CHAPTER I

The Study: Objectives, Scope and Organization

The present study aims to analyze the dynamics of output through the process of interactions between industry and agriculture and its implications for the inflationary process and monetary transmission mechanism in the context of Indian economy. The study is limited in so far as it does not look at the services sector.

1.1 The Theoretical Context and the Scope of the Study

At the macroeconomic level, probably, the most important and most studied relationship in the area of our subject has been the process of interactions between industry and agriculture. The earliest literature dates back to Physiocrats during the seventeenth century. Francois Quesnay, physician to Madame de Pompadour, adored agriculture and regarded it as the only source of wealth. Commerce and industry were regarded merely branches of agriculture. The early masters of political economy like Ricardo, Malthus, and Marx examined the problem from different angles during the nineteenth century. In the 20th century also it has received attention from a diverse body of economists. Bukharin and Preobrazensky studied the problem in the specific context of Soviet industrialization. Kalecki, Lewis, Fei and Ranis, Taylor, and Kaldor examined it in the context of economic development process.

A central problem of the development strategy is to assess the extent to which expansion
of a particular sector can be treated as exogenous and a policy variable. This would mean that exogenous changes could be activated deliberately as a matter of development policy in that sector, while other sector/s of the economy would adjust to it more or less passively or endogenously.

In brief, underlying a development strategy and its associated policies is an assumption, often implicit, of the degree of exogenity of a sector.

The classification of sectors into exogenous and endogenous variables for policy formulation has several implications. First, the degree of exogenity of a sector may sometimes reflect the consideration of administrative feasibility, rather than macroeconomic perspective of the model. Second, the debate over priority of a sector, in particular, agriculture vis-a-vis industry in development strategy reduces essentially to the question of relative autonomy of the two sectors. For instance, agriculture-first strategy can be justified if agriculture is assumed to be relatively an exogenous sector which means that its performance is not significantly influenced (or constrained) by the performance of industry. In other words, the industrial sector is assumed to adjust endogenously to the requirements of the agricultural sector. This assumption is crucial to sustain an argument in favour of the agriculture-first strategy.
Kalecki (1972), for instance, emphasized the possible constraints of wage goods that could threaten the process of industrialization because he treated the farm output as exogenous. Lewis (1954) also, in his dual economy model, assumed that agricultural output to be exogenous. The work of Jorgenson (1961, 1970), Fei and Ranis (1964), Kaldor (1967) accepted this central feature of the Lewis model. They worked on the assumptions of exogenity of the agricultural sector. Kaldor (1978) tried to bring in the demand-side impact of the agricultural sector on the industry but he did not extend the analysis further (Skarstein, 1997, p 92-3).

In contrast, all industrialization-led strategies assume, explicitly or implicitly, a significant degree of exogenity of the 'modern' industrial sector with 'traditional' agricultural sector adjusting more-or-less endogenously to the needs of industry. The Feldman-Mahalanobis model (Mahalanobis, 1953; Domar, 1957) of industrialization led by heavy, capital goods industries falls in this category. This model provided both the theoretical basis and intellectual justification for rapid industrialization in the context of Soviet development process. It was also the basis of the Indian Second Five Year Plan (1956-61) which underplayed the constraints that such a process of industrialization could face when agricultural sector fails to respond endogenously. This had led to serious
obstacles to smooth industrial expansion (see for instance Planning Commission, 1961).

An important feature of this literature is the price formation process of the two sectors. The argument generally put forward is that agricultural and industrial sectors respond differently to a situation of excess demand. Prices adjust to clear the agricultural markets, while in industrial sector supply-demand balance is brought about by quantity adjustments\(^2\). Given agriculture's relatively limited short-run supply response, prices tend to adjust to remove excess demand. Industrial production, on the other hand, is assumed to operate in the conditions of excess capacity, consequently the degree of capacity utilization varies with the level of demand. Market structures might further reinforce these sectoral adjustment patterns. In so far as most private agricultural enterprises are relatively small and, hence, have only limited market power as producers in the agricultural markets. As a result, the prices tend to be determined by the interplay of demand and supply in the agricultural sector. Market structure in industrial sector, on the other hand, is considered to be monopolistic/oligopolistic in nature, with industrial prices being 'administered', i.e., fixed by the producers by adding a mark-up to variable costs. Kalecki (1954) was of the opinion that changes in prices of finished goods are 'cost-determined' while changes in prices of farm products are 'demand-determined'.

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\(^1\) For a detailed discussion of these and related issues see Storm (1993), Bhaduri (1993), and Skarstein (1997).

\(^2\) Kalecki (1971), Kaldor (1976), Hicks (1965).
Moreover, the prices of finished goods may be influenced by changes in 'demand-determined' agricultural prices, through the channels of costs.

These two different sectoral price adjustment mechanisms determine, in turn, the inflationary process. The theoretical approaches of the monetarists and structuralists perceive the inflationary process in a very different manner from each other. Structuralists argue that the ultimate causes of inflation are the structural rigidities, mainly in the farm sector. Sectoral imbalances (caused by the rapidly growing industrial sector) tend to create excess demand for wage goods. This puts pressure on prices of agricultural commodities, which, through their cascading impact, propel the inflationary process in the economy.

The monetarists, in contrast, use a much simpler framework to explain the inflationary process. They do not recognize the importance of the sectoral distinction of the economy into agriculture and industry. They argue that the inflationary process is caused mainly by excess money supply growth. Typically, they assume that the output level is determined by factors other than aggregate demand so that any excess demand in the economy puts pressure on the price level in line with the money supply growth. Extending this reasoning, the restraint on deficit financing, which in most cases requires contraction of fiscal deficit, is seen as the key to keeping inflationary pressure in check.
The assumption, at times implied implicitly, is that fiscal deficit and deficit financing have one-to-one correspondence. Consequently targeting fiscal deficit means targeting ultimately the rate of inflation. Thus, the mechanism governing the role of fiscal deficit in the money supply process becomes a central concern in the monetarist perspective.

In the present study, we would examine some of these issues empirically in the Indian context. In particular, the issues to be considered are:

- The output-price relationship in the agricultural sector (Chapter 2).
- The implications of farm price and quantity for the different segments of rural population as this could alter the impact of the agricultural sector on the industry (Chapter 3).
- The relative exogenity of the agriculture sector (Chapter 4).
- The process of interaction between industry and agriculture over time (Chapter 4 and 5).
- Finally, the inflationary process and the monetary transmission mechanism (Chapter 6).

The issues are inter-related but are dealt with separately for analytical convenience. However, the main purpose of the study is to consider these issues to see how our understanding of the Indian economy could be improved in the light of these findings, as also their implications for the theoretical literature.

1.2 Organization of the Study

The study starts with chapter 2, which takes an overview of the agricultural sector. It was
felt important to examine the agriculture sector in more detail as the different segments of rural population are supposed to be affected differently by the changes in level of farm price and output. The two together determine the total agricultural income that is an important potential variable in influencing the industrial output, empirically as well as theoretically. In particular, it investigates how agricultural output and income are related and how farm price and quantity interact with each other. In this context, Chapter 3 looks at the question of distribution of income within the farm sector to ascertain the implications for the industrial sector.

The process of inter-linkages between industry and agriculture is examined in chapter 4. The empirical results indicate that the outputs of both the sectors mutually influence each other. The performance of the agricultural sector by itself is found to be inadequate in explaining the level and changes in industrial output. Greater attention, than is normally paid in the literature, is needed to examine the mutually interactive aspects of the two sectors.

In order to understand better the industrial performance, we examine in chapter 5, other possible variables that could influence industrial output taking into account the literature on the Indian industry.

In chapter 6, following from the earlier analysis, we examine the debate regarding
inflationary process in relation to both output adjustments as also its implications for the monetary transmission mechanism.

Chapter 7 summarizes the conclusions of the study.

The Appendix A discusses the data series, and their transformations. The sources and explanations of the data are also contained in it. The econometric methodology used in the study is explained in Appendix B that also discusses in detail the problem of non-stationarity that commonly arises in the empirical analysis of macroeconomic data series. The econometric technique of cointegration, error correction modelling and tests of causality and their relevance for the economic analyses are also discussed in this Appendix.