CHAPTER 7
Summary, Interpretations and Implications

7.1 Summary and interpretations

The present study is an attempt at analyzing the process of interaction of the industrial and agricultural sectors of the Indian economy. In the course of the discussion, we also try to identify the factors helping and/or hindering the output growth of the two sectors. The study also looked at the monetary transmission mechanism and inflationary process that are partly shaped by the process of interaction between the two sectors. This was necessary because it was observed in the course of our analysis that they exert significant influence either directly or indirectly on the output dynamics.

The process of interaction of the two sectors is visualized generally as a part of the broader process of transformation of a developing economy. This is usually referred to as the 'dual economy' framework in the economics literature. We have sought both to use and modify this framework in the present study, using the Indian case as our point of reference.

The development of a dual economy has been considered almost synonymous with the growth of 'modern' industrial sector. This process of development as well as the constraints operating on it has initiated a considerable debate. In the literature, there are broadly two kinds of constraints on the basis of which 'dual economy' models are
characterized. They are identified either as demand-determined or as supply-constrained models. In the former group of models, economies are postulated to respond to demand-based stimuli (like, say, a stepping up of the level of autonomous expenditure), while in the latter group of models economies are supposed to be constrained by various types of bottlenecks operating on the supply-side. However, while the agricultural output growth is identified by both sets of models as a potential bottleneck, in the overall growth process, its causal role is very different in the demand- and in the supply-oriented models.

The main questions raised by the dual economy models are the ways in which the rate of transformation of a dual economy from a predominantly traditional agriculture based one to an industrial one is affected. In so far as agricultural output is concerned, it is usually assumed to be supply-determined, while the demand-side explanation have not been given the attention they deserve. It is difficult to imagine a continuously rising level of farm output on a long-term basis unless there is sustained expansion in the market demand for its products. This point is not addressed adequately in many studies, perhaps because they examine the question of agricultural output from the point of view of immediate bottlenecks operating on agricultural output expansion. In contrast, the main concern of the present study is identifying the factors hindering the transformation of the Indian economy, over the longer run. Given that the short term constraints to growth are relatively easier to identify, it is the longer term constraints which need to be isolated, understood, and analyzed more systematically (See Section 1.1 of Chapter
1 for a detailed discussion of these issues).

On examining the empirical evidence and the arguments usually advanced in support of the supply-side constraints, we could not substantiate the existence of sustained supply bottleneck either on industrial or agricultural output. The demand-side variables seem to provide a more robust explanation for the output of the two sectors. Measured in real rather than nominal terms real public consumption expenditure, real aggregate investment and farm sector’s real income all seem to exert a significant influence on the inter-temporal behaviour of industrial output (Section 5.3, Chapter 5). The final result was as follows:

\[
\log(Q_{\text{ind}}) = -1.61 + 0.466 \log(Q_{\text{agr}}) + 0.442 \log(C_{\text{gov}}) + 0.28 \log(I_{\text{r}})
\]

Agricultural output level, on the other hand, is explained more satisfactorily in statistical terms by real industrial income and lagged farm price level as the following regression result shows (Section .4.4, Chapter 4):

\[
\log(Q_{\text{agr}}) = 7.00 + 0.287 \log(Q_{\text{ind}}) + 0.15 \log(P_{\text{agr}}(-1))
\]

Viewed in this light, the resultant output dynamics suggests that both the goods producing sectors of agriculture and industry in the Indian case have been moving along a growth path, which is influenced, to a large extent, by public expenditure, i.e., public

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1Variables are explained in the Appendix A.
consumption directly and public investment in a less direct way, and, perhaps, to a lesser extent, by the agricultural price policy of the government as also the stockholding behavior of public agencies and private traders in farm products. Together these influence the output levels of the two sectors in a complex interaction that our statistical analysis tries to capture (Chapter 4 and 5).

Since, in our statistical analysis the agricultural price level was observed to have a significant influence on the long-term agricultural output, and since we also saw that agricultural price is itself influenced significantly by industrial price through industrial nominal income variable (see Section 4.4, Chapter 4), it became imperative to examine the process of price-formation and its determinants in greater detail. The evidence on agricultural price formation suggested significant impact of demand as well as supply variables on the price level. The demand side gets reflected, statistically, in the lagged nominal industrial sector income and the supply by the lagged agricultural sector output level as the following regression equation shows (see Section 4.4, Chapter 4 for further details):

\[ \log(P_{ag}) = 6.61 - 0.923 \log(Q_{agr}(-1)) + 0.764 \log(Q_{ind}(-1)) \]

The story of the industrial price level appears to be more complex. It was found to be dependent mostly on credit, and cost-variables. The more important cost-side variables included agricultural price level, rate of interest, and the industrial output level (perhaps,

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2 See Section 2.5, Chapter 2 for an elaborate discussion.
through the economies of scale effect). Broad money representing aggregate banking sector credit was found to be significant on the credit side (Section 6.4, Chapter 6). The results observed was as follows:

$$\log(P_{\text{ind}}) = -1.2 + 0.128 \log(P_{\text{agr}}) + 0.54 \log(M_3) + 2.8 \text{RoiS} - 0.32 \log(Q_{\text{ind}})$$

These results might be interpreted as corroborating the influence of conflicting claims of the different classes in the price-formation process in Indian industry, as we argue in Section 6.5, Chapter 6.

The significant impact of the broad measure of money on inflationary process necessitated that we undertake a more thorough empirical analysis of the mechanism of monetary transmission. This was considered important because in usual policy debate in India 'fiscal deficit' is mostly held responsible for the inflationary pressures in the economy. The underlying argument for this view seems to be that there is a simple causal connection between fiscal deficit and reserve money creation, which plays the role of 'high-powered' money in the Indian context through monetized budget deficit.

In this view, the excess reserve money is supposed to feed excess overall liquidity proxied usually by broad money in the economy. This is postulated to take place through a 'stable' money multiplier. However, the evidence from our study tends to raise serious doubts about this line of reasoning. Our results indicate that broad money ($M_3$) has long run systematic relationship with the level of economic activity, price, and the rate of interest and is influenced significantly by these variables (Section 6.4,
Chapter 6):

\[ \log(M_3) = -10.99 + 1.46 \log(Q) + 1.38 \log(P) - 7.9 \text{ (RoIs)} \]

Thus, undue attention on fiscal deficit might be misplaced in so far as broad money is not directly controllable, but rather a symptom of the demand for credit determined by several other macro economic variables. This seems to be in tune with the ‘endogenous’ view of money supply process in the Indian economy. However, we also know that interest rates in the organized sector until recently, were not market-determined but administered by the monetary authorities. Therefore, to some extent, this could influence the broad money as also the industrial price level in the economy (Section 6.4, Chapter 6). To sum up, our empirical analyses indicate that the output dynamics and the inflationary process are closely inter-linked in a complex manner. Consequently, the conventionally held belief that inflation is basically a byproduct of government’s fiscal deficit or deficit financing is questionable. At the same time, the opposite structuralist perception that inflationary process is triggered primarily by shortage of farm sector output is also found to be inadequate for such an explanation.

7.2 Future Implications

It might be interesting to examine in a little detail the implications of our empirical analysis for the recent changes that are being brought about in macro economic policies
in India. They involve the following areas (Government of India, 1992): correcting fiscal imbalances, financial sector liberalization, industrial policy reforms, and opening-up of the external sector. The first and second of these are likely to result in some curtailment of demand stimulus provided by the autonomous expenditure. It is often argued that this might be more than compensated by an enhanced flow of foreign investment that is supposedly induced by a relaxation/simplification of the existing controls. The financial sector and industrial sector reforms are expected to contribute to this process. Moreover, they may generate efficiency and competition especially in the domestic industrial sector.

Changes in external sector policy environment, especially regarding foreign investment, are argued to aid faster technical progress in the economy. The success of new policy measures hinges crucially on the growth of export markets and uninterrupted foreign capital inflows (Sachs, Varshney and Bajpai, 1999, p 6, 11; Ahluwalia and Little, 1998, p 8, 11; Bhagwati, 1998, p 31; Nayyar, 1993, p 651; Mookerjee, 1992, p 795). On the other hand, the alternative stimulus in the form of growing autonomous domestic expenditure is dependent crucially on the success of reforming the tax-regime for raising public revenue (Rakshit, 1991). However, the evidence available till 1998 seems to show a declining trend on this account (Shome, 1999, p 3). Our analysis suggests that this along-with the objective of reducing fiscal deficit and deficit financing, are likely to result in a slowdown of the government expenditure. In turn, this could have adverse

3 Assuming the underlying relationships as we observed hold.
implications for growth of output of the Indian economy in so far as our analysis identifies demand constraint as important. Preliminary evidence on the growth experience of the nineties seems to substantiate this view, especially for the industrial sector.

The instability of growth in output of agriculture has been relatively small in recent years. This is mainly due to the continuous good monsoons in the last few years. To some extent, this has placed the policy-makers in a better position for pushing some difficult reforms. Despite this, the rise in rate of price increase of farm products, especially food grains, has been unprecedented in much of the post-reform period, with some adverse implications for the incidence of poverty (Tendulkar, 1997, p 24; World Bank, 1997, p 5). The policy of reducing subsidies to the farm sector along-with opening up of export of farm products could possibly be important immediate causes for this. The rising inflation rate might appear puzzling at first sight, since during this period the fiscal deficit as well as deficit financing as a proportion of GDP has been experiencing an overall downward trend. However, this is consistent with our finding that there seems to be no systematic relationship of fiscal deficit and deficit financing on the one hand, and price level on the other. Also, we find that overall bank credit (M,) has been expanding at its more or less usual pace. This means that the relation between monetized deficit and money supply purported to be captured by the money multiplier has been unsteady. Again, this is consistent with the evidence that we presented for the overall period.
The freeing of interest rates in the organized banking sector is likely to push up the burden of interest payment on the government as well as on other sectors of the economy. Its implications for the government expenditure will be that lesser resources will be available to it for spending. This could further accentuate the problem of demand stimuli. As for the industrial sector, it would push up its cost component and, correspondingly, industrial prices will rise at a faster pace in this transition period before interest rates settle down at an equilibrium level.

On the whole, the current approach appears to put emphasis on curtailing the role of the state. This may or may not be entirely justified in so far as it involves political as well as economic considerations. However, the main analytical thrust of our study has been to argue that sustaining adequate demand is a central problem for maintaining growth in the Indian economy. If the state is not to play an adequate role in managing demand, then recent policy reforms must pay greater attention, than has been given so far, as to how to deal with this effective demand problem. Perhaps this is the main policy lesson that emerges from our present empirical investigations of the process of interaction between agriculture and industry.