schools, roads and equipments.

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1.8.4 Government Revenues

The annual income collected from taxes by the government as individual and corporate income taxes. Usually, in Iran government revenues are classified in different groups such as excluding tax revenues, oil and gas revenues, and other revenues (general revenues).\(^{11}\)

1.8.5 Government Budget Deficit

According to the public finance literature, “a budget deficit is the excess of government outlays over receipts taken in from taxes, fees and charges levied by government authorities” (Hyman, 1996).\(^{12}\) The budget deficit measure is used to assess the sustainability of fiscal policy. A budget deficit suggests an expansionary stance. The budget deficit as a per cent of GDP is an indicator of the changeful impact of the government sector on the economy.

The government budget deficit has been variously defined by the economists in Iran. In official reports, government budget deficit is calculated by difference in total government revenues and total government expenditure. To ensure consistency, we use in our analysis the government budget deficit data that are released by CBI and Management and Planning Organization (MPO) of Iran. However, in 2002, the system of classification of budgetary items was changed in Iran.

1.8.6 Monetary Base

In a modern industrialized monetary economy, the monetary base is made up of the currency held by individuals and firms and bank reserves kept within a bank or on deposit at the Central Bank.

1.8.7 Liquidity (M2)

M1 comprises those claims that can be used directly, instantly, and without restrictions to make payments. These claims are liquid. An asset is liquid if it can immediately, conveniently, and cheaply be used for making payments. M1

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11. We discuss on formulation of budget law in Iran in Chapter 3.
12. We review the alternative definitions of budget deficit in Chapter 2.
corresponds most closely to the traditional definition of money as the means of payment.

M2 includes, in addition, claims that are not instantly liquid – withdrawal of time deposits, for example, may require notice to the depository institution; money market mutual funds may set a minimum on the size of checks drawn on an account. But with these qualifications, these additional claims also fall into a broader category of money.\textsuperscript{13}

1.8.8 Official Exchange Rate

The exchange rate is the price of a currency in terms of another currency. More precisely, exchange rate is the rate at which currency of a country is bought and sold against the currency (ies) of another country (ies) in the foreign exchange market. There is no simple answer to the question: How is the foreign exchange rate determined? It depends on whether foreign exchange market is free or controlled and whether the government adopts fixed or flexible exchange rate policy. The economists have attempted to explain the exchange rate determination through different kinds of theories including the Market Theory, the Purchasing Power Parity Theory and other theories. In this study, we have used official exchange rate in our analysis. Under the monetary system of Iran, CBI determines official exchange rate.

1.8.9 Fiscal Policy

The word ‘fisc’ means state treasury and ‘fiscal policy’ refers to policy concerning the use of state treasury or the government finances to achieve the macroeconomic goals. Fiscal policy has however been variously defined by the economists.

Arthur Smithies defined fiscal policy as: “a policy under which government uses its expenditure and revenue programs to produce desirable effects and the national income, production and employment”.\textsuperscript{14}


Shaw a well-knows name on the subject, defines Fiscal policy as: “any decision to change the level, composition or timing of government expenditures or to vary the burden, structure or frequency of the tax payment”.  

Fiscal policy can be defined in more general terms as follows: Fiscal policy is the government program of making discretionary changes in the pattern and level of its expenditure, taxation and borrowings in order to achieve intended economic growth, employment, income equality, and stabilization of the economy on a growth path.

1.8.10 Monetary Policy

The economists have defined monetary policy in different words. For example, Harry Johnson defines monetary policy as a “policy employing Central Bank’s control of the supply of money as an instrument of achieving the objectives of general economic policy”. Shaw defines monetary policy as “any conscious action undertaken by the monetary authorities to change the quantity, availability or cost …of money”.

Monetary policy is essentially a program of action undertaken by the monetary authorities, generally the Central Bank, to control and regulate the supply of money with the public and the flow of credit with a view to achieving predetermined macroeconomic goals.