

CHAPTER I

INTRODUCTION

1.1 Theoretical Background of the Research

During the great depression of 1930s, John Keynes developed the greatest breakthrough in the field of macroeconomics, a model of the economy that logically explained the causal relationships between employment, interest rate and money. Many economists have worked to extend the Keynesian model to further detail. The extensions often occurred in order to explain recent economic activity that was not fully modeled in the Keynesian model. In this retrospect, the concept of macroeconometric modeling has at first coined through by Dutch economist Jan Tinbergen at the same period, which he first built for the Netherlands and later applied to the United States and the United Kingdom after World War II. After that, the first global macroeconomic model, Wharton Econometric Forecasting Associates LINK project, was initiated by Lawrence Klein and was mentioned in his citation for the Nobel Prize in 1980. However, attempts to construct macroeconometric models of Bangladesh economy have been initiated after 1960s and policy simulations with the help of such models are rarely undertaken. Therefore, analytical exercises with regard to the effectiveness of different alternative options have not contributed much to the macro policy discourse of the country (Hossain & Razzaque, 2003).

In this context, the present paper describes a medium-sized Keynesian income-expenditure model of the Bangladesh economy to account for a number of important macro linkages that facilitates forecasting with some major policy shocks on various exogenous variables. For the sake of better specification, the model in this research has developed based on 6 building blocks, viz., (i) production, (ii) expenditure, (iii) balance of payments, (iv) Government, (v) monetary and (vi) price blocks. It has 44 equations comprising of 28 behavioral and 16 identities of which 44 are endogenous and 53 are exogenous variables. It covers aggregate production,

consumption, international trade, money supply, price, and government revenue and expenditure that can be used to examine the effects of both domestic and external shocks to the economy. In other words, the model is suitable for examining the effects of monetary, fiscal and exchange rate policies on the overall economy.

The model in the research has some idiosyncratic behaviors that put important contributions towards the applied macroeconomic structure of Bangladesh. Recently, the Bangladesh Bureau of Statistics (BBS)¹ has published national income accounting for the country by incorporating extensive methodological and conceptual data improvements. This resulted in an increase in national income by 26 – 43 per cent (in nominal terms) between 1980 and 2000². As the research has used revised data, it has overcome statistical deficiencies that reflect the true scenario of the economy.

It is widely practicing that most macroeconomic models tend to rely on a Keynesian framework emphasizing only on the demand constraint of the economy. According to the Keynesian school of thought, any policy that can stimulate effective demand would prove effective if and only if it can accelerate economic growth. However, it should be kept in mind that in many developing countries including Bangladesh supply side problem is also important. It has been accepted that in a supply constrained economy increasing effective demand through increased government spending gives rise to inflation instead of increasing employment and output (Mallick, 1999). For this reason, recent macroeconomic models have attempted to incorporate the supply side of the economy under the Keynesian framework. In most cases, this is done by specifying an aggregate production function (e.g., Musila, 2002). In the research, for the sake of gaining further insight into the supply constraint, production functions for agriculture, manufacturing and services sectors have been specified one by one. There is no ground to say that production dynamics in these three sectors are quite different and hence different specifications

¹ Bangladesh Bureau of Statistics (BBS) is the only national Statistical Institution responsible for collecting, compiling and disseminating statistical data of all the sectors of the Bangladesh economy to meet and provide the data-needs of the users for the national planning and formulating policies by the government.

² The revised national income estimates by the BBS are available only since 1980.

has given to be more appropriate estimates. Therefore, along with the demand side of the economy the model in this research has taken into consideration different aggregate production function in different sectors of the economy.

By convention, the sector-specific equations in macroeconomic modeling are chosen by using some kind of trial and error process. It runs several regression equations and then selects the best linear unbiased estimate (BLUE) based on goodness of fit, sign, and some statistical considerations. This practice is susceptible to reflect the model builders' prejudice about what is to be expected (rather than the actual outcome) and might result in empirical specifications that lack theoretical justification (Hossain & Razzaque, 2003). This method of running a number of equations and then choosing one of them is no longer considered as a good practice in modern econometrics (Charemza & Deadman, 1994). To overcome the shortcomings of traditional econometric methodology, this research has specified all equations before running the regression model and remains stick to it in the estimation stage. That is, the research has given more importance to the theory than empirical observations.

On the whole, as Bangladesh economy is becoming increasingly market-driven, most of the equations used in the model are formulated from the viewpoint of demand-side analyses. This Macroeconometric Model takes the Keynesian income-expenditure approach where GDP is determined endogenously. Among a number of exogenous variables, three variables are defined as policy variables: total government expenditures, interest rate, and exchange rate respectively. Considering that economic growth is influenced by policy changes, this model is better suited for alternative policy simulations as well as forecasting on Bangladesh economy.

1.2 Classical Versus Keynesian Dichotomy

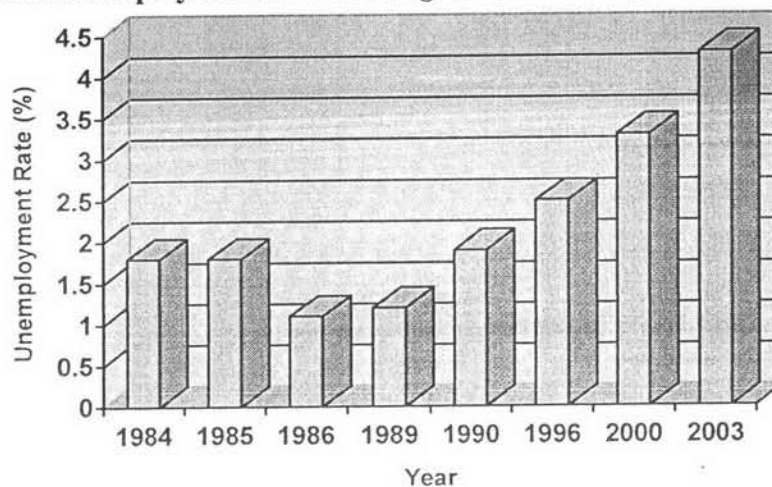
Generally, classical economists believe in no government regulation, whereas Keynesian economists believe in government intervention of the economy. The two camps have differing ideas on the causes and solutions of unemployment. The Classical economists believe that unemployment is caused by excess supply, which is caused by the high price level of labor. Based on supply and demand, when wages are held too high by social and political forces, demand would be lower and supply would be higher, and that excess supply represents unemployed people. Classical economists believe that if the economy were left on its own, it would adjust to reach an equilibrium wage for workers and the economy would be at full employment.

On the contrary, Keynes (1936, p. 3) wrote in his monumental work: "... I shall argue that the postulates of the classical theory are applicable to a special case only and not to the general case, the situation which it assumes being a limiting point of the possible positions of equilibrium. Moreover, the characteristics of the special case assumed by the classical theory happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience." In line with Keynes, Davidson (2004) has claimed that Keynesian model is not only a true general theory, but also the single true alternative to neoclassical orthodoxy. In his contribution, Davidson (2004) wrote: 'If one wishes to explain (describe) the production, exchange and financial features and operations of a market-oriented, money using, entrepreneurial economy, then Keynes's "General Theory" is the sole "correct" alternative to neoclassical economics. Fundamentally, as the prevailing economic condition of Bangladesh is still in pre-mature level, Keynesian prophecy suits more than that of classical thought due to the following inferences.

Firstly, in classical model the economy might deviate from full employment for short periods of time, but eventually, the economy goes back to full employment. The classical model describes the workings of an economy that is at full employment. However, Bangladesh economy has been experiencing with increasing unemployment

rate over time that is depicted in Figure 1.1. The Keynesian model also describes the workings of an economy that is below full employment. Hence, the economy of Bangladesh can be better explained by the Keynesian framework.

Figure 1.1: Unemployment rate of Bangladesh economy



Source: Different Labor Force Surveys (LFS), Bangladesh Bureau of Statistics (BBS), Bangladesh.

Secondly, under classical economy, firms cannot increase production in response to an increase in aggregate demand because they are already using all the capacity they have and hiring workers in a labor shortage situation is expensive. If they do, increase employment and production they would have to increase prices too. When more orders start to come in, firms will be able to increase production very little (or nothing at all) and prices will increase substantially. On the contrary, in Keynesian thought, firms can respond to increases in aggregate demand by increasing production since there is idle equipment and tools and workers are relatively cheap to hire because they are unemployed. As orders start to come in, firms will most likely increase employment and production, use the excess capacity they have rather than choke off the improvement in sales by increasing prices. In the economy of Bangladesh, wage rate is relatively lower due to excessive supply of labor. When aggregate demand for goods and services generates, the economy increases to employ

more labor that leads more production (Muqtada, 2003). In this regard, Keynesian philosophy about employment can describe Bangladesh economy appropriately.

Thirdly, in classical viewpoint, since there are labor shortages and the economy is producing at full employment, workers feel confident and demand higher wages. Because firms' labor costs increase, firms must increase prices too. Therefore, we say that under these circumstances wages and prices are flexible. In Keynesian framework, on the other hand, because workers are pessimistic and they are more concerned with job security they do not ask for higher wages and firms do not need to raise prices. Under these circumstances, it is said that wages and prices are "sticky". This means that wages and prices will change eventually, but for the time being, they show a "reluctance" to move. In this regard, neither the Keynesian nor the classical view of the macroeconomic model is completely applicable to the case of Bangladesh, and to attain sustainable development, a good coordination between fiscal and monetary policies is required (Ali, 2006).

Overall, as Bangladesh economy is now governing by open market forces while having cyclical unemployment, most of the equations used in the model are formulated from Keynesian framework. Precisely, the Macroeconometric Model used in this research follows the Keynesian income-expenditure approach by endogenizing GDP.

1.3 Rationale of the Research

A model in macroeconomics is designed to simulate the operation of a national or international economy in terms of factors including the total amount of goods and services produced, total income earned, the level of employment of productive resources, and the general behavior of prices. Such models are used to generate economic forecasts, and to produce what if scenarios, and are widely used by international organizations, national governments and larger corporations, as well as by economics consultancies and think tanks. Precisely, an economy develops

macroeconomic models to design long-term development plans and to assess the effects of economic policies. A macroeconomic model is particularly useful in the early stage of economic development, e.g. Bangladesh. The model facilitates conducting in-depth policy analysis as well as to forecast the future course of the economy. Nevertheless, as macroeconomics is a young and imperfect science, the macroeconomist's ability to predict the future course of economic events is no better than the meteorologist's ability to predict next month's weather. However, it is possible to know quite a lot about how the economy behaves with the help of formulating macroeconomic model.

In order to avoid major economic shocks such as great depression, governments make adjustments through policy changes. These are necessary to maintain stability and continue growth. Generally, this economic management is achieved through two types of strategies including Fiscal Policy and Monetary Policy. However, it is very contingent to determine which policy is more effective in what context. In this regard, macroeconomic model blinks the shed of lights for the policymakers to predict about the consequences of different policy implications. That is, macroeconomic model is the latest advanced tool for the macroeconomists to forecast about the future pulse of the economy after giving the potential shocks on it.

It is to be mentioned, however, that a model cannot be perfect in any context. Another way to regard the relationship between models and realism is to consider models as road maps. Sometimes one looks at road maps that represent large geographic areas and are very general, showing only major highways. Nevertheless, one never consider the roadmap "unrealistic." Maps are used because an individual expects to travel long distances and need to know only the major highways. Sometimes he looks at road maps representing localities that show him many, if not all, of the minor streets because he is more interested in driving in the city. From the same understanding, an economic model allows us to understand reality, even though not every "street" in the economy is included. In sum, then, a macroeconomic model cannot be faulted merely by stating that it is unrealistic in comparison with the

real world, for that same model may be very realistic especially at the early stage of economic development in terms of elucidating the central issue at hand on forces at work.

After the emergence of Bangladesh in the world map in 1971, progress in achieving economic development goals has been very slow. A series of political turmoil and untamed natural hazards of cyclone and flooding have combined with external economic shocks to derail economic goals persistently. As a result, an effective macroeconomic model is indispensable to explain the future course of economic phenomena so that macroeconomic policymakers can adopt precautionary policies, which can save the economy from both internal and external shocks in order to maintain sustainable economic development.

On the whole, the attempt to restructure a macroeconomic model makes forecasting easier to formulate as well as implement effective policies. Though, in forecasting work, the experts' own assessments of the various sectors of the economy often exceed the forecasting ability of a model, models are nevertheless an important tool in constructing a consistent overall picture of the economy. After all, the model is only an instrument. No model is perfect, as they are always simplified descriptions of the real world (Kilponen, Ripatti, & Vilmunen, 2004). However, the thesis reflects the conceptual framework of different policy simulations and helps focus on deliberations and clarify the process of shaping the forecast assumptions and expert information into the final figures presented in the forecast after making potential policy shocks on the economy.

1.4 Objectives of the Research

The purpose of conducting the thesis opts for three fundamental objectives. At first, it attempts to reconstruct and testify a macroeconomic model of Bangladesh for the sake of capturing the true linkages among different macroeconomic blocks. Secondly, the research analyzes the empirical strength of monetary, fiscal, and

exchange rate policies on the macroeconomic development of Bangladesh focusing on real GDP. In this regard, interest rate, total government expenditures, and exchange rate have been considered as policy variables respectively. The model used in the research can be used as a tool of forecasting the economy with different alternative policy simulations. Finally yet importantly, the thesis recommends a policy package for macroeconomic planning and management of the macroeconomic environment of Bangladesh.

1.5 Scope of the Research

No model in any science, and therefore no macroeconomic model, is completely realistic in the sense that it captures every detail and interrelationship that exists in an economy. Not only is such a model impossible to build, it would also be impossible to work with. For example, no model of the solar system could possibly take account of all aspects of the entire system. The nature of scientific model building is such that the model should capture the essential relationships that are sufficient to analyze or answer the particular questions at hand. For example, when we attempt to construct a model of consumer behavior in the face of changing prices for a particular commodity, there are at the very least a million determinants of how each consumer will respond to such changes in prices. However, most of those determinants are left out of our model. It is not that they are meaningless rather, the model that we usually use, which includes the price of the particular commodity, the income of the consumer, the prices of substitutes for the commodity in question, and the prices of complements for the commodity in question, seems to be adequate. That is, just taking into account the magnitudes of these four determinants of consumer demand works "well," even though the model is "unrealistic" because it does not capture all the various determinants of consumer demand.

In line with the above facts, the intention of this thesis is not to cover all economic forces, but to reconstruct a medium-sized macroeconomic model for Bangladesh to capture the fundamental macroeconomic linkages in the economy. In

this regard, it is to be mentioned that this study will develop and estimate a macroeconomic model over the period 1981 to 2000.³ For avoiding complexities, annual data has been considered.

This model has been developed and reconstructed based on Hossain & Razzaque model (1995). The fundamental changes have been done in production function, private investment functions, export supply functions, money supply function, food grains and raw materials functions. The macroeconomic model in this paper includes six key blocks— production, expenditure, balance of payments, government, monetary, and price block. In the context of Bangladesh, supply-constraints have a major influence on the macroeconomy, though in some areas demand side factors also exert important influence. This research does not consider the demand side analysis of money market due to the absence of official data source. The nexus between output, total government expenditures, interest rate and exchange rate are captured in the model. The model can be used to examine the effects of both domestic and external shocks on the economy. The model can also be used to analyze the effects of monetary and fiscal policies with the connection of exchange rate policy on the macroeconomic considerations. The results of this paper are expected to help the policymakers shed light on the impact of government policies on macro variables in the context of Bangladesh.

1.6 Outline of the Dissertation

At the outset, the dissertation has been segregated into five parts. The first part titled “Problem Identification: An Analytical Perspective” is devoted to define the theoretical background, rationale, objectives, and scope of the thesis. Part B is

³ Historically, Bangladesh has emerged in the world map in 1971 by fighting a savage war against the then central Pakistani government. At that time, the People’s Republic of Bangladesh is founded on the four basic principles including democracy, nationalism, secularism and socialism. Just after 1975, the philosophy of capitalism started to take place in fabricating Bangladesh economy instead of socialism. Due to this retrospect, the thesis has been developed by depending on annual data from 1981 to 2000 for maintaining standardization and homogeneity of macroeconomic environment. It is also to be mentioned that latest annual data on national accounting of Bangladesh is available only up to 2000.

committed to undertake a concrete literature review to gain understanding about the theoretical framework and empirical research findings. Furthermore, a scientific methodology of conducting the research has also been developed. In Part C, a descriptive analysis has been presented regarding reconstruction of macroeconomic model, which is appropriately suited for assessing Bangladesh economy. Variable specification, assumptions, hypothesis formulation, and predictions towards the model have been included. After that, 'Part D' has testified the hypothesis based on empirical results, interpretations, and forecasting under simulation approach. At the end, Part E concludes the simulation results and recommendations, summarizing the main contribution of this dissertation. A discussion of the model's weaknesses followed by some suggestions for further research has been referred as well.

PART II CONCEPTUAL FRAMEWORK AND METHODOLOGY