

RESERVE BANK OF INDIA
OCCASIONAL PAPERS

VOL .10 No . 4

DECEMBER 1989

A SPECIAL ISSUE
ON
"PLANNING IN INDIA - A RETROSPECTION"

EDITORIAL COMMITTEE

<i>Members</i>	:	D.K. Bhatia R. Nagaraja Rao T. Rama Rao A. Seshan
<i>Editor</i>	:	S.L. Shetty
<i>Associate Editors</i>	:	Narendra Jadhav K. Kanagasabapathy

The Reserve Bank of India Occasional Papers contains contributions by the staff of the Reserve Bank of India. Articles, notes, and reviews published in this journal do not necessarily reflect the views of the Editorial Committee or of the Reserve Bank of India. Responsibility for the views expressed and for the accuracy of statements contained in the contributions rests with the author(s).

There is no objection to the material published herein being reproduced, provided an acknowledgement of the source is made.

Subscription rates for 1989 are :

- | | |
|-----------|---|
| Inland : | (i) Rs. 120 (for four issues of the 1989 volume inclusive of postage)
(ii) Rs. 30 (for a single issue of the 1989 volume inclusive of postage) |
| Foreign : | (i) \$40 (for four issues of the 1989 volume inclusive of postage by surface mail)
(ii) \$10 (for a single issue of the 1989 volume inclusive of postage by surface mail)
For foreign air mail, please add \$4 per issue. |

There is no special rate for any category of subscribers. Subscriptions and orders, accompanied by cheques/drafts drawn on Bombay in favour of Reserve Bank of India, should be sent to:

The Director,
DRRP (Sales Section),
Department of Economic Analysis & Policy,
Reserve Bank of India,
Amar Building (Ground Floor),
Post Box No. 1036,
Bombay - 400 001 (India).

All other correspondence may be addressed to the Editor, Reserve Bank of India Occasional Papers, Department of Economic Analysis & Policy, Reserve Bank of India, Post Box No. 1036, Bombay - 400 023.

RESERVE BANK OF INDIA

OCCASIONAL PAPERS

VOL. 10

NO. 4

DECEMBER 1989

ARTICLES	Page
Editor's Introduction	279
Analytics of Indian Plan Models Narendra Jadhav	283
Indian Plan Models : A Review A.K. Ray	315
Planning and Employment : A Note on Changing Macro-Economic Perspectives of Indian Plans A.K. Nag	331
Financing of Sectoral Investment During Plan Periods K.S. Ramachandra Rao	363
Rural-Urban Income Series : Some Estimates Deepak Mohanty & A. George	385
Planning for Agricultural Transformation Mridul K. Saggar & V. Sunder Raghavan	401

Configuration of Industrial Growth in the Context of Indian Planning	Jag M. Chona	435
India's Balance of Payments During the Four Decades of Planning	K. R. Holla	473
Price Trends During Five Year Plan Periods	Mohua Roy	539
REVIEW ARTICLES		
Development Planning – à la Indien	A. Vasudevan	563
India's Planning Strategies, Techniques and Performance : A Critical Review	D. K. Bhatia & S. L. Shetty	571

Editor's Introduction

BY the end of the fiscal year 1989-90, the Indian economy had been nursed by seven five-year plans interspersed with a few annual plans. By then the planning process had also reached a state of flux, if not a state of dissolution. While the social, economic and technological achievements made during the four decades of planned development were sizeable, many gaps in success *vis-a-vis* the goals set and the aspirations of society surfaced.

2. Even though the overall growth rate of real GDP has accelerated in the 1980's the pattern of growth has left much to be desired, with the evidence of inter-crop and inter-regional imbalances in agricultural growth and with inter-industry distortions and widening inter-state disparities in industrial development. Along with the persistence of rural-urban dichotomy in economic and social progress, there has also arisen some disproportionate growth in a few of the non-commodity-producing or services sectors. Issues concerning insufficient and inefficient technological adaptation, as also entrepreneurial inability to look beyond its short-term interests, have shown up as major constraints. The overall domestic saving rate has stagnated in the 1980s. Above all, what have emerged as matters of great concern are: distinct and persistent deceleration in the rate of employment absorption in all major sectors of the economy; the levels of poverty, though somewhat receding, still remaining high; and the demographic perspectives of the five-year plans constantly going awry recognisedly due to the social neglect of the status of women, especially female literacy and female employment and poor child health care leading to high infant mortality rates. In the ongoing debate on planning, what has been discernible is a sense of fatigue and helplessness experienced by India's economic, social and political system generally in regard to the implied discipline of economic planning and particularly in regard to the question of employment generation, resource mobilisation and use, and the imperative need for institutional

changes so as to provide a wider base for, and better spread of, social and economic development.

3. As the preparation of the Eighth Five Year Plan began against the backdrop of the above scenario, the Editorial Committee of this journal thought that its December 1989 issue be devoted to the theme of planning and that the professional staff of the Reserve Bank of India be given an opportunity to present studies of different aspects, with accent on evaluating the past performances and distilling the experiences of the four decades of planning. The Committee was conscious of the ambitious nature of the task involved. While the response has not been as wholesome as it was originally conceived, the following pages of this issue contain articles covering a fairly wide spectrum of subjects on the theme of "Planning in India – A Retrospection".

4. Thus, we have two contributions on Plan models. The first one by Narendra Jadhav presents an integrated discussion of the model structures underlying the successive five-year plans. For this purpose various parameters and variables of different plan models have been reduced to common symbols. Jadhav argues that perhaps the most fundamental shortcoming of the plan modelling strategy in India has been "virtual neglect of the social optimality considerations". The second article by A.K. Ray, likewise, takes cognizance of the critical issues involved in the evolution of the plan models in India, but also tries to show that there is enough scope for improving model-building exercises as applied to Indian planning and makes a few suggestions such as the need for sub-models for the Indian States, the need for setting out the framework of dynamic programming in order to capture structural changes, a possible annual review against the backdrop of the respective model, and the need to recognise the role of price changes explicitly in plan models.

5. The third article by A.K. Nag takes an eclectic view of the evolving macro-economic perspectives of Indian five-year plans and focusses specifically on the objective of employment generation. It argues that the success of an employment-oriented planning strategy crucially depends on the emergence of a desirable structure of social wants and questions the possibility of bringing it about 'by planning in the form it has been and is being undertaken in India'. Nag buttresses this on the premise that the structure of

social wants is primarily determined by the existing pattern of the distributions of income and wealth.

6. The fourth article by K.S. Ramachandra Rao uses flow-of-funds data and brings out how the deficit sectors, namely, Government and private corporate business, have financed declining proportions of their investment from out of their own savings.

7. The fifth article by D.K. Mohanty and A. George makes an attempt to present some original estimates of rural-urban income disparities and concludes that while such disparities may have been reduced to some extent, there is still the possibility that the inter-class inequalities in income distribution have got widened over the years.

8. The subsequent two contributions relate to the performances of the two major commodity-producing sectors, viz., agriculture and industry. The article by Mridul K. Saggarr and V. Sunder Raghavan on agriculture makes a survey of the strategy of agricultural development over the plan periods and examines the hypothesis of deceleration in agricultural growth in the post-green revolution period. It concludes that, in totality, there appears to be some deceleration in the output growth of wheat, cereals, raw cotton, raw jute and mesta and sugar-cane during the 1980's due to the stagnancy in area under production. These decelerations are, however, counterbalanced by the higher growth path achieved in rice and oilseeds production. Perhaps, the most striking feature of agricultural development during the 1980's has been the spread of agricultural growth to Eastern India due to special efforts put in for enhancing rice production in that region. In the author's view, if "green revolution was a 'wheat revolution', the recent phenomena may be called a 'rice revolution'." The article on 'configuration of industrial growth' by Jag M. Chona presents a Plan-by-Plan account of the growth and structural changes in Indian industry. Broadly, he concludes that whereas basic and capital goods sectors have strengthened the industrial base, the decline in relative importance of the intermediate goods sector is a matter of concern because there are industries in this sector which are labour-intensive and which have both forward and backward linkage effects. There has emerged a disproportionate growth in the development of consumer durables. In comparison, the consumer non-durables or the wage goods sector has receded in importance.

9. The sectoral studies are followed by a comprehensive paper by K. R. Holla on 'India's balance of payments during the four decades of planning', which attempts to situate the external sector in its proper macro-economic perspective. It also presents a Plan-by-Plan account of the various dimensions of India's external trade and payments and concludes that the country had not faced many occasions when the external sector was under severe pressure up to the 1980's. "India's external trade and payments situation has thus reached a delicate stage. Though the current account deficit in relation to GDP is small as compared with some other developing countries, considering the small size of the external sector, the persistent current account deficit, the growing foreign debt, and the rising debt-service burden are indeed worrisome. There are no indications of any prospective change in the scenario either".

10. Finally, in the articles section, we have a contribution by Mohua Roy on "price trends during the five-year plan periods" essentially to present the extent and nature of inflation in terms of bare statistics and to pinpoint identifiable micro-causes for the given behaviour of prices in different Plan periods, in various inflationary phases and even in individual land-mark years. Dips in supplies of foodgrains and agriculture-based raw materials, two petroleum price shocks and occasional spurts in administered prices, increases in import costs, and the underlying demand pressure emanating from monetary growth, have been identified as common factors causing inflation in different periods.

11. This issue of the journal takes pride in the fact that it is in a position to present review articles on the two recent outstanding contributions on India's development planning - A. Vasudevan on Sukhamoy Chakravarty's *Development Planning- the Indian Experience* and D. K. Bhatia and S. L. Shetty on S. P. Gupta's *Planning and Development in India : A Critique*.

12. While we are conscious of the fact that many aspects of planning have not been addressed in this issues, we nevertheless hope that articles and reviews contained in it go to make a contribution, however humble, to an understanding of at least some facets of India's development experience.

S. L. Shetty

Analytics of Indian Plan Models

Narendra Jadhav*

IN most developing countries which attained political independence after the World War II, economic growth has come to be regarded as the key to transition from erstwhile dependent and subordinate status to a position of independence and equality. In this regard, development planning has generally been perceived as a potent instrument for achieving desired transformation of an economy.

2. Virtually all developing countries have resorted to development planning at some stage of their economic development. According to a survey of planning in developing countries by Agarwala (1983), more than 300 development plans were formulated in developing countries by the year 1982.

3. Although wide variations exist among development plans devised by different countries, some broad patterns are discernible. First, there are comprehensive centralised plans influenced by the Soviet example and attempted in parts of Asia (e.g., India, Pakistan, Bangladesh and Turkey). Secondly, there are comprehensive cooperative plans based on consultation and collaboration between the private and public sectors. This approach has been favoured by some developing countries in East Asia (e.g., South Korea and Singapore) as well as by industrial countries like Japan. Finally, there are indicative plans which are comprehensive in scope but only indicative in respect of economic targets. This approach has been adopted in South-east Asia (e.g., Malaysia, Indonesia, Philippines and Thailand) as well as in sub-Saharan

* Dr. Narendra Jadhav is Director, Monetary Modelling Unit, Department of Economic Analysis and Policy.

Africa and the Caribbean (e.g., Ghana, Tanzania, Botswana and Malawi)¹.

4. Among the mixed economies, India has been regarded as a pioneer in development planning. Indeed, following her bold initiative, "India became a model for other newly independent states that also took up national planning." [Gillis, Perkins, Roemer and Snodgrass (1983), p. 97].

5. As a result of the sustained official interest in development planning, extensive literature has evolved on the subject in India over the last four decades. Apart from numerous perceptive analyses based on descriptive approach, there are several technical studies dealing with plan models which provide the analytical foundation of the planning process in India. Mahalanobis (1953, 1955), Komiya (1959), Sandee (1960), Manne, Rudra and others (1965), Eckaus (1967), Eckaus and Parikh (1967), Bhagwati and Chakravarty (1969), Bhagwati and Desai (1970), Rudra (1976), Ursula Hicks (1979), Lal (1980), Dahiya (1982), and Gupta (1971, 1989) are some of the noteworthy technical contributions.

6. Given the technical nature of the subject, discussion of plan models, inherently, tends to be esoterical. In the Indian context, this situation has often been compounded further by technical debates between protagonists and antagonists. As a result, a clear understanding of the subject has been obscured at times. This suggests a need for an integrated discussion of the plan models underlying the successive plans. Such a discussion would not only serve a useful pedagogical purpose but could also stimulate fresh thinking on the subject. The present paper makes an attempt in that direction.

7. The paper is organised as follows : Section I presents an analytical survey of the plan models. Section II provides a critique of the underlying approach within the broad framework of available policy options.

1. For further details of this taxonomy, see Agarwala (1983). The results of the survey are also summarised in Agarwala (1985).

1. An Analytical Survey of Indian Plan Models

8. A common approach to surveying the planning models is to examine the successive plans chronologically and discuss the corresponding plan models². Such an approach, besides being prosaic, is often subject to a major expositional limitation, i.e., it fails to classify plan models and obscures the evolutionary aspect of the perspectives on development planning. Development planning in India, as in most other developing countries, has been conditioned by "learning by doing". Evolution of the Indian plan models over the last four decades has been subject to a confluence of factors such as improvements in data and information system as well as advances in model building techniques, which is not clearly brought out by the chronological approach.

9. As an alternative, one could develop a series of models in accordance with their analytical evolution and then relate them to the plan models as understood to have been deployed in the actual planning exercises. This approach has an advantage of isolating the analytical essentialities and hence, can offer a clearer picture of successive refinements in the plan models in their evolutionary continuum. The present paper, accordingly favours this approach.

10. A caveat may be in order here. Strictly speaking, all models regarded as the Indian plan models do not enjoy the "official sanction" [Rudra (1975), p. 191]. It is only from the Fifth Plan onwards that the practice of encapsulating the plan models in officially published "technical notes" was initiated. In what follows, references to the first four plan models, accordingly, relate to the models generally believed to have been embedded in the relevant plans.

(A) One-Sector Harrod-Domar Model

11. The simple one sector Harrod-Domar model conceptualises an economy producing output (Y) using capital (K) and, as detailed in the Technical Appendix, comes up with the following wellknown equation for the "warranted" rate of growth (G_n)

2. For a recent example of this approach, see Gupta (1989).

$$\text{Eq. (1) } \dot{Gn} = \left(\frac{\Delta Y}{Y} \right) = \left(\frac{s}{V^*} \right)$$

where s = average propensity to save ,

V^* = incremental capital - output ratio (ICOR)

Accordingly , the growth-path takes the form :

$$\text{Eq. (2) } Y_t = Y_{t-1} + \left(\frac{s}{V^*} \right) Y_{t-1}$$

12. The basic plan framework for the First Plan in India (1951-56) was derived from this model with some modifications. The growth path depicted by the standard model [i.e., eq. (2)] was deemed to be inadequate in the following two respects :

- (i) The gestation lag between net investment and output in the standard model is assumed to be one year . The planning authorities favoured a longer lag of two years .
- (ii) The standard model does not accommodate any potential difference between average and marginal propensity to save . The planning authorities preferred incorporation of the marginal propensity to save as an explicit parameter .

13. Accordingly , the following growth path was chosen :

$$\text{Eq. (3) } Y_t = Y_{t-1} + \left(\frac{s}{V^*} \right) Y_{t-2}$$

which , as detailed in the Technical Appendix , yields the following set of equations :

$$\text{Eq. 4(a) } \Delta Y_1 = \left(\frac{s}{V^*} \right) Y_{-1}$$

$$4(b) \Delta Y_2 = \left(\frac{s}{V^*} \right) Y_0$$

$$4(c) \Delta Y_3 = \left(\frac{s}{V^*} \right) Y_0 + \left(\frac{s^*}{V^*} \right) \Delta Y_1$$

$$4(d) \Delta Y_4 = \left(\frac{s}{V^*} \right) Y_1 + \left(\frac{s^*}{V^*} \right) \Delta Y_2$$

$$4(e) \Delta Y_3 = \left(\frac{s}{V^*} \right) Y_2 + \left(\frac{s^*}{V^*} \right) \Delta Y_3$$

where, $\Delta Y_t = Y_t - Y_{t-1}$ and
 $s^* = \text{incremental saving ratio.}$

14. The model was operationalised by assigning alternate values to the three parameters : average propensity to save (s), marginal propensity to save (s^*) and incremental capital - output ratio (V^*)³. The wielding of these parameters as instruments for planning was somewhat novel for, "there are no planners and no instruments in Harrod and Domar's World" [Rudra, (1985), p. 758.].

B) Mahalanobis' Two-Sector Model⁴

15. Mahalanobis' two sector-model conceptualises a closed economy divided into two sectors producing investment goods (I) and consumption goods (C). In this simple setting, assuming full capacity utilisation and a single period lag between investment and output, the growth path, as detailed in the Technical Appendix, is given by:

$$\text{Eq. (5)} Y_t = Y_0 \left[1 + \alpha_0 \left(\frac{\lambda_1 \beta_1 + \lambda_2 \beta_2}{\lambda_1 \beta_1} \right) \{ (1 + \lambda_1 \beta_1)^t - 1 \} \right]$$

where : α_0 = initial investment - output ratio,

β_1, β_2 = reciprocals of the ICORs in capital goods and consumption goods sector respectively and,

λ_1, λ_2 = shares of investment in the two sectors respectively.

16. Given the closed economy assumption, α coincides with the average propensity to save (s). Moreover, $(\lambda_1 \beta_1 + \lambda_2 \beta_2)$ depicts the incremental output (i.e., the productivity of new investment).

3. In the absence of relevant data, illustrative values assigned to the parameters were $s = 0.05$, $s^* = 0.20$ and $V^* = 3$.

4. Mahalanobis' model was first published in 1953. It turned out to be quite similar to a model published in Russian by Feldman in 1928, translated into English and published by Domar in 1957.

and hence, the ratio $\left(\frac{\lambda_1 \beta_1}{\lambda_1 \beta_1 + \lambda_2 \beta_2} \right)$ indicates the proportion of incremental output that takes the form of investment, which in the context of the closed economy, represents the marginal propensity to save.

17. Since α is the initial condition, β_1, β_2 are technological factors and time is exogenous, it is clear from eq. (5) that the entire growth process is determined by only *one* independent policy parameter (λ_1), i.e., the share of total investment allotted to the capital goods sector.

18. In fact, the resource allocation strategy could be worked out simply by posing the question regarding the appropriate value of (λ_1). Indeed, as λ_1 is raised, $\left(\frac{\lambda_1 \beta_1 + \lambda_2 \beta_2}{\lambda_1 \beta_1} \right)$ falls at a constant rate, which is independent of time, whereas $(1 + \lambda_1 \beta_1)^t$ rises at a rate that is an *increasing* function of time. It follows, therefore, that a *ceteris paribus* comparison of two growth paths corresponding to two values of (λ_1) say (λ_1) = 0.1 and (λ_1) = 0.4 would be such that

- (i) for low values of t , $Y(\lambda_1 = 0.4) < Y(\lambda_1 = 0.1)$
- (ii) for high values of t , $Y(\lambda_1 = 0.4) > Y(\lambda_1 = 0.1)$

Equivalently, the growth path corresponding to the high value of (λ_1) may lie *initially* below the one corresponding to the low value of (λ_1) but with the passage of time, the growth path with higher (λ_1) would dominate the one with lower (λ_1). Thus higher (λ_1) would mean a higher growth path on the future.

19. Implication of this result for development strategy is described succinctly by Rudra (1975) when he observes: "..... if one wants a higher rate of growth of consumption in the long run, then the best policy is to give priority to the development of investment goods industries over consumer goods industries, even though the latter might have higher capital-output ratios and even though one cannot eat machines" (p. 94).

20. It is this development philosophy that underlay the accent on a large share of investment allocation to the production of capital goods adopted in the Second Five Year plan.

C) Mahalanobis' Four-Sector Model

21. This model [Mahalanobis (1955)] is an adjunct to the two-sector model. While the two-sector model deals with inter-temporal allocation of investment, the four-sector model is related to inter-sectoral allocation of investment.

22. The model deals with investment allocation among four sectors—capital goods, factory production of consumer goods, household production of consumer goods (including agriculture) and the services sector.

23. For a given targetted income growth (ΔY), the one-sector Harrod-Domar type model gives the necessary aggregate investment (I), based on the assumed aggregate value of the incremental capital-output ratio (ICOR). The problem is to allocate investment (I) among the four sectors so as to generate a targetted additional employment (ΔN).

Let $\lambda_1, \lambda_2, \lambda_3$, and λ_4 be the desired investment shares. Then $\lambda_1 I, \lambda_2 I, \lambda_3 I$, and $\lambda_4 I$ are sectoral investments in the four sectors. If $\beta_1, \beta_2, \beta_3, \beta_4$ are the respective sectoral incremental output-capital ratios and $\theta_1, \theta_2, \theta_3, \theta_4$ are the respective incremental capital-labour ratios, assumed to be constant, then, the problem essentially boils down to solving the following system of equations:

$$\text{Eq. 6(a)} \quad \lambda_1 I + \lambda_2 I + \lambda_3 I + \lambda_4 I = I^0$$

$$\text{Eq. 6(b)} \quad \beta_1 (\lambda_1 I) + \beta_2 (\lambda_2 I) + \beta_3 (\lambda_3 I) + \beta_4 (\lambda_4 I) = \Delta Y^0$$

$$\text{Eq. 6(c)} \quad \frac{1}{\theta_1} (\lambda_1 I) + \frac{1}{\theta_2} (\lambda_2 I) + \frac{1}{\theta_3} (\lambda_3 I) + \frac{1}{\theta_4} (\lambda_4 I) = \Delta N^0$$

24. Given the parameters $(\beta_1, \beta_2, \beta_3, \beta_4)$ and $(\theta_1, \theta_2, \theta_3, \theta_4)$ which are "determined by technological factors and considerations of production" which "cannot be settled at the choice of the planner", the system has 3 equations in 4 unknowns $\lambda_1, \lambda_2, \lambda_3$, and λ_4 . Given the value of λ_1 , derived from the two sector model, the system can be uniquely solved for the remaining three unknowns, thus providing the solution. (Mahalanobis used $\lambda_1 = 0.33$)

25. It is generally agreed that the developmental philosophy

underlying the Second Plan was based on these two models conceived by Mahalanobis. The accent on a large share of investment allocation to the production of capital goods was derived from the two-sector model whereas the inter-sectoral allocation of investment was governed by the four-sector model.

D) Sukhamoy Chakravarty's Model

26. Unlike the first two Plan models which were adapted from specific models available in literature, this model was constructed specifically for the Third Plan. The only available version of this model appears to be the one by Sukhamoy Chakravarty which, according to Gupta (1989), translates the relevant technical paper on the subject prepared by the Planning Commission into the mathematical logic of a plan model⁵.

27. Chakravarty's original model has been published in Rosenstein-Rodan (1964) and a version of it reproduced in Gupta (1989)⁶. In what follows, a reconstructed version is presented.

Notation

- Σ denotes sum total over the plan period,
- Δ denotes increment to the relevant variable,
- superscript (O) indicates exogenous variable,
- subscript (O) indicates initial value of the relevant variable.

The Model

28. Given the exogenous policy determined annual economic growth rate ($\dot{G}$), the incremental income over the plan period

5. See Gupta (1989), p. 8. The Planning Commission paper referred to is the one entitled, "Certain Dimensional Hypotheses concerning the Third Plan."

6. The version provided by Gupta (1989) is, however, difficult to interpret. Apart from several serious typographical errors, the model has a missing equation- "17 equation in 18 unknowns"-, leading to indeterminacy and is also subject to misclassification of endogenous variables into exogenous variables and vice versa.

$\Sigma (\Delta Y)$ is given by

$$\text{Eq. (7)} \quad \Sigma (\Delta Y) = Y_0 [1 + (\dot{G})^0]^5 - Y_0$$

29. Given $\Sigma(\Delta Y)$ and the assumed aggregate ICOR (V^*), corresponding cumulative investment requirement over the plan period (ΣI) is derived from :

$$\text{Eq. (8)} \quad \Sigma I = V^* [\Sigma (\Delta Y)]$$

30. Given (ΣI) and exogenously determined cumulative foreign savings (ΣF) , cumulative domestic saving requirement (ΣS) works out to

$$\text{Eq. (9)} \quad \Sigma S = (\Sigma I) - (\Sigma F)^0$$

31. If $(\Delta \bar{S})$ is assumed to be the uniform annual increment to savings, it follows that⁷

$$\text{Eq. (10)} \quad \Delta \bar{S} = \frac{\Sigma S - 5 (S_0)}{\Sigma t}$$

32. Accordingly, the incremental savings over the plan period $\Sigma (\Delta S)$ is given by

$$\text{Eq. (11)} \quad \Sigma (\Delta S) = 5 (\Delta \bar{S})$$

and the marginal propensity to save (s^*) is given by

$$\text{Eq. (12)} \quad s^* = \frac{\Sigma (\Delta S)}{\Sigma (\Delta Y)}$$

33. In the real sector, per capita annual real income growth ($\dot{g}$) is given simply by the difference between the targetted output growth ($\dot{G}$) and the exogenous population growth ($\dot{G}_p$). Thus,

$$\text{Eq. (13)} \quad \dot{g} = (\dot{G})^0 - (\dot{G}_p)^0$$

7. Since $(\Delta \bar{S})$ is the uniform annual increment, saving in any year t is given

$$\text{by } S_t = S_0 + t (\Delta \bar{S})$$

$$\rightarrow \Sigma S = \Sigma (S_0 + t \Delta \bar{S}) = 5 S_0 + \Delta \bar{S} (\Sigma t)$$

$$\rightarrow \Delta \bar{S} = \left(\frac{\Sigma S - 5 (S_0)}{\Sigma t} \right)$$

34. Assuming that there is no mis-match between demand for and supply of agricultural production, the rate of growth of agricultural production ($\dot{G}_a$) is given by

$$\text{Eq. (14) } (\dot{G}_a) = u_1 (\dot{g}) + (\dot{G}_p)^0$$

where u_1 = per capita income elasticity of agricultural demand.

35. Given the overall growth rate ($\dot{G}$) and the agricultural growth rate ($\dot{G}_a$) the non-agricultural growth rate is determined residually from :

$$\text{Eq. (15) } w_1 (\dot{G}_a) + w_2 (\dot{G}_{na}) = (\dot{G})$$

where w_1 , w_2 are relevant shares of agriculture and non-agricultural sectors in total output.

36. Also, aggregate consumption in the terminal year (C_5) is given by

$$\text{Eq. (16) } C_5 = [Y_0 + \Sigma (\Delta Y)] - [S_0 + \Sigma (\Delta S)]$$

Accordingly the implicit annual growth rate of consumption ($\dot{G}_c$) may be derived from

$$\text{Eq. (17) } C_0 (1 + \dot{G}_c)^5 = C_5$$

37. Finally, in the fiscal sector, cumulative tax receipts (ΣT) comprise of cumulative endogenous tax receipts (ΣTE) and exogenous cumulative autonomous tax receipts (ΣTA). Thus,

$$\text{Eq. (18) } \Sigma T = (\Sigma TE) + (\Sigma TA)^0$$

38. The cumulative endogenous tax receipts (ΣTE) are determined by

$$\text{Eq. (19) } \Sigma TE = (TE)_0 \sum_{t=1}^5 (1 + (\dot{TE}))^t$$

where the annual growth rate of endogenous tax receipts ($\dot{TE}$) is

approximated by

$$\text{Eq. (20) } T\dot{E} = \delta_1 (\dot{G}_a) + \delta_2 (\dot{G}_{na}) + \delta_3 (\dot{G}_c)$$

where $\delta_1, \delta_2, \delta_3$ are elasticities of tax receipts with respect to agricultural income, non-agricultural income and consumption respectively.

39. On the expenditure side, total cumulative public expenditure (ΣE) is the sum total of exogenous cumulative current expenditure (ΣEC) and the cumulative capital expenditure. Thus,

$$\text{Eq. (21) } \Sigma E = (\Sigma EC)^0 + \lambda (\Sigma I)$$

where λ = Public Sector's share in total investment.

40. It follows then that the cumulative resource gap is given by

$$\text{Eq. (22) } \Sigma D = (\Sigma E) - (\Sigma T + \Sigma R^0)$$

where (ΣR) is the cumulative surplus of public enterprises, determined exogenously, which completes the model.

Given

(A) the initial values

Y_0 : base year real income,
 S_0 : base year domestic savings,
 C_0 : base year consumption,
 $(TE)_0$: base year endogenous component of tax receipts and,

(B) Parameters

v^* : aggregate ICOR,
 u_1 : per capita real income elasticity of agricultural demand,
 w_1 : share of agriculture in total output,
 w_2 : share of non-agricultural sector in total output,
 δ_1 : elasticity of tax receipts w.r.t. agricultural income,
 δ_2 : elasticity of tax receipts w.r.t. non-agricultural income,
 δ_3 : elasticity of tax receipts w.r.t. consumption,
 λ : public sector share in total investment, and

(c) exogenous variables

- $(\dot{G})$: targetted output growth ,
- $(\dot{G}_p)$: population growth rate ,
- ΣF : cumulative foreign savings ,
- ΣTA : cumulative autonomous component of tax receipts ,
- ΣEC : cumulative current expenditure ,
- ΣR : cumulative surplus of public enterprises , and
- t : time ,

values of the 16 endogenous variables could be uniquely determined by solving the system of 16 equations

[eq. (7) through eq. (22)].

The 16 endogenous variables include:

(a) in the real sector

(i) income related variables:

- $\Sigma(\Delta Y)$: cumulative incremental real income ,
- $(\dot{g})$: per capita annual real income growth rate ,
- $(\dot{G}_a)$: growth rate of agriculture ,
- $(\dot{G}_{na})$: growth rate of non-agricultural sector ,

(ii) saving-investment related variables :

- ΣI : cumulative investment requirement ,
- ΣS : cumulative domestic saving ,
- $\Sigma(\Delta S)$: cumulative incremental domestic savings ,
- $\Delta \bar{S}$: annual incremental domestic savings ,
- s : average propensity to save ,
- s^* : marginal propensity to save ,

(iii) consumption-related variables:

- C_5 : consumption level in the terminal year of the plan ,
- $(\dot{G}_c)$: growth rate of consumption , and

(b) in the fiscal sector

- ΣT : cumulative tax receipts,
 $\Sigma(TE)$: cumulative endogenous tax receipts,
 $\dot{TE}$: growth rate of endogenous tax receipts,
 ΣE : cumulative total public expenditure, and
 ΣD : cumulative resource gap of the public sector.

41. The Third Plan model accorded an explicit priority to agriculture unlike the Second Plan, Arguing that it was thought both logical and necessary to modify the original Mahalanobis formulation to accord priority to agriculture, Chakravarty (1987) nevertheless felt that it was not clear from the Third Plan document and discussions around that time "whether the planners had fully comprehended the nature of the changed priorities and their lack of congruence with the Second Five Year plan strategy" (p. 20).

E) Multi-Sectoral Consistency Models

42. Following the Mahalanobis four-sector models, the next phase in the evolution of planning models comprises an advancement to multi-sectoral consistency models. These models are focussed on establishing intersectoral consistency of production targets in a multi-sectoral framework based on the input-output methodology. As noted in a Planning Commission (1981) document, since the Fourth Plan, "the input-output models of different variants, basically belonging to the Leontief group came into increasing use" (p. 1). This process continued right up to the Seventh Plan with increasing articulation.

43. In view of the above, first the analytics of this family of plan models are set out in a general context and then successive modifications and refinements in the corresponding Indian plan models are spelt out.

44. The simplest form of input-output based multi-sectoral plan models is represented by the static input-output models. In this sub-group of models, consumption and investment are viewed as 'final demands', while inter-industry transactions are interpreted as 'intermediate demands'. Analytically, the basic question is : what

level of output should each industry in the economy produce in order that it will just be sufficient to satisfy the total demand (final demand as well as intermediate demands) for the commodity .

45. Consider a closed economy with n sectors .

Let $\bar{Y}$ be $n \times 1$ vector representing gross output in n sectors ,
 Let $\bar{A}$ be $n \times 1$ vector representing final demands in n sectors ,
 Let $\bar{H}$ be $n \times n$ matrix, (h_{ij}) $i, j = 1$ to n such that h_{ij} denotes the extent to which the i^{th} commodity is used for the production of each unit of the j^{th} commodity .

46. The material balance equations , which simply state that the gross output for each commodity must match the sum total of respective inter-industry demands and the final demand , can accordingly be expressed in the form of a matrix equation :

$$\text{Eq. (23) } \bar{Y} = \bar{H}\bar{Y} + \bar{A}$$

which on solving for $\bar{Y}$ yields ,

$$\text{Eq. (24) } \bar{Y} = [\bar{I} - \bar{H}]^{-1} \bar{A}$$

Where $\bar{I}$ is an identity matrix of order n and the superscript (-1) indicates the matrix-inverse .

47. Equation (24) constitutes the 'solution' of the static input-output model. Given the technology matrix $(\bar{I} - \bar{H})^{-1}$ and exogenously specified vector of final demands ($\bar{A}$) this equation can be readily used for determining sectoral production targets necessary to satisfy the total sectoral demands. This simple technique is deemed to be useful for development planning "because it embodies the requirement for economy-wide consistency of sectoral production plans." [See , Dervis , DeMelo and Robinson (1982), P.24] .

48. The closed economy model outlined above can be easily extended to include a foreign sector under simplifying assumptions . At one extreme , imports are treated as completely different from the domestically produced goods (i.e. , non-substitutable), in which case , they cannot be aggregated with domestic production .

Accordingly, the modified material balance equations do not include imports.

At the other extreme, domestic and imported commodities are assumed to be perfect substitutes in all uses. In that case, the material balance equations are modified as :

$$\text{Eq. (25) } \bar{Y} + \bar{M} = \bar{H} \bar{Y} + \bar{A} + \bar{X}$$

where $\bar{M}$ = import vector ($n \times 1$),

$\bar{X}$ = export vector ($n \times 1$),

$\bar{A}$ = domestic demand vector ($n \times 1$).

Solving for $\bar{Y}$, thus,

$$\text{Eq. (26) } \bar{Y} = [\bar{I} - \bar{H}]^{-1} [\bar{A} + \bar{X} - \bar{M}]$$

which is identical to eq. (24), except for $[\bar{A} + \bar{X} - \bar{M}]$ which is now interpreted as net demand for domestically produced commodities.

49. Several other variants between these two polar extremes are discussed in the literature. [see for example, Chenery and Clark (1959), Syrquin (1976) and Dervis, deMelo and Robinson (1982)].

50. A more advanced version of the input-output based planning models takes the form of dynamic input-output models. A dynamic input-output model can arise from various considerations such as the existence of time lag between demand and supply or partial adjustment mechanism. In the context of development planning, probably the most relevant consideration in this regard is endogenisation of investment.

51. In the static input-output model, investment is subsumed under the vector of final demand which is treated as exogenously determined. More realistic would be the case wherein investment is regarded not as a final demand but as a means of enhancing future production capacities, and hence endogenously determined. In this case, analytically, the basic question is: what level of output should each sector in the economy produce so as to

ensure that besides the final demand for consumption inter-sectoral input demand as well as inter-sectoral investment demand is just satisfied.

52. The inter-sectoral investment demand may be captured by matrix (U) such that

$$\text{Eq. (27) } U = \bar{K} (\Delta \bar{Y})$$

where $\bar{K} = [K_{ij}]$ in which

K_{ij} = capital coefficient depicting the quantity of investment goods produced by i^{th} sector per unit output expansion in the j^{th} sector.

53. Combining the investment demands given by eq. (27) with other components, the material balance equations of the dynamic model can be formulated as

$$\text{Eq. (28) } \bar{Y} = \bar{H} \bar{Y} + \bar{K} (\Delta \bar{Y}) + \bar{C}$$

Where $\bar{H} \bar{Y}$ = inter-sectoral input demands,

$\bar{K} (\Delta \bar{Y})$ = inter-sectoral investment demands, and

$\bar{C}$ = final demands for consumption.

Writing the equation in recursive form and solving for $\bar{Y} (t+1)$ yields:

$$\text{Eq. (29) } \bar{Y} (t+1) = [(\bar{K})^{-1} (\bar{I} - \bar{H} + \bar{K})] \bar{Y} (t) - [(\bar{K})]^{-1} \bar{C} (t)$$

54. Given the input-coefficient matrix ($\bar{H}$), the capital coefficient matrix ($\bar{K}$) and the series of target consumption vectors $\bar{C}(t)$ ($t = 0, 1, 2, \dots$), this equation can be solved recursively provided that $(\bar{K})^{-1}$ exists. Thus, given $\bar{Y}(0)$ and $\bar{C}(0)$, one solves for $\bar{Y}(1)$. Given $\bar{Y}(1)$ and $\bar{C}(1)$, one solves for $\bar{Y}(2)$ and so on. Accordingly, corresponding to the series of target consumption vectors stipulated in the plan, a series of output target vectors $\bar{Y} (t)$ could be derived so as to ensure that inter-sectoral input demands, inter-sectoral investment demands as well as the final consumption demands are just satisfied.

Multi-sector Consistency Models in India

55. As noted before, planning models in India, since the Fourth Plan, have been derived essentially from the multisectoral consistency framework presented above. The evolution of these models, especially the successive refinements therein, may be distinguished with reference to the following aspects : (i) data base and structure, (ii) treatment of consumption, (iii) treatment of capital formation, and (iv) treatment of the external sector, besides a gradual incorporation of specialised sub-models.

(a) The Fourth Plan Model⁸

56. This model has been classified as "open-static Leontief type inter-industry" model with a few embellishments for the endogenous treatment of capital formation. [Rudra (1975), p. 119]. The model projected the principal components of gross domestic expenditure, translated them into final demands for individual commodities and then, the input-output framework was used for deriving an internally consistent set of sectoral outputs, imports and investment requirements. Specific details of the model may be described as under :

1. The core of the model comprised a 30 sector input-output model, aimed at achieving consistency in the terminal year 1970-71⁹ for this purpose, a fullfledged inter-industry transaction matrix (with base 1960) was developed. The classification of the sectors and their ordering was chosen so as to facilitate computation through achieving as near triangularity as possible in the transactions matrix. Indeed, "one of the principal findings of the exercise" was that the Indian economy could be represented by "a highly triangular pattern of input dependence," suggesting that "everything does not depend upon everything else" [Rudra (1975), p. 121].

8. In the absence of any strictly 'official' version, the model developed by Manne (Stanford University) and Ashok Rudra (Indian Statistical Institute) has been taken as the Fourth Plan Model. This model is available in Manne, Rudra, et al (1965). Also in Dahiya (1982).

9. With the intervening of Plan holiday for three years (1966-67 to 1968-69), the Fourth Plan was finally implemented during the period 1969-70 to 1973-74).

As a matter of fact, out of the total 900 coefficients (corresponding to the 30 x 30 matrix), non-zero coefficients occurred in only about 240 cases¹⁰.

2. In the conventional open-static consistency models, the vector of sectoral outputs is endogenously determined in entirety. In the Indian version, output of sectors like crude-oil and rubber, which have large gestation lags, were set exogenously.

3. Aggregate household consumption as well as government consumption were treated exogenously. Relevant commodity composition was set exogenously in respect of the government consumption whereas in the case of household consumption, the same was derived extraneously using individual Engel curves and relevant frequency distribution adopted from the National Sample Survey (NSS) data.

4. Capital formation was neither treated totally exogenous as in the 'static' consistency models nor was it deemed to be entirely endogenous as in the case of the 'dynamic' models; a combination of the two was favoured. Five categories of capital goods were identified—two belonging to construction and three relating to equipment. Given the institutional set-up in India, it was recognised that a significant part of investment – for example, that in respect of social overheads—cannot be directly related to any output targets.

5. On the external side, exports were treated as exogenously determined while imports were deemed to be partly exogenous and partly endogenous, in more or less *ad hoc* manner, assuming a significant structural change from the base year.

(b) The Fifth Plan Model¹¹

57. Like the Fourth Plan model, this model for the Fifth

10. Of the 240 non-zero coefficients, about one-fourth were corrected further by cross-checking with independent sources and in the light of anticipated technological changes.

11. As noted before, the discussion of the models for the Fifth through Seventh Plan are based on their 'authentic' versions.

Plan (1974-75 to 1978-79)¹² could also be broadly classified as an open-static Leontief type model with further refinements to suit the Indian socio-economic set up.

58. The model comprises three parts: (a) macro-economic model, (b) input-output model, and (c) consumption sub-model. (i) macro-economic model translated the contemplated growth path for real GDP into the aggregate gross investment need on the basis of an aggregate ICOR. The aggregate investment need was phased out over the plan period to derive year-wise investment levels. On the external side, exports were treated as exogenous while imports were projected, commodity-wise, as discussed below. The aggregate imports net of exports and external aid yielded the net imports. Estimated year-wise investment need in excess of net imports indicated gross domestic savings, which then was used to derive aggregate consumption as well as private consumption component, given the exogenously determined government consumption.

(ii) The input-output model was different from the one deployed in the Fourth Plan model in at least three respects:

- a) An up-dated and moderately enlarged input-output table was used with 66 sectors and the year 1965 as the base;
- b) A different treatment for accorded to imports which were derived, commodity-wise on the basis of input demand for imports adjusted for import substitution and the assumed import content of consumption (private and government) and investment;
- c) Estimates relating to private consumption were derived from a separate consumption sub-model.

(iii) The consumption sub-model, which was perhaps the most novel feature of the Fifth Plan model, introduced the notion of a

12. Around this period, planning in India faced some chequered history. The Fifth Plan was terminated in 1977-78 by a new Government which proposed a draft Sixth Five Year Plan for the period 1978-79 to 1982-83; it could not be implemented and a new Sixth Plan was formulated for the period 1980-81 to 1984-85.

a minimum standard of living for the lowest 30 per cent of the population.

59. The objective of poverty alleviation was implicitly deemed to be co-terminous with the attainment of the monthly per capita consumption equivalent to Rs. 20 at 1960-61 prices. Accordingly, the aggregate demands for individual consumer commodities were derived so as to provide for the lowest 30 per cent of the population to enjoy this minimum level of consumption.

(C) The Sixth Plan Model¹³

60. The Sixth Plan (1980-81 to 1984-85) made significant changes in the modelling methodology. Instead of a single model structure, it adopted a family of sub-models geared to a core model. The core model comprised several blocks : (i) input-output block, (ii) investment block, (iii) consumption and poverty block, (iv) import block, (v) employment block, (vi) financial resources block, and (vii) perspective plan block, while the supporting sub-models included, i) agriculture, ii) exports, iii) net transfers from abroad, iv) demography, and v) the long-term objectives.

61. The system of blocks or sub-models superimposed specialised sector-specific considerations on essentially the same consistency framework, based on the input-output nucleus, extended now to 89 sectors. Certain highlights of the Sixth Plan model are:

- (a) The macroeconomic model in the Fifth Plan model could only provide the estimates of total investment. On the other hand, formulations in the Sixth Plan model could provide a way to measure potential effects of alternate allocation of investment, by destination, on sectoral growth rates. Further, the Sixth Plan model, for the first time, used a technique for estimating investment by production activities (i.e., by sources), based on a capital coefficient matrix. Additionally, the Sixth Plan model, for the first time, also incorporated the private sector investment and its financing.

13. The discussion of the Sixth and Seventh Plan here draws on Gupta (1989).

- (b) The Sixth Plan model extended the consumption sub-model of the Fifth Plan further by relating it to any changes in the plan's specific programmes and re-distributive policies.
- (c) During the previous three plan models employment considerations in the form of appropriate targets were neglected. The Sixth Plan revived the exercise, based on a new concept of Standard Person Years (SPY).
- (d) In earlier plan models, while estimating the balance of payments gap or resource availability of the plan, potential effect of changes in the external terms of trade were ignored. This was corrected in the Sixth Plan.

62. The different blocks in the core model were interdependent and the five separate sub-models were related to the core model in a recursive manner. Individual sub-models were solved separately and their interaction with each other and with the core model was achieved by a sequence of iterative processes. In this endeavor, the model-system as a whole become underdetermined (i.e., the number of unknowns exceeded the number of equations). This problem was solved by imputing alternate exogenous values to selected endogenous variables and choosing a 'solution' from several alternate solutions by value judgements.

The Seventh Plan Model

63. The Seventh Plan (1985-86 to 1989-90) model was broadly similar to the Sixth Plan model with the following noteworthy refinements:

1. Estimation of investment by sources (i.e., production activities) in the Sixth Plan model was aggregative, i.e., without any distinction between public and private investment. In the Indian planning process, public sector investment allocation is treated as a set of targets while the private sector investment allocation is an indicative forecast, subject to the influence of macroeconomic demand management policies, which necessitates a separate treatment of the two. The Seventh Plan, for the first time, attempted this disaggregation.

2. In the earlier plan models, investment estimates were made only in gross aggregative terms. The Seventh Plan, on the other hand, made an explicit distinction between investment for replacement, that for modernisation and new investment.
 3. The Seventh Plan model introduced a *basic needs sub-model* with a view to assessing the impact of plan expenditures on growth and development. This was said to be reflected in an improvement in the quality of life, as measured by a set of socio-economic indicators, such as, education, health, literacy, fertility, mortality and the like.
 4. The seventh plan also reformulated the *poverty sub-model* by isolating all activities relating exclusively to the poverty-alleviation programmes such as the Integrated Rural Development Programme (IRDP) and the National Rural Employment Programme (NREP) with a view to giving special treatment to the targeted low-income groups.
 5. Yet another important addition to the Seventh Plan model was inflation adjustment of resource estimates incorporated in the *resources sub-model*.
64. Resource planning in the earlier plans was based on the constant base-year prices. It was believed that during the formulation of the plan, balancing the sources and uses of investible funds at *constant* prices would automatically ensure the balance during the plan implementation at *current* prices as well. This presumption emanated from the tacit assumptions that
- (i) the price elasticity of government revenue and expenditure is the same, and
 - (ii) prices of broad categories of commodities, i.e., consumption goods, capital goods, etc., would move in tandem.
65. The actual experience of the 1970's and 1980's showed however, that the price elasticity of government expenditure

exceeded the price elasticity of government revenue¹⁴. Moreover, during the same period, prices of capital goods rose generally faster than those of consumption goods. Consequently, the *real* size of the planned investments was subject to an erosion during the plan implementation, especially when inflation was high. The Seventh Plan, for the first time, made an attempt to address this problem by examining alternate approaches for protecting the targeted plan size in the face of inflation¹⁵.

II : Indian Plan Models : A Critique and Policy Options

66. Several studies have attempted appraisal of planning in India. In particular, perceptive criticisms have been offered by Komiya (1959), Bhagwati and Chakravarty (1969) Tendulkar (1974), Rudra (1975 and 1985), Lal (1980), Prasad (1984) and Gupta (1989).

67. On the analytical plane, the First Plan model was regarded "largely an intellectual appendage with little impact on actual plan formulation"¹⁶. The Second Plan model was criticised for its technical inefficiency. For example, Komiya (1959) demonstrated that greater employment and/or output could have been obtained than suggested in the Mahalanobis' model by simply reallocating the given investment among the sectors. The Third Plan model has been criticised for being highly aggregative in structure, attempting to cover vastly different economic activities in a single macro-model.

68. The phase of aggregative models ended with the

14. For a recent econometric evidence of this phenomenon, See Jadhav and Singh (1990).

15. How firmly was any specific alternative accepted for inflation adjusted resources estimates for the Seventh Plan is not clear from the existing literature. Gupta (1989 pp. 17-19) has said that finally some recommendation was made to net out any increase in input costs consequent to a revision in administered prices in estimating the savings of the public sector enterprises. There is no reference to any such attempt in any of the other plan documents including the technical note on the Seventh Plan [Planning Commission (1981)].

16. Bhagwati and Chakravarty (1969, p.5).

introduction of large multi-sector models beginning the Fourth Plan. The Fourth Plan model and its subsequent refinements, however, have been criticised for having failed to take adequate cognizance of institutional factors, natural and human resource constraints and for leaving large chunks of final demand such as government consumption and exports for exogenous treatment¹⁷

69. Not surprisingly, the Draft Five Year plan (1978-83) which finally remained unimplemented admitted thus: "we must face the fact that the most important objectives of planning have not been achieved, the most cherished goals seem to be as distant today as when we set out on the road to planned development" (p. 2).

70. Perhaps, the most fundamental shortcoming of the plan modelling strategy in India has been the virtual neglect of the social optimality considerations. Even when the planning process came of age with the multi-sectoral planning models, in essence, the principal objective was to derive mutually consistent sectoral output targets and corresponding sectoral investment demands. It is pertinent to note that logical inter-industry consistency, which happens to be the principal virtue of this strategy, is perhaps the *minimal* virtue required of a planning framework; more vital being social optimality which is *not* guaranteed by the multi-sectoral consistency framework. In other words, the intersectoral consistency emphasised in the Indian plan models is a necessary condition for their usefulness, but is by no means a sufficient one.

71. No wonder, the disenchantment with planning has been growing leading often to scathing criticism exemplified by Prasad (1984) wherein he observes, "The planning process itself has become more or less a routine, stale and a prisoner of its own promises and wishful thinking, unable to cope with the changing realities. Unmindful of lessons from past experience, our planners continue to harp on the same old tunes despite their proven irrelevance and ineffectiveness" (p. 1).

72. Given the disillusionment over the adequacy of planning

17. See Rudra (1975), pp. 203-206 and Rudra (1985), pp. 761-764.

it is logical to ask: what are the policy options in the present state of affairs?

73. Since planning is essentially viewed as an alternative to the 'market mechanism' it may be tempting to advocate its dismissal in favour of the 'market allocation', especially in the light of the sweeping reforms underway in the USSR and the Soviet-type economies of the Eastern Europe.

74. In the euphoria over the perceived virtues of the private enterprise, however, often it is not fully appreciated that the market mechanism, by itself does *not* ensure a socially optimal outcome. Indeed, there are stringent pre-conditions which must be satisfied for the unimpeded working of the competitive forces to culminate into the attainment of the maximum social welfare. These conditions have been rigorously investigated by several influential thinkers such as Debreu (1959), Arrow and Hahn (1971), Malinvaud (1972) and others.

75. In a perfectly competitive economy, self-seeking consumers and producers (i.e., utility maximising consumers and profit maximising producers) face given prices on the basis of which they choose the optimal consumption and production bundles. These choices are consistent in the aggregate in the sense that total consumption is equal to total production plus the initial endowments in each period. only when it is assumed further that

- (i) the consumers possess independent convex preference sets¹⁸,
- (ii) the producers possess independent convex production sets¹⁹, and
- (iii) there is no uncertainty about future tastes and technology.

18. The assumption of independence implies that:

- (a) an individual consumer's preferences are independent of those of any other consumer, and,
- (b) there is no interaction between any two production processes.

19. The assumption of convexity implies that:

- (a) there are no increasing marginal rates of substitution in consumption, and,
- (b) there are no increasing returns to scale in production.

then alone the perfectly competitive economy leads to the so-called 'Pareto-optimal' allocation of goods and services.

76. It is important to note that a Pareto-optimal allocation of goods and services, by itself, does *not* guarantee maximum social welfare. It simply depicts a social state wherein it is not possible to make any person better off without making someone else worse off through a re-allocation. As Sen (1987) observes succinctly, "This is a very limited kind of success and in itself may or may not guarantee much. A state can be Pareto-optimal with some people in extreme misery and others rolling in luxury, so long as the miserable cannot be made better off without cutting into the luxury of the rich. Pareto-optimality can, like 'Caesar's spirit', 'come hot from hell' (pp 31-32).

77. Sen (1987) has also argued against equating Pareto optimality with 'economic efficiency' since the Pareto optimality captures efficiency aspects only of utility-based accounting "paying no attention to the distributional considerations regarding utility"(p. 33).

78. As a matter of fact, different Pareto-optimal competitive equilibria would correspond to *different* income distributions. Only if the prevalent distribution of income happens, rather fortuitously, to coincide with the socially desirable pattern that the corresponding Pareto-optimal competitive equilibrium would ensure the attainment of the maximum social welfare.

79. A closer look at the socio-economic milieu in developing countries clearly suggests inapplicability of the pre-conditions for achieving the Pareto optimality. Economies of scale are large relative to the market size and hence, monopoly or oligopolistic industrial structure is inevitable. The indivisibilities in production and the concomitant increasing returns to scale rule out the required convexity. Moreover, the widespread existence of positive and negative externalities rule out the independence conditions, besides uncertainties about future tastes and technology abound. As a result of the non-conformity to the required conditions, unleashing the forces of free enterprise would *not* automatically lead to a Pareto-optimal state. For the sake of argument, even if it is assumed that the required conditions are fulfilled and that a Pareto-

optimal state is attained, given the undesirability of the ensuing income distribution as reflected in acute income inequalities, maximisation of social welfare through the unfettered working of the market mechanism *cannot* be taken for granted.

80. This provides a *prima facie* case for deliberate governmental intervention in the form of planning, which is further reinforced by the fact that in developing countries like India, poverty, illiteracy and remoteness exclude a significant number of the poor from large segments of markets. As a result, even well-functioning markets cannot adequately redress the societal concerns imposed on the authorities in the form of national goals.

81. The question of policy options, therefore boils down essentially to the relative effectiveness of the planning process vis-à-vis the market mechanism in enhancement of the social welfare. The case in favour of planning is undeniable in the context of developing countries as long as the welfare gains through the governmental intervention more than compensate for the welfare losses arising out of the concomitant market distortions. It is in this context that a significant structural change in the plan models emphasising the social optimality considerations is undeniably called for.

Technical Appendix

82. The simple one-sector Harrod Domar model conceptualises an economy producing output (Y) using capital (K) subject to the simple production relationship:

$$(A. 1) \Delta Y = \beta (\Delta K)$$

Where β is a constant reflecting the productivity of capital.

Since β is a reciprocal of the familiar incremental capital-output ratio (ICOR), denoted by V^* , we have:

$$(A. 2) \Delta Y = \left(\frac{1}{V^*} \right) \Delta K$$

Now, savings (S) can be written as,

$$(A. 3) S = sY$$

Where s is the average propensity to save.

Also, since investment is the addition to the capital stock,

$$(A. 4) I = \Delta K$$

In a closed economy macro-economic equilibrium is attained with saving-investment equality. It follows from eq. (A. 3) and (A. 4) therefore that,

$$\Delta K = sY$$

which on substitution in eq. (A. 2) yields,

$$(A. 5) (Gn) = \left(\frac{\Delta Y}{Y} \right) = \left(\frac{s}{V^*} \right)$$

which is eq. (1) in the text.

If the gestation lag between investment and output is assumed to be two years, then the growth path is given by

$$Y_t = Y_{t-1} + \left(\frac{s}{V^*} \right) Y_{t-2}$$

(i) When $t = 1$

$$Y_1 = Y_0 + \left(\frac{s}{V^*} \right) Y_{-1}, \quad \text{which can be written as,}$$

$$\Delta Y_1 = \left(\frac{s}{V^*} \right) Y_{-1}$$

(ii) When $t = 2$

$$Y_2 = Y_1 + \left(\frac{s}{V^*} \right) Y_0, \quad \text{which can be written as,}$$

$$\Delta Y_2 = \left(\frac{s}{V^*} \right) Y_0$$

(iii) When $t = 3$

$$Y_3 = Y_2 + \left(\frac{s}{V^*} \right) Y_1,$$

$$= Y_2 + \left(\frac{s Y_1}{V^*} \right)$$

Now, $s Y_1 =$ savings in period 1, which can be written as :

$$= s Y_0 + s^* (\Delta Y_1) \text{ where } s^* = \text{marginal propensity to save.}$$

On substitution,

$$Y_3 = Y_2 + \left(\frac{s Y_0 + s^* \Delta Y_1}{V^*} \right)$$

$$\rightarrow \Delta Y_3 = \left(\frac{s}{V^*} \right) Y_0 + \left(\frac{s^*}{V^*} \right) \Delta Y_1$$

Similar results could be derived when $t = 4, 5$ as,

$$\Delta Y_4 = \left(\frac{s}{v^*} \right) Y_1 + \left(\frac{s^*}{v^*} \right) \Delta Y_2$$

$$\Delta Y_5 = \left(\frac{s}{v^*} \right) Y_2 + \left(\frac{s^*}{v^*} \right) \Delta Y_3$$

which are reported in the text as eq. 4(a) through 4(e).

Mahalanobis' Two-Sector Model

83. Consider an economy divided into two sectors producing investment goods (I) and consumption goods (C). Assuming a single period lag between investment and the resultant capacity expansion, the capacity outputs in the two sectors can be written as:

$$(A. 6) \bar{I}_t = \bar{I}_{t-1} + \lambda_1 \beta_1 I_{t-1}$$

$$(A. 7) \bar{C}_t = \bar{C}_{t-1} + \lambda_2 \beta_2 I_{t-1}$$

where λ_1, λ_2 are the respective shares in investment and β_1, β_2 are the respective incremental output-capital ratios (i.e., reciprocals of ICORs).

84. Assuming a closed economy with full capacity utilisation in the investment goods sector, the volume of capital formation (I) coincides with the capacity output of the investment goods sector ($\bar{I}$). Thus,

$$I_t = \bar{I}_t \\ = (1 + \lambda_1 \beta_1) \bar{I}_{t-1} \text{ which on solving yields}$$

$$(A. 8) I_t = I_0 (1 + \lambda_1 \beta_1)^t \text{ or equivalently .}$$

$$I_{t-1} = I_0 (1 + \lambda_1 \beta_1)^{t-1}$$

which on substitution in eq. (A. 7) yields

$$\bar{C}_t = \bar{C}_{t-1} + I_0 \lambda_2 \beta_2 (1 + \lambda_1 \beta_1)^{t-1}$$

which has the solution:

$$(A. 9) \bar{C}_t = \bar{C}_0 + I_0 \lambda_2 \beta_2 \left[\frac{(1 + \lambda_1 \beta_1)^t - 1}{\lambda_1 \beta_1} \right]$$

85. Assuming the entire economy at full capacity output (which given the assumption of $\bar{I} = I \rightarrow \bar{C} = C$), we have :

$$(A. 10) C_t = C_0 + I_0 \lambda_2 \beta_2 \left[\frac{(1 + \lambda_1 \beta_1)^t - 1}{\lambda_1 \beta_1} \right]$$

Adding eq. (A. 8) and (A. 10), aggregate output in the economy, thus, equals

$$\begin{aligned} (A. 11) Y_t &= [I_0(1 + \lambda_1 \beta_1)^t] + \left\{ C_0 + I_0 \lambda_2 \beta_2 \left[\frac{(1 + \lambda_1 \beta_1)^t - 1}{\lambda_1 \beta_1} \right] \right\} \\ &= \left[I_0 + I_0 \left\{ (1 + \lambda_1 \beta_1)^t - 1 \right\} \right] + \left\{ C_0 + I_0 \lambda_2 \beta_2 \left[\frac{(1 + \lambda_1 \beta_1)^t - 1}{\lambda_1 \beta_1} \right] \right\} \\ &= (C_0 + I_0) + I_0 \left[(1 + \lambda_1 \beta_1)^t - 1 \right] \left\{ 1 + \left(\frac{\lambda_2 \beta_2}{\lambda_1 \beta_1} \right) \right\} \\ &= Y_0 + I_0 \left[(1 + \lambda_1 \beta_1)^t - 1 \right] \left[\frac{\lambda_1 \beta_1 + \lambda_2 \beta_2}{\lambda_1 \beta_1} \right] \end{aligned}$$

If the base year investment - output ratio is denoted by α_0 i.e., $I_0 = \alpha_0 Y_0$ then,

$$(A. 12) Y_t = Y_0 \left\{ 1 + \alpha_0 \left(\frac{\lambda_1 \beta_1 + \lambda_2 \beta_2}{\lambda_1 \beta_1} \right) \left[(1 + \lambda_1 \beta_1)^t - 1 \right] \right\}$$

which is the growth equation, i. e., eq. (5) given in the text.

References

1. Agarwala, R. (1983): "Planning in Developing Countries: Lessons of Experience", *World Bank Staff Working Papers* No. 576.
2. Agarwala, R (1985): "Planning in Developing Countries: Lessons of Experience", *Finance and Development*.
3. Arrow, K.J. and Hahn, F.H. (1971): *General Competitive Analysis* (San Francisco: Holden Day).
4. Bhagwati, J.N. and Chakravarty S. (1969): "Contributions to Indian Economic Analysis- A Survey," *American Economic Review*, Supplement, Vol. 59, No. 4, September.
5. Bhagwati, J. N. and Desai, P. (1970): *India - Planning for Industrialisation* OECD (London: Oxford University press).
6. Chakravarty, Sukhamoy (1987) *Development Planning: The Indian Experience* (Oxford: Clarendon press).

7. Dahiya, S. Bhagwan (1982) *Development Planning Models* (Vols: one and two) (New Delhi: Inter India Publications).
8. Debreu, G. (1959) : *The Theory of Value* (Yale: Cowles Foundation).
9. Dervis, K., deMello J., and Robinson S. (1982) : *Planning Models and Development Policy* (Baltimore: Johns Hopkins University Press).
10. Eckaus, R.S. (1967) : "Planning in India", in M.F. Millikan (Ed.): *National Economic Planning* (New York : National Bureau of Economic Research).
11. Eckaus, R.S. and Parikh, K. (1967): *Planning for Growth* (Cambridge : MIT press).
12. Gillis, M., Perkins, D.H., Roemer, M., and Snodgrass D.R. (1983) *Economics of Development* (New York : Norton and Company).
13. Government of India (1973): *A Technical Note on the Approval to the Fifth Plan of India, 1974-79*, (Planning Commission, New Delhi).
14. Government of India (1981): *A Technical Note on the Sixth Plan of India, 1980-85* (Planning Commission, New Delhi).
15. Gupta, S. P. (1971) : *Planning Models in India* (New Delhi : Vikas).
16. Gupta, S. P. (1989) : *Planning and Development in India: A Critique* (New Delhi : Allied Pabishes).
17. Hicks, U. (1979) : "Thirty Years of Planning : The Indian Experience," *Malayan Economic Review*, October.
18. Jadhav, N. and Singh, Balwant (1990), "Fiscal-Monetary Dynamic Nexus in India: An Econometric Model," *Economic and Political Weekly*, January 20.
19. Komiya, R. (1959) : "A Note on prof. Mahalanobis' Model of Indian Economic Planning," *Review of Economics and Statistics* Vol. 41, No. 1, February.
20. Lal, D. (1980) : "Prices for Planning : Toward the Reform of Indian Planning".
21. Mahalanobis, P. C. (1953) : "Some Observations on the Process of Growth of National Income," *Sankhya*, September.
22. Mahalanobis, P. C. (1955) : "The Approach of Operational Research to Planning in India", *Sankhya*, December.
23. Malinvaud, E. (1972) : *Lectures on Microeconomic Theory* (Amsterdam : North Holland).
24. Manne, A. S. (1974) : "Multi-sector Models for Development Planning: A Survey", *Journal of Development Economics* Vol. 1, No. 1, June.
25. Manne, A. S., Rudra A. and Others (1965): "A Consistency Model for India's Fourth Plan", *Sankhya*, Vol. 27, Series B.
26. Planning Commission (1978): *Draft Five Year Plan: 1978-83* (April).
27. Prasad, K. (1984) : "Planning in India : Some Basic Issues Relating to Operational & Strategic Aspects," *The Indian Economic Journal*, Vol. 31, April-June.
28. Rudra, Ashok (1975) : *Indian Plan Models* (Bombay : Allied).

314 RESERVE BANK OF INDIA OCCASIONAL PAPERS

29. Rudra, Ashok (1985) : Planning in India: An Evaluation in terms of its Models," *Economics and Political Weekly*, Vol xx, No. 17, April 27.
30. Rosenstein-Rodan (1964) : *Capital Formation and Economic Development* (London : George Allen & Unwin Ltd.)
31. Sandee, J. A. (1969) : *A Demonstration Planning Model for India*, "(Asia Publishing Company).
32. Sen, A. K. (1987) : *"On Ethics and Economics"* (Oxford: Basil Blackwell).
33. Tendulkar, S. D. (1976) : "Planning for Growth Redistribution and Self Reliance in the Fifth Five Year Plan," *Economic and Political Weekly*, Vol. 11, No. 3, January.

Indian Plan Models – A Review

Amal Kanti Ray*

INDIA'S plan formulations are, by and large, followed by plan model-building exercises. In order to have an understanding of India's plan formulations, it is imperative to revisit the plan models. A large literature is available on this subject and we bring out here the essential features of the Indian plan models and their passage of development.

Mahalanobis' Models and India's First and Second Five-Year Plans

2. Model-building exercise towards India's plan formulation has started with the very First Five-Year Plan. Models from then on are becoming larger in size with increasing scope and coverage. For the First Five-Year Plan, the Planning Commission's estimates of saving ratio (5 to 6 per cent) and incremental capital-output ratio (about 3.1) were obtained by using the Mahalanobis (1953) single-sector model. This led to a projected growth rate of 2 to 2.25 per cent per annum. That the economy achieved much more than what the model projected is a different story. On completion of the First Plan, it was observed that the capital - output ratio worked out to 1.8 and the overall growth to 18.4 per cent during the five-year period.

3. The mathematical form of the growth rate in the Mahalanobis single-sector model, adapted from the Harrod-Domar model of growth is : $Y_t = Y_0 (1 + \alpha\beta)^t$

* Shri Ray is Assistant Adviser in the Department of Statistical Analysis & Computer Services.

with Y_t as the national income in year t and α, β as the parameters of rate of investment and incremental output - capital ratio, respectively. Alternatively, the equation of growth may be written as :

$$Y_t = Y_0 (1 + \alpha\beta - \rho)^t$$

with y_t as the per capita national income in year t , and ρ the rate of population growth. The above model considered the entire economy as a single unit and therefore could not recognise the interplay of forces in different sectors of the economy. Indeed, the spectacular achievements of the First Plan had little correlation with this background model. Higher growth rate and favourable capital-output ratio during the First Plan period were attributed partly to higher utilisation of capacity in the industrial sector and good monsoons contributing towards higher agricultural output. However, the importance of this model lay in recognising capital-output ratio and rate of investment as the two major parameters of growth and this gave a direction to the model-building exercise for the subsequent plans.

4. The above equation of growth was given a wider scope in the Mahalanobis (1955) two-sector model by splitting the economy into two sectors, namely, those of investment goods and consumer goods, which resulted in the following equation of growth :

$$Y_t = Y_0 \left[1 + \alpha_0 \frac{\lambda_c \beta_c + \lambda_i \beta_i}{\lambda_i \beta_i} \{ (1 + \lambda_i \beta_i)^t - 1 \} \right]$$

where, λ_i and λ_c are the relative shares of investment in the two sectors ($\lambda_i + \lambda_c = 1$);

β_i and β_c are the respective incremental output - capital ratios; and α_0 is the rate of investment in the base year.

This equation of growth projects a higher rate of growth for smaller λ_i in the initial years, and in the long-run, higher growth rate is associated with higher values of λ_i . The logic of increasing investment in investment goods industries for the Second Five-Year Plan was a natural corollary of this principle and as such an ambitious decision was taken to raise the λ_i ratio from 10 percent during

pre-plan period to 33 percent by the end of the Second Plan. This worked under a plausible assumption that the incremental output-capital ratio was smaller in the investment goods sector than that in the consumer goods sector. In other words, this model could distinguish one sector from the other and their relative effects on the overall growth. By manipulating various parameters of the model, a desired growth could be achieved or at least conceived of. However, this model being a mathematical extension of the single-sector model, had the inherent deficiency of the latter. As in the case of the single-sector model, this model too oversimplified the economy by treating it as a closed one. It also ignored gestation lags between investment and production and the whole treatment was independent of price effects on the economy. These apart, there were other oversimplifications. The economy was split into two mutually exclusive and exhaustive sectors and therefore no interactions, say, in terms of transfer of capital from one sector to the other, had been considered in the model. Government expenditure did not have a separate treatment as distinct from investment and consumption expenditures. These points were raised by critics in the past.

5. While most Indian critics concentrated on the scope, sectoral decomposition and the underlying assumptions of the two-sector model, Tsuru (1957) pointed out some sloppy ground for β_i . It may be noted that Mahalanobis' single-sector and two-sector models faced criticisms mainly because expectations of planners as well as critics were too high, perhaps treating these models as a package of development plans and ignoring the fact that a growth model adapted for planning would not necessarily meet all the requirements of planning. For instance, only from a single equation of growth, a unique determination of sectoral parameters may not be possible. Further, the choice of sectors and distribution of parameters over the sectors do introduce a degree of subjectivity. Indeed most of the criticisms of Mahalanobis' models are essentially pointing towards these limitations, [see, Mitra (1957), Chakravarty (1957), Mathur (1957)].

6. Mahalanobis made further decomposition of consumption goods sector with three sub-sectors, namely, (i) factory production of consumer goods (C1), (ii) production of consumer goods

including agricultural products in small and household industries (C2) and (iii) services, such as health, education, etc. (C3), and this led to Mahalanobis' four - sector model. The essential feature of the four-sector model was that the aggregate parameters of the capital goods sector and consumption goods sector were derived from the two-sector model, followed by the problem of allocation of aggregates of the consumption goods sector into its three sub-sectors. This model too had all the limitations of the two-sector model arising out of the underlying assumptions of the latter, except that this model presented a more refined treatment of the consumption goods sector by way of its decomposition. This was the first of its kind in the Indian planning to raise the problem of sectoral allocation. As in the case of two-sector model, this model too assumed that all the four sectors had independent output-capital ratios and labour-output ratios, say, $\beta_k, \beta_1, \beta_2, \beta_3$, and Q_k, Q_1, Q_2, Q_3 and investment allocation parameters (share of investment in a sector) $\lambda_k, \lambda_1, \lambda_2, \lambda_3$ adding up to unity. The mathematical problem related to one of the sectoral allocations of investment (I) consistent with targeted increase in income (Y) and employment (N). This led to a system of 3 equations as follows :-

$$\begin{aligned} Y_k + Y_1 + Y_2 + Y_3 &= Y \\ N_k + N_1 + N_2 + N_3 &= N \\ I_k + I_1 + I_2 + I_3 &= I \end{aligned}$$

Or,

$$\begin{aligned} \lambda_k \beta_k I + \lambda_1 \beta_1 I + \lambda_2 \beta_2 I + \lambda_3 \beta_3 I &= Y \\ \lambda_k I/Q_k + \lambda_1 I/Q_1 + \lambda_2 I/Q_2 + \lambda_3 I/Q_3 &= N \\ \lambda_k I + \lambda_1 I + \lambda_2 I + \lambda_3 I &= I \end{aligned}$$

The solution to λ_k was derived from the two-sector model. It was treated as one-third and was supposed to satisfy some asymptotic properties. The values assigned to others were :

$$\beta_k = .20$$

$$\beta_1 = .35$$

$$\beta_2 = 1.25$$

$$\beta_3 = 0.45$$

$$QK = \text{Rs. } 20,000$$

$$Q1 = \text{Rs. } 8,750$$

$$Q2 = \text{Rs. } 2,500$$

$$Q3 = \text{Rs. } 3,750$$

The manner in which these solutions to the parameters were so obtained, is not clear. Proceeding a little further, on the assumptions of 9 per cent average rate of investment, Rs. 56,100 million as the target for investment in the five-year plan period, 5 per cent targeted rate of growth of national income and creation of new jobs to the tune of 11 million during the plan and base year national income at Rs. 1,08,000 million, the model resulted in the following projections of allocation of investment and distribution of employment among various sectors, for the terminal years of the Second Five-Year Plan.

Table 1 : Projected values of Investment and Employment

Sector	Investment (Rs. million)	Incremental income (Rs. million)	Additional employ- ment generation (million)
K	18,500 (33.0)	3,700 (12.8)	0.9 (8.2)
C1	9,800 (17.5)	3,400 (11.7)	1.1 (10.0)
C2	11,800 (21.0)	14,700 (50.7)	4.7 (42.7)
C3	16,000 (28.5)	7,200 (24.8)	4.3 (39.1)
Total	56,100 (100.0)	29,000 (100.0)	11.0 (100.0)

N.B. Figures in brackets are the sectoral percentages to total.

7. While the procedure of obtaining solution to the parameters of Mahalanobis' model is not quite clear, it is apparent that in Mahalanobis four-sector model, there were ingredients of an optimisation problem. It was observed subsequently that the above solution was sub-optimal (see, Komiya 1959). A plan model

provides a set of directions for economic development. However, a model's credibility depends much upon the achievements of a plan with reference to the targets set through the model. In this regard, when the above solutions are compared with the actuals of the Second Five-Year Plan, it brings a scene of dismay. For example, in the sector K, the suggested allocation of Rs. 18,500 million was quite off the mark from the actual allocation of Rs. 24,400 million. However, the suggested investment in the sector C1 was very close to its actual allocation, with the figures being Rs. 9,800 million and Rs. 10,000 million, respectively. The relative figures of projected allocations and their actuals for the other two sectors were Rs. 11,800 million and Rs. 15,200 million for sector C3 and Rs. 16,000 million and Rs. 17,900 million for sector C4. Thus, investment allocations were higher than the projected (suggested) ones in all the four sectors. While the difference was marginal in the case of sector C2, the allocation in the other three sectors were widely different from the suggested ones. The sectoral income generation showed a different picture. Sectoral incomes were always smaller than the anticipated figures and the total realized incremental income was Rs. 22,730 million as against Rs. 29,000 million anticipated through the four-sector model. While not dilating beyond this on the Mahalanobis' model, we may conclude with a note that the last two models constricted the forces of growth to the problem of sectoral allocations. Various reasons have been attributed for the not-so-good performance of these two models, in terms of recognition of sectors, on the one hand and doubtful rigours of mathematical solution, on the other. Notwithstanding these limitations, Mahalanobis' models stand out as the ones introducing the plan model concept to the Indian economic thought.

Sandee's Model for the Third Plan

8. We come across one important plan model developed by Jan Sandee (1960). Sandee's model was quite elaborate in sectoral decomposition of the economy. As many as thirteen sectors were chosen with regard to such considerations like the size of a sector, homogeneity within a sector, and the availability of data. The sectors selected were :

- | | | |
|------------------------------------|-------------------------|-----------------------------------|
| 1. agriculture; | 5. coal mining; | 9. other equipment manufacturing; |
| 2. large-scale food manufacturing; | 6. fertiliser industry; | 10. other large-scale industries; |
| 3. steel industry; | 7. transport; | 11. construction; |
| 4. electric power industry; | 8. heavy engineering; | 12. small-scale industries; and |
| | | 13. housing. |

The time horizon (1960–70) of the model was aimed at covering the periods of the Third and Fourth Five-Year Plans. It was essentially a linear programming model constructed by using an input-output matrix of the Indian economy for 1953–54. Change in the level of aggregate consumption between the terminal year and the initial year was chosen as the objective function subject to (i) inter-sectoral consistency arising from the input-output matrix, and (ii) feasibility condition of the balance of payments. Despite its historical importance that it was the first Indian model based on optimisation principle satisfying the basic requirements of a plan model, the underlying assumptions like zero gestation lag, constant capital-output ratios and constant incremental growth of investment in all the sectors of the economy and a weak data base had rendered the plan model less effective. Also, Sandee's model presented the aggregate solution (projection) to the variables for the terminal year and ignored the (projected) times paths of output, consumption and investment. The background model of the Third Five-Year Plan was never spelt out clearly. However, it is apparent that Mahalanobis' models as well as Sandee's optimisation model were used for drawing up India's Third Five-Year Plan.

Manne–Rudra Model for the Fourth Plan

9. Manne–Rudra's (1965) model, like Sandee's model, is not an official model of planning. It is perhaps useful to discuss the broad outline of the model as it reflected on the prospect of the Fourth Plan and implicitly gave foundation to the model of the Fifth Plan. With it also the plan model making achieved a major advance in that the multi-sector models came to be firmly established. Covering the period 1960–1970, this model was developed for making projections of the 30-sector economy after ensuring the

sectoral consistency with regard to sectoral output, import and investments for the terminal year. The sectors considered in the model are :

1. construction – industrial and urban;	11. plantations;	21. forestry products;
2. construction – rural;	12. leather and leather products;	22. motor transport;
3. electrical equipment;	13. animal husbandry and fishery;	23. petroleum products;
4. transport equipment;	14. food industries;	24. crude oil;
5. non-electrical equipment;	15. food-grains;	25. rubber products;
6. iron and steel;	16. cotton and other textiles;	26. rubber;
7. iron ore;	17. jute textiles;	27. chemicals;
8. cement;	18. other agri-culture;	28. railways;
9. other metals;	19. chemical fertilisers;	29. electricity; and
10. other minerals;	20. glass, wooden and non-metallic mineral products;	30. coal.

These sectors were chosen not only with reference to availability of statistical data, but the choice and ordering of the sectors were so made that the transaction matrix was near triangular, giving the insight that "everything does not depend on everything else. At least within the Indian economy, it appears that there is an almost block-angular structure of current account transactions. The bulk of such transactions takes place within two virtually independent complexes: one based upon agriculture and other upon mining, metals, machinery and forestry products. A third and smaller complex produces items that may be described as 'universal intermediates' (i.e. fuel, power, transport and chemicals). This was

an interesting exercise, but at the same time it may be argued that a plan model does not rest on the block-angular property of the transaction matrix. Manne-Rudra model may be briefly stated as a Leontief inter-industry model deriving the gross production vector on the alternative assumptions of growth of aggregate consumption, exponential growth of investment and of import coefficients. The endogenous treatment of capital formation was a novelty in the model. Exports were determined exogenously. The model generated the terminal year projections but did not give a growth path for the time horizon of the model. Later, a consistency model was developed by Bergsman and Manne (1965) covering the period 1966-67 to 1975-76 which, unlike Manne-Rudra's terminal year consistency model, brought out some implications of *alternative paths of economic growth of India*.

Model for the Fifth Plan

10. The model for the Fifth Five-Year Plan was indeed the first official plan model [Planning Commission (1973)]. This was evolved to meet the objective of redistribution, with growth. The model integrates three sub-models, namely, (i) macro-economic model, largely on the lines of Harrod-Domar model; (ii) input-output model, that is a Leontief static inter-industry model, ensuring sectoral consistency of target outputs; and (iii) consumption model, providing sectoral distribution of private consumption expenditure (after taking into consideration a minimum level of living represented by per capita consumption expenditure of Rs. 20 per month at 1960-61 prices.)

11. The input-output table for the base year 1973-74 was constructed by updating the 66 - sector input-output table of 1965-66 "using available information on output levels, exports, investments, imports and public consumption consistent with national income data of 1970-71. The updated table of 1970-71 was then recast to fit in with the various sectoral output figures and final demand for the base year 1973-74 as well as with national income estimates". These apparently simple words of the Planning Commission (1973), explaining the construction of I-O table for 1973-74 have serious implications. It is axiomatic that a I-O model or activity analysis is sensitive to the coefficients of I-O matrix and an

imprecise estimation of I-O matrix leads to biased estimation of output/final demand vector. While we do not have any idea about the factors taken into consideration for the 1970-71 I-O matrix, it appears from the Planning Commission's explanation that the 1973-74 I-O matrix satisfies only the necessary condition of consistency between the vectors of inputs and outputs/final demand. But then, there could be many such matrices meeting this necessary condition and all of them cannot be construed as I-O matrix.

12. While aggregate investment is worked out by using the macroeconomic model, on the assumption of incremental capital-output ratio of 3.34 and target growth rate of GDP at 5.5 per cent per annum, the sectoral distribution of gross output was determined by the input-output model. Various alternative target growth rates were examined in the Technical Note and the preferred ones were 5.5 percent growth rate of real GDP at factor cost and 7.0 per cent growth rate of commodity exports. Sectoral imports (used as inputs) were estimated endogenously by the model. Aggregate public consumption expenditure was treated as exogenous and was projected for the terminal year on the assumption of average growth rate of 7 per cent over the base year. The sectoral public consumption expenditure was estimated by the sectoral trend rates or overall trend rate depending upon the significance or otherwise of trend rates. One is not sure about the statistical validity of such type of estimation procedure which, in general, cause a difference between the total of estimated sectoral public consumption and estimated aggregate public consumption. Further, substituting a non-significant sectoral trend rate of public consumption expenditure by overall trend of public consumption expenditure calls for a statistical explanation.

13. Sectoral private consumption was estimated separately for the first time for rural and urban areas, by using the consumption model. Again, the model attempted for the first time in postulating the objective with regard to the removal of poverty which was quantified as ensuring the bottom 30 per cent of the population with a minimum consumption expenditure of Rs. 20 (at 1960-61 prices) per capita per month expenditure ("This amounts to a monthly per capita consumption of Rs. 36.64 in the rural area and

Rs. 39.64 in the urban area at 1971-72 prices"). Tendulkar (1974 a, b, c) was very critical about the model and doubted its economic feasibility in practice. He observed that the basic objective of removal of poverty was a 'non-statement' and the 'policy frame exhibits a penchant for abstract logic without being operational'. Rudra (1975) also examined theoretically the Fifth Plan objective of removal of poverty and concluded: "it is accepted somewhat fatalistically that nothing can be done about the poorest members of the society; they must be left out". The difficulty is that the model did not outline a strategy for income generation for the poorest sector of the population by planned investment to match with the detailed targets of consumption. Looking back into the Fifth Plan model, it is observed that the model elaborated on the methodology of terminal year sectoral projections under certain assumptions or alternative conditions of the aggregates. It appears as if the I-O matrix was treated as a black-box, assigned with the role of generating output/final demand vector from an input vector. The model lacked in specifying optimal properties, and associated paths of the economy from the initial year to the terminal year, which are generally expected of planning and so also of its background model.

Sixth Plan Model

14. It is indicated in the Sixth Plan Technical Note [Planning Commission (1981)] that the model used for the Sixth Plan formulation was an extension of the Fifth Plan model. However, there were technical differences in these two models. Firstly, the Sixth Plan model did not consider the Fifth Plan macro-model for the determination of aggregate private consumption and saving. Secondly, in the Sixth Plan model, sectoral allocation of investment in 14 sectors was determined by postulating investment functions. Thirdly, unlike stipulating the preferred rate of growth of national income in the Fifth Plan, this Plan model estimated the growth rate from the structural equations. The basic structure of the Sixth Plan model comprised a core model and a system of sub-models. The core model consisted of the following blocks:

- (i) input-output block.

- (ii) investment block, giving the procedure of estimation of sectoral incremental capital-output ratios for the determination of sectoral investment allocation required for generating a desired expansion of output,
- (iii) private consumption block, developed for estimating effective consumption demands separately for rural and urban population below and above the poverty line and for commodities and services as considered in the 89-sector input-output table,
- (iv) financial resources block, estimating the domestic saving, both in the public and the private sectors,
- (v) import block, estimating imports on the basis of an import coefficient matrix of order 89×89 , indicating the amount of import used as current input in production,
- (vi) employment block, and
- (vii) perspective planning block, providing estimates of total production capabilities available for the 15-year perspective ending 1994-95.

The following sub-models were primarily designed to process the inputs entering as exogenous variables for the core model :

- (i) agriculture, providing estimates of agricultural output under alternative assumptions of weather conditions,
- (ii) export, giving sector-wise estimates of value of exports over time,
- (iii) demography, working out demographic relations, population, its rural-urban break-up and labour force,
- (iv) autonomous investment (in respect of certain time-bound programmes having important welfare dimensions) and public consumption, and
- (v) long-term objectives with regard to reduction of poverty and achieving a self-reliant society; reducing the number of people below the poverty line to a minimum and establishing a limit on the surrogate indicator for self-reliance, namely, the ratio of foreign saving to export earnings and import requirements, both by the year 1994-95.

15. In the final analysis, the Sixth Plan achieved the task of setting out the intertemporal projections for the time horizon of the

Sixth Plan period, namely 1980-85, using the core model. However, our observations regarding the Fifth Plan model were equally applicable for this model also. This model did not incorporate any optimality criterion, that is very desirable from a plan model and as such it cannot be said of the solutions if they satisfied any optimal property.

Model of the Seventh Plan

16. The structure of the Seventh Plan model [Government of India (1986)] was "an extension of the one used during the Sixth Plan formulation". In this respect the Fifth Plan model was the parent model for both the Sixth Plan and Seventh Plan models. The Seventh Plan model comprised three core models, namely,

- (i) a macro-economic model, defining identities of national income and expenditure,
 - (ii) an input-output model, based on an updated 115-Sector I-O table of 1973-74; and,
 - (iii) an investment model;
- and eight sub-models, namely,
- | | |
|-------------------|-----------------------------------|
| (i) agriculture, | (v) investment, |
| (ii) poverty, | (vi) export-import, |
| (iii) industry, | (vii) financial resources, |
| (iv) consumption, | (viii) demography and employment. |

Besides, the Working Group constituted in connection with the Seventh Plan presented an econometric estimation of ICORs of different sectors that led to the projection of ICORs. From a comparison of the Sixth Plan model with the Seventh Plan model, it appears that the outline of these two models are broadly the same except that certain core model in the Sixth Plan found place in the sub-models of the Seventh Plan. For example, the core models relating to the financial resources, private investment, import, and employment of the Sixth Plan model were shifted to sub-models of the Seventh Plan model. While the sub-models in the Sixth Plan provided estimates for the core models exogenously, the scope of the Seventh Plan sub-model structure is broader and the "sub-models are constructed to go into details of certain phenomena that

are complementary to the core input-output model (as well as) to pay the attention which is technically necessary but which is not at present in the main input-output model". However, while the objectives and outlines of the models of the Sixth Plan and Seventh Plan were similar, the core models in the Seventh Plan, unlike their counterparts in the Sixth Plan, were not clearly spelt out in the Seventh Plan Technical Note.

Conclusion

17. Indian plan models have been briefly reviewed in the earlier paragraphs. One may refer to Gupta (1971), Rudra (1985) and Chakravarty (1987) for further details of the Indian planning and associated plan models. Apart from the models covered in this article, there is a good number of plan models which directly or indirectly influenced the planning process in India. For example, Chakravarty and Lefebvre (1965), and Eckaus and Parikh (1968) outlined the structure of intertemporal optimising plan model in the context of the Indian economy. Despite various limitations, the Indian plan models have given insight and direction to the development process of the economy. Beginning with the single-sector model for the First Plan, we have come to a stage of 115-sector model in the Seventh Plan with more technical details and complexities. There is still enough scope for improving model-building exercises applied to Indian planning and this article gives the following suggestions.

- (i) There is a need to have sub-models for the Indian States.
- (ii) Alternative to fixed coefficient input-output model, a plan model may be set out in the framework of dynamic programming in order to capture structural changes in the economy.
- (iii) A periodic, say, annual review is necessary to examine the performance of the plan against the backdrop of the model. For this, a suitable measure of control may be devised towards minimising the differences, if any, between the observed actuals and the set out targets for the period under review. While the feedback control would attempt in correcting the deviation caused by known and measurable sources of

disturbances, in the feed-forward control procedure, the deviations of the actuals from the targets may be used as the basis of adjustment without any consideration for the sources of disturbances. In fact, both the procedures would be useful to make amends for any departure of economy from the targets set out in the growth path.

- (iv) It may not be always possible to obtain the data of actuals periodically. But then, there are variables which are related to the target variables with certain lags. In the absence of actual data, such related variables or lead indicators would be useful in short-term reviews of plan performance and as such there is a need to identify such lead indicators.
- (v) The models, in general, are kept free from the price effect. This may be corrected by recognising the role of price explicitly in the model.

References

1. Bergsman, J. and A.S. Manne (1965): "An Almost Consistent Inter-temporal Model for India's IV and V Plans". *Economic Weekly*, 17, p. 1744.
2. Chakravarty, S. (1957): "The Mahalanobis Model of Development Planning", *Arthaniti*, 1, p. 61.
3. Chakravarty, S. (1987): *Development Planning: The Indian Experience*, Clarendon Press, Oxford.
4. Chakravarty, S. and L. Lefebvre (1965): "An optimizing Planning Model" *Economic Weekly* Vol. 17, Nos. 5, 6 and 7, pp 237-52.
5. Eckaus, R.S. and K.S. Parikh (1968): *Planning for Growth Multisectoral, Inter-temporal Models Applied for India*, MIT Press.
6. Gupta, S.P. (1971): *Planning Models in India with Projections to 1975*, Praeger Publishers.
7. Komiya, R (1959): "A Note on Prof. Mahalanobis' Model of Indian Economic Planning", *The Review of Economics and Statistics*, Vol. 41, No. 1.
8. Mahalanobis, P.C. (1953): "Some Observations on the Process of Growth of National Income", *Sankhya*, 12, pp 307-12.
9. Mahalanobis, P.C. (1955): "The Approach of Operational Research to Planning in India", *Sankhya*, 16, pp 3-130.

330 RESERVE BANK OF INDIA OCCASIONAL PAPERS

10. Manne, A.S. and A. Rudra (1965): "A Consistency Model for India's Fourth Plan", *Sankhya*, Series B, Vol. 27, pp 57-144.
11. Mathur, P.N. (1957): "A Note on Planning in India", *The Indian Economic Journal*, 4, pp. 378-410.
12. Mitra, A. (1957): "A Note on the Mahalanobis Model", *Economic Weekly*, March 16, p. 373.
13. Planning Commission, Government of India (1951, 1956, 1961, 1969, 1974 and 1980) - *First, Second, Third, Fourth, Fifth and Sixth, Five-Year Plans*, respectively, New Delhi.
14. Planning Commission, Government of India (1973): *A Technical Note on the Approach to the Fifth Plan of India 1974-79*, New Delhi.
15. Planning Commission, Government of India (1981): *A Technical Note on the Sixth Plan of India 1980-85*, New Delhi.
16. Planning Commission, Government of India (1986): *A Technical Note on the Seventh Plan of India 1985-90*, New Delhi.
17. Rudra, A. (1975): *Indian Plan Models*, Allied Publishers Pvt. Ltd.
18. Rudra, A. (1985): Planning in India - An Evaluation in Terms of its Models. *Economic and Political Weekly*, Vol. 20, No. 17 pp. 758-764.
19. Sandee, J. (1960): *A Demonstration Planning Model for India*, Asia Publishing House.
20. Tendulkar, S.D. (1974 a): "Planning Models for Growth and Redistribution in India - An Assessment", *Sankhya*, Series C, 36, pp. 39-66.
21. Tendulkar, S.D. (1974 b): "Planning for Growth, Redistribution on Self-reliance in the Fifth Five-Year Plan", *Economic and Political Weekly*, 9, pp. 27-40 and 63-80.
22. Tendulkar S.D. (1974 c): "Draft Fifth Plan and Removal of Poverty", *Economic and Political Weekly* 9, pp 283-289.
23. Tsuru, Shigeto (1957): "Some Theoretical Doubts on India's Plan Frame; *The Economic Weekly*, Annual Number, January.

Planning and Employment – A Note on Changing Macro-Economic Perspectives of Indian Plans

A. K. Nag*

I. Introduction

AN economy-wide planning exercise entails an enormous amount of information collection and processing. During the decade of the 1930s, a serious debate arose among economists about the practical feasibility of arriving at any rational allocation of resources by way of centralised planning. Although the logical possibility to carry out such an exercise was admitted, it was felt well-nigh impossible to arrive at a practical solution to the problem which was formulated purely in terms of a system of mathematical equations. Economists like Oscar Lange (1973), on the other hand, demonstrated the way this problem could be solved in practice in a centrally-planned economy.

2. The gradual dismantling of the traditional planning mechanism and introduction of market principles in most of the present-day centrally-planned economies, after more than half a century of economy-wide planning exercise, have seriously undermined economists' confidence in the allocative efficiency of such a planning process. This, however, does not allow us to jump to any conclusion about the 40-year old experience of planning in India. Nevertheless, the present crisis in centrally-planned economies does underscore one major point i.e., planning per se even when implemented with vigour and rigour cannot be looked upon as panacea for all the problems of any economy.

* Dr. A.K. Nag is Assistant Adviser in the Department of Statistical Analysis and Computer Services.

3. The introduction of this caveat at the outset is felt necessary because it forecloses one easy and convenient conclusion available to any student of the Indian planning process. That is, planning in India cannot be said to have failed because it was never sincerely and seriously implemented. A statement that Indian plans are theoretically sound but bad in implementation is somewhat vacuous since in that case "plans cannot be even good on paper". (Chakravarty, 1987).

Nature of Indian Planning

4. Indian planning like its economy is of a mixed nature. Unlike the kind of planning undertaken in a centrally-planned economy, there is no scope for making detailed physical plan for all sectors as the predominant part of the Indian economy continues to be in the private sector, the production of which is beyond the direct control of the planners. On the other hand, the Indian plans cannot be put on a par with the kind of indicative planning which prevailed in France. This is so because the extent of state intervention in the economy is much broader and deeper. In fact, by setting physical targets for a host of industries, the Plan documents provide a framework for exercising physical controls in respect of these industries. The resource-allocation motivation behind these physical controls was clearly stated in the First Plan itself: "To some extent overall controls through fiscal, monetary and commercial policy can influence the allocation of resources, but physical controls are also necessary. The targets of production defined in a Plan cannot be achieved unless a structure of relative prices favouring the desired allocations of resource is maintained." (Planning Commission, 1951, p.44). Indian Plan documents, therefore, should not be understood as merely a medium-term budgeting exercise of the public sector. Much more than that, the Plan documents provide a macro-economic perspective to the political authority for devising an active interventionist policy towards the economy as a whole.

Basic Objective of Indian Plans

5. The basic objective of all the hitherto formulated plans in India has remained almost identical as the basic problem of mass

poverty and unemployment has remained unresolved to a large extent. Simply put, this basic objective has been "to provide the masses of the Indian people the opportunity to lead a good life". (Planning commission 1961, p.1). This does not mean that the achievements of Indian economy during the last 40 years of planning has been negligible. A mass of statistical facts and figures can be easily marshalled to demolish any suggestion to this effect. Nevertheless, the expectation of planners has not been fulfilled. Although the broad objective of all the Five Year Plans in India has remained invariant, substantive strategies formulated in various Plan documents clearly reveal some major shifts in the macro-economic perspectives underlying the strategies during recent times. In the course of the following discussion, we shall argue that although there have always been two broad strategies of economic development contending for occupying the centre stage of the Indian polity, namely, investment or growth oriented strategy and employment-oriented strategy the shift in macro-economic perspectives, which has gathered momentum during the 1980s, has occurred within the framework of the first broad strategy. Our discussion will not, however, touch upon a possible third alternative, i.e., complete restructuring of income distribution and property relationships as a plausible way to achieve our planned objectives.

6. Though our thesis can be elucidated with reference to various facets of our economic policies, this is a task beyond the scope of this paper; we rather wish to confine our attention in this paper mainly to the problem of unemployment and strategies proposed in various five year plan documents to tackle this problem.

II. The Problem

7. That lack of gainful and productive employment for a large section of the Indian labour force is one of the most basic problems of our economy is admitted by all. In fact, the twin problems of mass unemployment/underemployment and mass poverty are but the two aspects of the same problem since the root cause of the mass poverty can be traced to unemployment/ underemployment. The implicit objective function for the Second Plan was given to

Prof. P. C. Mahalanobis by Pandit Jawaharlal Nehru in the following words: "Is it possible to prepare a Plan which would enable unemployment being liquidated in 10 years and which would also provide for a satisfactory increase in national income at the same time"(Mahalanobis, 1985, p.55). Before we discuss the policy measures devised to tackle this problem, it will be interesting to know the dimensions of the problem.

Magnitude of the Problem

8. The concepts of employment and unemployment as prevalent in developed market economies are not directly relevant in a labour-surplus economy like India, where the composition of the labour market is much more heterogenous, multi-dimensional and complex. A substantial amount of labour is still spent in household enterprises and in agriculture without any intervention of the market. This blurred distinction between the family labour and wage labour makes it extremely difficult to estimate the degree of unemployment and underemployment in the economy with a reasonable accuracy. The First Plan document, in the absence of reliable statistical data did not attempt to quantify the magnitude of the problem. It simply stated that "the extent of unemployment in rural areas is difficult to estimate. Some authorities put the figure at 30 per cent; in addition to this there is chronic under-employment. The quantitative estimates of these are even more difficult to work out" (Planning Commission, 1951, p.652)

9. Starting with the Second Five Year Plan, the Plan documents have been furnishing estimates of backlog of unemployment at the beginning of the concerned Plan period and additional employment likely to be generated during the Plan period. Backlog of unemployment at the start of a Plan period was arrived at by reducing or increasing the corresponding estimates at the start of the preceding Plan period by the net decrease/increase in the level of unemployment during the Plan period. The net increase in unemployment during the Plan period was arrived at by deducting the estimated additional employment generated during the Plan period from the estimated net additions to the labour force during the period. Obviously, the reliability of the resulting estimates of level of unemployment at the beginning of a Plan period depended on the

reliability of estimates of the three components described above.

10. The estimates of employment to be generated during a plan period are based on certain norms about employment potentials of selected investment. The same norms are again used to calculate the likely size of employment actually generated during the plan period. The differences in these two estimates could, therefore, arise due to differences between the "planned" and actual investment.

11. A detailed study of the method followed by the Planning Commission for estimating employment generation potential during the first four plan periods showed that these were based on too many assumptions, the veracity of which could not be easily established. The Committee of Experts on Unemployment Estimates (Dantwala committee) appointed by the Planning Commission in 1969 commented thus: "In view of the difficulties experienced in estimating the volume of investment in the non-corporate segment of the private sector, more particularly in agriculture and small-scale industries, estimates on employment generation are necessarily subject to an unknown margin of error". Further, the employment norms adopted by the Planning Commission for a large part of the unorganised sectors was described as "quite arbitrary and is almost a shot in the dark" (Planning Commission, 1970, p. 10-11). The weaknesses of the Planning Commission's estimates of the number of unemployed persons in the labour force arose mainly due to some of the inherent weaknesses of all the basic sources of data on employment and unemployment in India. This was not due to any conceptual confusion existing in the minds of respective statistical authorities but due to peculiarities of the Indian employment situation. Over a period the size and nature of employment and unemployment in India have been generally unravelled essentially with the help of nation-wide sample surveys.

12. There are three basic sources of data on employment and unemployment in India. They are: (i) decennial census (ii) the various rounds of the National Sample Survey; and (iii) the employment market information (EMI) and employment exchange data collected by the Directorate General of Employment and Training.

13. In India the population census provides the most comprehensive and disaggregated data on economically active population. Although data on work participation rate of the population are available from various Censuses since 1901 (except 1941), the compatibility of the estimates are severely limited due to significant changes in the concept and method of enumeration from Census to Census. Prior to 1981, no direct question on 'availability for' and/or 'whether seeking work' was estimated in the census. In 1961 Census, some attempt was made to collect data on employment seeking and/or availability for work status from non-workers. But the concept of worker itself was made too broad to provide any reliable and useful estimates of the level of unemployment. For example, any one engaged in a seasonal activity such as agriculture but who had worked for at least one hour a day throughout the greater period of the working season was considered a worker. No wonder, the number of unemployed persons estimated by the 1961 census was put at only 1.4 million, of whom 0.8 million were in urban areas. In 1981 Census, the total number of persons seeking or available for work at the all-India level was estimated at 19.42 million, of whom 10.95 million were males. The rural areas accounted for 62 per cent of total unemployment. Compared to this the Sixth Plan document put the backlog of unemployment at the beginning of the Plan (April 1980) at 11.3 million (see Table 1).

14. The National Sample Survey Organisation (NSSO) has been conducting labour force surveys right from the 9th Round (1955). Based on an earlier enquiry conducted during the 7th Round, Mahalanobis (1959, p 213) estimated the size of severely unemployed persons at around 23 million persons. In subsequent labour force enquiries conducted mostly in urban areas the concepts, reference period, etc. underwent major changes. As a sequel to the recommendations of the committee of Experts on Unemployment Estimates, the NSSO has evolved standardised concepts and definitions of labour force, employment and unemployment appropriate to India's socio-economic conditions and adopted them in quinquennial surveys on employment and unemployment beginning from its 27th Round (1972-73). As a result, we now have fairly comparable information on various dimensions of employment and unemployment at four intervals of five years each based on the NSS Rounds-27th (1972-73), 32nd (1977-78),

38th (1983) and 43rd (1987-88). Thus, based on the *usual activity status* determined with reference to a longer period than a day or a week, it is found that apart from principal activity, substantial employment particularly by women, is seen in subsidiary occupations (Table 2). Over the 15 year period 1972-73 to 1987-88, the annual compound growth rate of aggregate employment worked out to 2.1 per cent which is close to the population growth rate (Table 3). The growth rates have been vastly different in rural (1.6 per cent) and urban (4.0 per cent) areas. Data in Tables 2 and 3 are based on *usual activity status* whereas the rates of employment participation based on *weekly status* (determined with reference to a period of preceding seven days) and *daily status* (determined for each day of the preceding seven days) differ quite significantly (see Table 4).

15. The industrial distribution of the usually employed persons, particularly in rural areas has undergone a noticeable change, with a gradual shift in favour of manufacturing and services sectors (Table 5). More significantly, it is the casualisation of the rural male labour which stands out as a distinct phenomenon of the 1980's (Table 6).

16. Estimates of unemployment are also available on the basis of the three concepts cited above. Usual status unemployment measures long-term chronic unemployment, while weekly status and daily status unemployment estimates represent the average number of persons unemployed per week and per day, respectively, during the survey period; daily status unemployment is said to be the most inclusive and the widest measure of unemployment and under-employment in the economy. The growing nature of unemployment in the country, both in rural and urban areas is brought out in the NSS data summarised in Tables 7 and 8. A comparison of these data with those presented in Table 2 suggests that differences as between the three concepts of employment or unemployment are the largest in respect of the rural areas, implying that such areas nurse the highest incidence of chronic unemployment.

17. According to data thrown up by the latest round of survey (July 1987 - June 1988), the size of usually unemployed

persons was estimated at around 12 million persons. Of this a little over 2 million had some secondary work. So around 10 million persons may be categorised as chronically unemployed in India. Out of this 10 million chronically unemployed persons around 53 per cent were in rural areas. According to the Seventh Plan estimates (1985-86 to 1989-90), the backlog of unemployment at the end of the Plan period would be around 3.75 million only. This suggests that Planning Commission estimates of backlog of unemployment are generally on the lower side. Since the effect of underestimation of size of unemployed persons is carried over to the next plan, it appears the Planning Commission has been unable to provide for full employment even at the planning stage.

18. There is, of course, vast divergences in employment growth as between States (see Tables 9 and 10). Apart from the growth in employment per se, a comparison of such employment growth with population growth brings out the inter-State disparities rather sharply. Furthermore, some states which experienced low rural employment growth made good the loss in better urban employment (Gujarat and Haryana are good examples). Some like Bihar have gained from neither rural nor urban employment. A few States have benefitted from relatively high employment growth in both rural and urban areas (such as, Rajasthan and Punjab).

19. One feature of Indian employment scenario that requires mention here is that the bulk of increase in employment has been in unorganised sector during all the plan periods. In fact, the share of organised sector employment to total estimated employment has remained constant at a low level of around 8 per cent during the last three NSSO quinquennial surveys on employment and unemployment. Between 1972-73 and 1987-88, i.e., in a span of 15 years, the total size of employment in India grew by around 86 million out of which the organised sector contributed only around 6 million till 1985-86 (see Table 11). On a different plane, the contradictions in the existing development strategy are also reflected in the fact that even as employment growth has decelerated, there has occurred an acceleration in the national income growth rate during the 1980's (see Table 12).

III : Investment-Oriented Planning strategy

20. In terms of economic fundamentals, two broad planning strategies cited earlier have been advocated in India. For the sake of brevity, these two alternative strategies can be termed as 'investment and growth-oriented planning strategy' and 'employment-oriented planning strategy'. A common denominator in terms of the fundamentals favouring the first of these strategies can be observed in all the five-year plans so far formulated and executed in full. The second alternative strategy of employment-orientation was proposed to be introduced in the aborted Sixth Plan for the period 1978-83. The present debate about the new Eighth Plan signifies another effort towards implementation of this alternative strategy in India.

21. The fundamental features of the growth-oriented strategy are most precisely formulated in the Second Plan document and in the writings of Mahalanobis, the architect of this plan. The technical sophistication of later plans may be looked upon as more of improvement, extension and addition, keeping the basic approach of the Second Plan in tact.

22. The basic ingredient of this approach is the recognition of the fact that investment and economic growth are the single most important means towards eradication of unemployment and mass poverty of any backward country like ours. The central problematique of development under this approach has been clearly stated by Sukhamoy Chakravarty (1987, p.7) in the following words: "More goods are preferred to less, and a higher level of capital stock per worker (is) unambiguously helpful in improving the standard of living". This total preoccupation with commodities as well as capital formation is clearly visible in the writings of Mahalanobis. He wrote: "the national income may of course be increased to some extent by an increase in the average productivity per person. But the only long range way of increasing the national income is to create new physical assets, i.e., new means of production in the form of factories, machines, buildings, transport, etc. The rate of economic development would, therefore, ultimately depend on the amount of new physical assets or means of production which is created every year" (Mahalanobis,

1985, p. 1). Therefore, according to this approach, the "only way of eliminating unemployment in India is to build up a sufficiently large stock of capital which will enable all unemployed persons being absorbed into production activity. Increasing the rate of investment is, therefore, the only fundamental remedy for unemployment in India". (Ibid p. 71).

23. It is thus clear that the initial objective function of minimisation of unemployment in a short span of 10 years got subsumed in a different (but supposedly equivalent) objective function of maximisation of the size of capital stock over a reasonably long time horizon. This, in turn would lead to maximisation of economic growth over the same time horizon. The causal mechanism can now be easily stated—higher investment will lead to higher income level. Income growth will enable capital stock to rise further, given a saving rate. A larger capital stock will help support a larger working force, given a capital-labour ratio. More employment will generate more income and thus a sustained growth process will ensue, thereby reducing poverty and increasing the standard of living of the masses. Given this mechanism the planner has to decide about the best way to allocate investible resource so as to maximise income over a sufficiently long time horizon. Thus Mahalanobis' two-sector growth model provided a symbolic justification for investing more in the capital goods sector.

24. The problem of unemployment does not figure when the allocation ratio of investible resources between the two broad sectors is decided upon. The problem of unemployment is addressed in the next stage of the plan formulation. Thus, after obtaining the estimate of allocation ratio for the capital goods sector from the two sector model, Mahalanobis went on to derive the allocation ratio for the three other identified sectors to achieve a targeted size of additional employment to be generated during the plan period as well as the desired output level. Even in the four-sector model, no maximisation of employment was sought to be achieved. In fact, Komiya (1959) by transforming the four-sector model to a linear programming problem, could show that the parameters estimated in the second Five Year Plan model were sub-optimal.

25. There can be many criticisms of the Second Five Year

Plan model or the Mahalanobis-Nehru strategy of development, viz., neglect of the demand aspect of economic development, too high aggregation, neglect of financial implications of the plan, etc. But so far as the problem of generation of employment is concerned, we may note two major shortcomings of this approach. Firstly, the question of length of time horizon was not given proper attention. According to arithmetical exercise given in the technical appendix to Mahalanobis' paper on "The Approach of Operational Research to Planning in India", the investment strategy proposed in the Second Five Year Plan would ensure a higher consumption level than would be given by an alternative allocation pattern of investment (say 10 per cent allocation to the capital goods sector) only after 30 years. The demographic implication of denying a higher level of living to the masses for such a long time period was not looked into. The political implications of such a strategy were also too important to be ignored. The strategy which is consistent with a highly centralised political structure cannot be easily implemented in a political structure which has to respond to various pulls and pressures of different interest groups. Secondly, there was no proper appreciation of the problem of the choice of technique in the formulation of the Plan and its implications on the employment situation. It may be noted here that the distinguishing feature of the developmental model underlying the Second Plan was not merely an emphasis on increased rate of productive investment but rather on a particular type of investment, i.e., machine building industries. There was no recognition of the simple fact that output of new machines must get absorbed somewhere in the domestic economy, given low export potential of such capital goods. Would it not mean introduction of labour-substituting technology in the consumer goods industries, which were apparently to be developed in the small-scale sector having high employment potential? Apparently, the Mahalanobis' model gave less recognition to the inter-dependence of technologies between different sectors of production. It is not possible to have an economy with a sector producing tractors as well as a traditional non-mechanised peasant-based agricultural sector. The experience of the Second Five Year Plan in relation to reduction of unemployment was far from satisfactory. This, however, did not lead to any change in the thinking of planners. Thus, according to Mahalanobis (1959 p.215), "the only conclusion (of this experience) must be that we must have much bigger

plan next time and still bigger plan in future years."

26. The basic approach of the Second Five Year Plan was continued in the Third Plan, although it became more and more apparent that the policy of heavy industrialisation and import substitution was not having the desired impact on the twin problems of unemployment and mass poverty. Serious problems on the food front and balance of payments position began to emerge as major constraints to further economic growth. Although the Fourth Plan documents reiterated that "the basic strategy of Indian Planning as defined at the beginning of the Second Plan is not at fault", its immediate concern was to remove the cause of sharp fluctuations in the growth process. Although the objective of acceleration of growth was not abandoned, it was sought to be implemented in "conditions of stability and reduced uncertainties". The Fourth Plan aimed, therefore, to introduce "safeguards against the fluctuations of agricultural production as well as the uncertainties of foreign aid in the period of the Fourth Plan" ("Planning Commission, 1968, p. 13).

27. This apparently minor change of gear in our planning strategy, which was again in the form of reaction to emerging constraints in the economy, heralded the beginning of a process which culminated in the so-called new economic policies of the 1980s. First of all, the removal of instability in agricultural production became a secondary goal within the primary goal of economic growth through increased investment. Since agriculture in India is primarily peasant-based and the central planning authority does not have any means to extend public control over agriculture (for example, by introduction of state farms on a large scale), improved performance of agriculture could be brought about either by extending incentives to individual farmers or by encouraging co-operative farming on a large scale. Although right from the First Plan, co-operative farming was described as the most desirable institutional form of ownership in agriculture, consistent with the policy of bringing about a socialistic pattern of society, no remarkable progress in this direction could be achieved during the first three plan periods. Therefore, the only alternative was to encourage individual farmers to organise production more efficiently. The role of the State would be to provide better infrastructure and ensure supply of modern

inputs at reasonable prices to induce farmers to adopt them .

28. Secondly , correction of imbalance in the balance of payments position required considerable stepping up of exports . To achieve this , the Indian industry has to be competitive in the global market , requiring further investment and technological upgradation . As the public sector was unable to generate adequate savings and as there were severe resource constraints , the scope for increasing public sector investments was felt to be limited . Therefore , investment by private sector had to be encouraged . These new policy requirements could not be effected in a regime of strict control over large industries . It therefore , logically follows that revision "of the regime of control appeared to be desirable" and the same was proposed in the Fourth Plan .

29. During the Fourth Plan period itself , it became quite clear that the severe inequality in income distribution was becoming a constraint to further growth . The political instability generated by the acute sense of deprivation on the part of a large number of people was considered to be acting as a barrier to growth . The Fifth Plan , therefore , brought inequality reduction as an explicit objective of the Plan . The Plan model , however , did not envisage any redistribution of income as such . Only the expenditure distribution was incorporated in the Fifth Plan model to produce estimates of sectoral vector of consumption goods which would be consistent with a higher level of consumption of lowest deciles , given the consumption pattern . The explicit introduction of the objective of inequality reduction in the Fifth Plan model , however , did not lead to any change in the broad planning strategy of growth and capital accumulation . The perspective that the growth in output would lead to reduction in inequality remained at the heart of the Fifth Plan exercise . However , one important conclusion emerged from the numerical exercise carried out with the help of the Fifth Plan model , which is as follows . "The main message of the (Fifth Plan) model was quite clear , however , despite all its limitations . It showed that if the growth rate of around 5-6 per cent per annum was the maximum one could have , it was impossible to bring about a significant reduction in poverty , howsoever defined , without attacking the *problem directly*" , (Chakravarty , 1987 , emphasis added) . As a result , in addition to the trickle- down (or pulling up

as Jagdish Bhagwati would like us to say) effect of growth, it was felt necessary to make a direct assault on poverty and unemployment.

30. Thus the optimism of the Second Plan that an investment-oriented planning strategy would augment the capital stock sufficiently to generate productive employment for the entire labour force, gave way to the pessimism of the Fifth Plan about the inability of capital accumulation process to take care of this problem by itself.

31. The Sixth Plan explicitly recognised that the organised sector would not be able to generate sufficient additional wage-employment to eradicate the problem of unemployment. Therefore self-employment was considered to be the only alternative available to the mass of the unemployed. The thrust of the policy measures would be, therefore, to provide "training, credit marketing and general guidance about the various facilities available to the people for starting their own venture. (Planning Commission, 1981, p.210).

32. Along with this new approach of direct assault on poverty and unemployment, a policy of progressive liberalisation gathered momentum during the Sixth and Seventh Plan periods. The greater allowances given to market forces to determine the allocation of resources, at least in respect of private sectors, signifies a shift in the nature of State intervention in the economy. This does not, however, mean a shift away from the broad strategy of investment-oriented growth followed so far. As Jagdish Bhagwati has noted in his Purushotam Thakurdas Memorial Lecture, "the objectives and strategy remained as always, simply the design of policy had to be drastically altered to improve the efficacy of the strategy and fulfil better our anti-poverty objectives".

33. In the course of discussions in the above paragraphs we have tried to argue that the basic strategy of our planning has remained unchanged, although in recent times two important changes in the policy designs have occurred. They are: (i) introduction of a strategy of direct assault on poverty and unemployment; and (ii) gradual dismantling of the control mechanism so as to give

greater role to market forces for determining the levels and structure production and investment.

IV : Employment Oriented Planning Strategy

34. Counter-posed against the above investment/ growth-centred planning strategy, an alternative planning strategy which purports to put maximisation of employment potential as its main objective has also been proposed. It is difficult to describe precisely the macro-economic perspectives underlying this broad strategy since diverse and sometimes contradictory views about the process of economic development have been expounded by the proponents of such a strategy. However, certain common aspects can still be found in the various formulations of such a strategy.

35. A very forceful and somewhat extreme exposition of this alternative approach can be found in the writings of the late Charan Singh, particularly in his book (1977) *Gandhian Blue- Print for India's Economic Policy*, the words of which were reproduced verbatim in the economic policy statement of the Janata Party issued in November 1977.

36. The philosophy, so to say, of this approach gets reflected in a desire for preserving the peasant mode of production in agriculture and creation of an industrial structure in conformity with the desired institutional framework in agriculture. Thus, the proponents of this view would like to have "a society based mainly on self-employment". (Charan Singh, 1977, p. 1).

37. The analytical core of this approach can be described in the following way. Land and capital are the two limiting factors of production in a labour surplus economy like ours. Therefore, productivity of these two relatively scarce factors of production should be maximised. Agriculture is of primary importance since it provides the "first necessity of man, viz., food." Import of food is ruled out under this strategy because it apparently "drains the country not only of its wealth but also of its self-respect". A prosperous agriculture would also provide a large home market for non-agricultural commodities. In so far as the agricultural sector is concerned, the introduction of modern capital incentive techniques

is not dis-favoured. The effect of such a policy on employment potential in agriculture is, therefore, ignored. The State is envisaged as the provider of infrastructure and modern inputs at subsidised prices so as to keep the cost of agricultural production low.

38. As regards industry, all power-using enterprises employing more than nine hired workers are categorised as capital intensive or large-scale industries. A positive discouragement of such large capital-intensive industries, except in exceptional cases like production of modern agricultural inputs, forms an important plank of this approach. Thus an economy is envisaged where "cottage and small-scale enterprises using labour-intensive, capital-saving techniques, dispersed over country side, will or should form the main pattern, and not large-scale industries". (Charan Singh, 1977, p. 16).

39. Even if such a policy leads to a lower growth of the economy, the advocates for such a policy would opt for it since, "employment of those at the bottom is worth paying the price in terms of slower rise in incomes for the rest of the community". In other words, if there had to be a trade-off between employment and growth, it was the increase in employment which was to be preferred. It has been thus stated, "The creation of more jobs would unavoidably cause a rise in GNP but, when, if at all, faced with the choice between the higher rate of growth of GNP with fewer jobs on the one hand, and lower rate of growth with more jobs on the other, we will unhesitatingly opt for the latter course" (Charan Singh 1977, P. 28). The rationale behind this relatively greater emphasis on employment creation aspect of development than on growth is that investment oriented-growth strategy is likely to accentuate inequality because of differential accrual of the benefits of growth to different sections of society.

40. It is clear from the above brief description of the main feature of employment-oriented planning strategy that no inter-temporal comparison of employment generation potential of alternative plan formulations has been given due consideration. Furthermore, employment per se cannot be a desired objective unless employment generates sufficient income to the employed persons to achieve a minimum level of living. If investible resources are thinly

spread so as to employ a very large number of people for one period and if all the employed persons are to be ensured a minimum level of living, it may so happen that the surplus generated and available for investment in the next period will be less than adequate to employ the new entrants to the labour force. Thus, in the long run this strategy of employment generation may not be as effective as it seems. In fact, a strategy of high economic growth in conjunction with a policy of direct approach to reduction in poverty and unemployment may turn out to be economically more justified than a policy of generating high level of employment for a short span of time and low economic growth later. A pre-requisite for the long-term sustainability of such an approach is the need to create assets in the process of employment generation through the direct approach.

41. There are certain related aspects of the employment-oriented planning strategy which are worth noting. Firstly, the public sector is not expected to play any major role in production sectors, except perhaps in infrastructure industries and in sectors producing public goods. The role of the State would be to devise appropriate physical, financial and other promotional policies so as to prevent the growth of large-scale industries in areas where small-scale industries and village and cottage industries are expected to play effective role. Therefore, the interventionist role of State in the economy would be minimised. Under such a policy regime the market forces would mostly determine the sectoral level of production and investment in respect of the small-scale and cottage industries. An obvious contradiction arises here as the most efficient firms in the preferred sectors would have no incentive to grow in size, since otherwise they would lose the advantage of concessionary policies extended to smaller size firms only. As a result, at no point of time the economy would have the advantage of cost reduction through scale-economies.

42. The most important feature of this strategy, however, lies in strong emphasis on decentralisation of planning as well as in the economic decision-making process. Harnessing of local resources and decision-making by local power structure are the two methods suggested. This would also mean a substantial refashioning of organisational structure of resource mobilisation

which is presently highly centralised. Thus, the effective implementation of this strategy becomes contingent upon the redesigning of a host of institutional features. Moreover a sincere implementation of this strategy would imply a major restructuring of income and wealth distribution, for a positive discrimination against large capital, intensive enterprises would also act as a deterrent to further accumulation of capital by big entrepreneurs.

43. The practical feasibility of such a planning strategy is quite limited at the present juncture since the costs involved in restructuring the present industrial base would be substantial if not prohibitive.

44. A strategy that may be applicable in a predominantly agrarian economy may turn out to be unrealistic in an economy having a significant, diversified and complex industrial structure. Furthermore, the Indian economy today is much more integrated both domestically and internationally than was the case at the beginning of the planning era.

45. As it happened in the case of Mahalanobis-Nehru strategy, the present day protagonists of employment-oriented strategy are unable to appreciate the limits of public policies. In the earlier case, the State was assigned the role of principal economic agent of capital accumulation. By monopolising a large number of industries, the State, it was expected, would be able to generate adequate surplus for investment and gradually lead the economy to full-employment level, with equity and justice. Similarly, in the present case the State is expected to take the leading role for devising appropriate policies and programmes for generation of full-employment. Such an expectation of the role of the State may not come true unless planners are able to specify the process through which the State will be able to do it. Such a specification should include the expected response of private economic agents towards the State policies and its likely impact on the economy. The method of resource mobilisation to be undertaken by the State also needs to be specified and its implications on various aspects of the economy like level of prices is to be described in detail.

46 If the policy measures are not in conformity with the

given economic situation, and if the success of a Plan becomes dependent upon fundamental changes in economic environment, the wishes of the planners, however lofty they are, will remain unfulfilled.

V : Concluding Observations

47. Any planning strategy that is based upon an inadequate understanding of the nature of the State as well as on an incorrect behavioural assumptions about individual economic agents is bound to flounder in practice. These aspects are extremely vital when policies are being devised to mould the course of economic events according to certain pre-stated objectives.

48. The Mahalanobis-Nehru strategy presumes to a large extent neutrality of the State vis-a-vis the interest groups contending for economic and social power. One need not subscribe to a mechanistic view that the State is an instrument of exercising social and economic power by one or more social groups or classes, to appreciate that State policies are neither devised nor implemented in the most objective and rational way. For example, the need for institutional restructuring of the agrarian sector has been emphasised in Plan documents after Plan documents but not much headway has been made so far in this direction, except for the abolition of the Zamindari and Inamdari systems, and some instances of success in land-to-the-tiller schemes. Thus if planners chart a growth path, ignoring possible responses of these interest groups to various policy measures prescribed, the operational utility of such a Plan becomes doubtful.

49. Similarly, the behavioural assumptions about the economic agents that are implicit in any planning strategy should be made realistically. It would be naive to assume that "behavioural pattern which will get the system on goal adequate trajectories" (Chakravarty, 1987, p.42). will be established automatically. The Smithian model of human nature in which the pursuit of individual gain is considered to be the most potent motivating force, still remains as the most adequate model of human nature, applicable to economic domain. The task of the planners is to devise policy measures that would transform these private vices into public

virtues. It is true that till today the paradigms of different models of economic development are largely commodity centred. This is so because commodity fetishism is endemic to human nature. To deny its existence would be utopian, as has been amply demonstrated in the craze for consumerism presently sweeping the centrally-planned economies. Whether one likes or not, there undoubtedly exists a large degree of social sanction behind the commodity-centred paradigm of economic development. The current debate about long-term viability of large irrigation projects is a pointer to this direction. Therefore, a planning strategy, the success of which is predicated upon the replacement of existing structure of social wants by a different (but desirable on normative grounds) structure of social wants, is most likely to end in failure. The structure of social wants is primarily determined by the distribution of income and wealth. For example, the impressive growth in output of consumer durables in recent times is a reflection of the pattern of income distribution and, therefore, artificial restriction on the growth of these industries will not bring about any change in the underlying income distribution but only lead to distortion in the price structure. The success of the employment-oriented planning strategy crucially depends on the emergence of a desirable structure of social wants. Of course, there is nothing sacrosanct about the existing structure of social wants, or for that matter, the existing distribution of income, but the desired changes cannot possibly be brought about by planning, in the form it has been and is being undertaken in India.

NOTES AND REFERENCES

1. Bhagwati, Jagdish, (1987): *Indian Economic Performance and Policy Design*, Sir Purshotamdas Thakurdas Memorial Lecture, Indian Institute of Bankers, Bombay.
2. Chakravarty, Sukhamoy (1987) : *Development Planning : The Indian Experience*, Clarendon Press, Oxford.
3. Komiya, R. (1959) : "A Note on Mahalanobis Model of Indian Economic Planning" in *Review of Economics and Statistics*, Vol. 41, No. 1.
4. Lange, Oscar (1973) : "On the Economic Theory of Socialism" reprinted in (Ed) by Barry Townsend, *Price Theory - Selected Readings* Penguin Education.

5. Mahalanobis, P. C. (1959) : "(i) "Unemployment" – Address delivered as Chairman of the sectional meeting of the Second All-India Labour Economics Conference at Agra on 1st January. (ii) "National Income, Investment and National Development". (1985) (iii) "The Approach of Operational Research to Planning India" reprinted in *Papers on Planning* (Ed) by P. K. Bose & M. Mukherjee, Statistical Publishing Society, Calcutta.
6. Planning Commission (1951, 1956, 1961, 1969), Government of India : *First, Second and Third Five Year Plans and Fourth Five Year Plan Draft* respectively, (1970) "Report of the Committee of Experts on Unemployment Estimates.
7. Singh, Charan (1977) : *A Gandhian Blue Print for India's Economic Policy* (Centre for Monitoring Indian Economy, November).

Table 1 : Estimates of Backlog of Unemployment in Successive Five Year Plans

(Figures in millions)

	First Plan	Second Plan	Third Plan	An- nual Plans (1966- 69)	Sixth Plan	Seventh Plan
1. Backlog of unemployment at the start of the Plan.	3.3	5.3	7.1	9.6	11.3	7.8
2. Net addition to the labour force during the Plan period.	9.0	11.8	17.0	14.0	32.1 [@]	36.3 [@]
3. Total (1 + 2).	12.3	17.1	24.1	23.6	43.4	44.1
4. Additional employment likely to have been generated.	7.0	10.0	14.5	11.0	35.6	40.4**
5. Backlog of unemployment at the end of Plan. (3 - 4)	5.3	7.1	9.6	12.6	7.8	3.7**

[@] In the age group 15-59 years.

** Estimated in the Seventh Plan document.

Source :

For First, Second, Third and Annual Plans, see *RBI Bulletin* December 1969 (p. 1909).
 For Sixth and Seventh Plans, see respective Plan documents. No estimates for backlog of unemployment were provided in Fourth and Fifth Plan documents.

Table 2 : Percentage and number of persons employed according to usual status by sex and residence status.

NSS Round	Category of Worker	All-India usually employed			
		Rural		Urban	
		Male	Female	Male	Female
43 (1987-88)	Principal status	51.7 (153.9)	24.5 (70.1)	49.6 (53.8)	11.8 (11.3)
	Subsidiary status	2.2 (6.6)	7.8 (21.9)	1.0 (1.2)	3.4 (3.4)
	All	53.9 (160.5)	32.3 (92.0)	50.6 (55.0)	15.2 (14.7)
38 (1983)	Principal status	52.8 (147.8)	24.8 (66.1)	50.0 (46.2)	12.0 (9.8)
	Subsidiary status	1.9 (5.2)	9.2 (24.3)	1.2 (1.1)	3.1 (2.5)
	All	54.7 (152.7)	34.0 (90.4)	51.2 (47.3)	15.1 (12.3)
32 (1977-78)	Principal status	53.7 (136.7)	24.8 (60.6)	49.7 (32.7)	12.3 (7.3)
	Subsidiary status	1.5 (4.0)	8.3 (20.3)	1.1 (0.7)	3.3 (2.0)
	All	55.2 (140.7)	33.1 (80.9)	50.8 (33.4)	15.6 (9.3)
27 (1972-73)	All	56.5 (127.2)	33.0 (70.6)	53.3 (31.3)	14.3 (7.2)

Source: National Sample Survey Organisation (NSSO) (1990): "Key Results of Employment and Unemployment Survey : All India (Part I), NSS 43rd Round (July 1987-June 1988) - January.

Note: (1) Percentages are related to total number of persons.

(2) Figures in parentheses give aggregates in millions.

Table 3 : Aggregate employment (usually employed) for rural and urban areas for different NSS rounds

(Figures in Millions)

Round & Year	Number of employed persons		
	Rural	Urban	Total
43 1987-88	252.5 (43.3)	69.7 (33.9)	322.2 (40.9)
38 1983	243.1 (44.6)	59.6 (34.3)	302.7 (42.1)
32 1977-78	221.6 (44.4)	42.7 (34.0)	264.3 (42.3)
27 1972-73	197.8 (45.0)	38.5 (35.3)	236.3 (43.1)
Annual Compound Growth Rate (%)			
1987-88 over 1972-73	1.64	4.04	2.09

Figures in parentheses give percentage of persons employed to total persons in each category. The employment figure includes those who are employed as subsidiary workers.

Source : Same as in Table 2.

Table 4 : Number of persons employed per 100 persons according to current weekly and daily status by sex and residence status .

All-India

Round	Male		Female	
	Number of persons/person-days employed per 100 persons/person-days according to			
	Weekly status	Daily status	Weekly status	Daily status
RURAL				
43 (1987-88)	50.4	50.1	22.0	20.7
38 (1983)	51.1	48.2	22.7	19.8
32 (1977-78)	51.9	48.8	23.2	19.4
27 (1972-73)	54.9	52.1	28.7	24.0
URBAN				
43 (1987-88)	49.2	47.7	11.9	11.0
38 (1983)	49.2	47.3	11.8	10.6
32 (1977-78)	49.0	47.2	12.5	10.9
27 (1972-73)	52.1	50.8	13.1	11.5

Source : National Sample Survey Organisation (NSSO) – Key Results of Employment and Unemployment Survey–All-India (Part I) NSS 43rd Round (July 1987–June 1988).

Note Percentages are related to total number of persons .

Table 5 : Industrial distribution of the usually employed persons for rural and urban areas

(Figures in percentage)

Sectors	Rural				Urban			
	1972-73	1977-78	1983	1987-88	1972-73	1977-78	1983	1987-88
Agriculture including Mining and Quarrying	85.9	83.8	82.0	78.9	15.8	16.0	15.7	14.6
Manufacturing including Electricity Gas and Water supply	5.4	6.3	6.9	7.4	27.3	28.9	27.9	27.1
Construction	1.4	1.3	1.6	3.3	4.1	3.7	4.7	5.4
Trade and Transport	3.2	4.1	4.6	5.3	25.7	26.7	26.4	27.0
Other services	4.1	4.5	4.9	5.1	27.1	24.7	25.3	25.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rural/Urban as percentage of total employed persons.	83.7	83.8	80.3	78.4	16.3	16.2	19.7	21.6

Source : National Sample Survey Organisation (NSSO) – Key Result of Employment and Unemployment Survey–All-India (Part I) NSS 43rd Round (July 1987–June 1988) – Jan 1990.

Note : Percentages are related to total number of persons.

356 RESERVE BANK OF INDIA OCCASIONAL PAPERS

Table 6 : Percentage distribution of usually employed by status of employment

All-India

Round and year	Usually employed					
	Principal status			All		
	Self- employed	Regular employees	Casual labour	Self- employed	Regular employees	Casual labour
	1.	2.	3.	4.	5.	6.
Rural Males						
43 (1987-88)	57.5	10.4	32.1	58.6	10.0	31.4
38 (1983)	59.5	10.6	29.9	60.5	10.3	29.2
32 (1977-78)	62.2	10.8	27.0	62.8	10.6	26.6
27 (1972-73)	--	--	--	65.9	12.1	22.0
Rural Females						
43 (1987-88)	54.9	4.9	40.2	60.8	3.7	35.5
38 (1983)	54.1	3.7	42.2	61.9	2.8	35.3
32 (1977-78)	56.3	3.7	40.0	62.1	2.8	35.1
27 (1972-73)	--	--	--	64.5	4.1	31.4
Urban Males						
43 (1987-88)	41.0	44.4	14.6	41.7	43.7	14.6
38 (1983)	40.2	44.5	15.3	40.9	43.7	15.4
32 (1977-78)	39.9	47.2	12.9	40.4	46.4	13.2
27 (1972-73)	--	--	--	39.2	50.7	10.1
Urban Females						
43 (1987-88)	39.3	34.2	26.5	47.1	27.5	25.4
38 (1983)	37.3	31.8	30.9	45.8	25.8	28.4
32 (1977-78)	42.2	30.8	27.0	49.5	24.9	25.6
27 (1972-73)	--	--	--	48.4	27.9	23.7

Source : NSS 43rd ROUND (July 1987-June 1988)

Note : All includes subsidiary workers also.

Table 7 : Unemployment rates by sex and residence status .

All-India

Round and year	Approach	Unemployment rates			
		Rural		Urban	
		Male	Female	Male	Female
43 (1987-88)	Usual status	2.8 (4.5)	3.5 (2.6)	6.1 (3.5)	8.5 (1.1)
	--do adjusted (excluding s. s. workers)	1.8 (3.0)	2.4 (2.3)	5.2 (3.0)	6.2 (1.0)
	Current weekly	4.2	4.4	6.6	9.2
	Current daily	4.6	6.7	8.8	12.0
38 (1983)	Usual status	2.1 (3.2)	1.4 (0.9)	5.9 (2.9)	6.9 (0.7)
	--do adjusted (excluding s. s. workers)	1.4 (2.2)	0.7 (0.5)	5.1 (2.5)	4.9 (0.6)
	Current weekly	3.7	4.3	6.7	7.5
	Current daily	7.5	9.0	9.2	11.0
32 (1977-78)	Usual status	2.2 (3.1)	5.5 (3.5)	6.5 (2.3)	17.8 (1.6)
	--do adjusted (excluding s. s. workers)	1.3 (1.8)	2.0 (1.8)	5.4 (2.0)	12.4 (1.3)
	Current weekly	3.6	4.1	7.1	10.9
	Current daily	7.1	9.2	9.4	14.5
27 (1972-73)	Usual status	1.2	0.5	4.8	6.0
	(excluding s. s. workers)	(1.5)	(0.3)	(1.6)	(0.5)
	Current weekly	3.0	5.5	6.0	9.2
	Current daily	6.8	11.2	8.0	13.7

Source : National Sample Survey Organisation (NSSO) - Key Result of Employment and Unemployment Survey-All India (Part I) NSS 43rd Round (July 1987 - June 1988) - July

Note : Figures in parentheses give aggregates in millions.
s. s. = Subsidiary Status

Table 8 : Aggregate employment and unemployment by current weekly and daily status

(Figures in million persons/person-days)

	Employment			Unemployment		
	Rural	Urban	Total	Rural	Urban	Total
Current weekly status						
Round & Year						
43-1987-88	212.7	64.9	277.6	9.5	4.5	14.4
38-1983	203.0	55.1	258.1	8.2	4.0	12.2
32-1977-78	189.0	39.7	228.7	7.3	3.4	10.7
27-1972-73	185.0	37.2	222.2	7.4	2.6	10.0
Daily status						
Round & year						
43-1987-88	208.1	62.4	270.5	11.4	6.4	17.8
38-1983	187.2	52.3	239.5	16.1	5.5	21.6
32-1977-78	171.8	37.5	209.3	14.3	4.3	18.6
27-1972-73	168.6	35.6	204.2	15.0	3.5	18.5

Source : National Sample Survey Organisation (NSSO) -Key Result of Employment and Unemployment Survey -All India (Part I) NSS 43rd Round (July 1987-June 1988)-July

Table 9 : Statewise data on change in population (5 +) and in employment by principal status for rural areas, between 1983 and 1987-88.

State	Absolute growth in population (million)	% Growth in population	Absolute growth in employment (in million)	% Growth in employment
1. Andhra Pradesh	2.2	5.9	0.6	2.7
2. Assam	1.7	10.7	0.3	6.1
3. Bihar	3.8	8.9	0.1	0.5
4. Gujarat	1.5	7.2	0.2	1.5
5. Haryana	1.0	10.7	0.1	3.9
6. Himachal Pradesh	0.3	8.7	0.4	2.1
7. Jammu & Kashmir	0.4	8.9	0.2	15.5
8. Karnataka	1.7	7.2	0.4	3.4
9. Kerala	1.4	7.2	0.6	8.8
10. Madhya Pradesh	2.6	7.0	0.2	1.2
11. Maharashtra	2.1	5.8	0.3	1.3
12. Orissa	1.3	6.2	0.2	1.7
13. Punjab	0.6	6.0	0.3	8.2
14. Rajasthan	2.5	10.1	1.3	10.1
15. Tamil Nadu	1.8	6.1	1.1	7.0
16. Tripura	0.2	12.6	0.4	7.5
17. Uttar Pradesh	6.0	7.4	2.6	8.3
18. West Bengal	2.5	6.8	1.7	13.7
All India	35.04	7.4	10.4	4.9

Source : National Sample Survey Organisation (NSSO) - Key Result of Employment and Unemployment Survey-All India (Part I) NSS 43rd Round (July 1987-June 1988) - January 1990.

Note : Population refers to persons in the age group 5 and above. Employment refers to usually employed by principal status.

Table 10 : Statewise data on change in population (5 +) and in employment by principal status for urban areas, between 1983 and 1987-88.

State	Absolute growth in population (million)	% Growth in population	Absolute growth in employment (in million)	% Growth in employment
1. Andhra Pradesh	2.3	19.2	0.8	17.3
2. Assam	0.3	16.4	0.1	17.8
3. Bihar	1.8	21.9	0.3	11.6
4. Gujarat	1.5	15.4	0.9	29.7
5. Haryana	0.7	26.1	0.2	17.2
6. Himachal Pradesh	0.4	12.5	(-)0.2	(-)19.9
7. Jammu & Kashmir	0.2	16.3	0.1	19.0
8. Karnataka	2.1	20.2	0.6	15.8
9. Kerala	0.7	15.8	0.25	16.3
10. Madhya Pradesh	2.4	23.5	1.0	28.5
11. Maharashtra	3.2	15.5	0.9	11.7
12. Orissa	0.8	27.5	0.2	19.4
13. Punjab	0.8	18.2	0.3	18.4
14. Rajasthan	1.6	23.5	0.6	25.1
15. Tamil Nadu	1.8	12.2	1.1	18.0
16. Tripura	0.03	15.5	0.03	44.9
17. Uttar Pradesh	4.4	23.1	1.4	21.1
18. West Bengal	1.7	12.5	0.5	9.0
All India	28.5	18.7	9.05	16.1

Source : National Sample Survey Organisation (NSSO) - Key Result of Employment and Unemployment Survey-All India (Part I) NSS 43rd Round (July 1987-June 1988) - January 1990.

Table 11 : Growth of employment in the organised sector in India

(Figures in thousands)

Year (April-March)	Public Sector	Private Large	Sector Small	Total
1960-61	7050	5040	N.A.	12090
1965-66	9379	6813	N.A.	16192
1970-71	10730	6035	726	17491
1975-76	13363	6113	731	20207
1980-81	15484	6600	795	22879
1985-86	17683	6547	826	25056

Annual compound growth rate in employment

1966 over 1961	5.9 (11.3)	6.2	--	6.0
1971 over 1966	2.7 (7.6)	(-)2.4	--	1.6
1976 over 1971	4.5 (6.7)	0.3	0.1	2.9
1981 over 1976	3.0 (7.0)	1.5	1.7	2.5
1986 over 1981	2.7 (7.7)	(-)0.2	0.8	1.8

Source : CSO Statistical Abstract of India, different volumes.

Note : Between March 1961 and March 1966 only Non-agricultural establishments in the private sector employing 25 or more workers (i.e. large private sector) were covered and thereafter the coverage was extended so as to include establishments employing 10 to 22 workers on a voluntary basis. Hence data for small private establishments are not strictly comparable. Figures in parentheses give annual compound growth rate in GDP from public sector at 1980-81 prices.

362 RESERVE BANK OF INDIA OCCASIONAL PAPERS

Table 12 : Growth Performance of Indian Economy under Different Plans.

Period	NNP at factor cost at 1980-81 prices as the base year.	Per capita NNP at factor cost	Average of Annual growth rates during the Plan period	
			NNP	Per capita NNP
1951-52 to 1955-56	40454	1126.9	3.6	1.8
1956-57 to 1960-61	48288	1228.7	4.0	2.0
1961-62 to 1965-66	58602	1350.3	2.4	0.2
1966-67 to 1968-69	65734	1355.3	3.7	1.5
1969-70 to 1973-74	73285	1414.8	3.3	1.0
1974-75 to 1978-79	86010	1482.9	5.0	2.7
1980-81 to 1984-85	102937	1550.3	5.4	3.2
1985-86 to 1989-90	133972	1812.9	5.6*	3.5*

NNP = Net National Product

* Based on Quick-estimates figures up to 1988-89 only.

Financing of Sectoral Investment During Plan Periods

K. S. Ramachandra Rao*

SAVING and capital formation play a very important role in economic development. "Planning exercises in India have throughout highlighted their importance not only in the context of resource mobilization and allocation but for assessing the growth potential of the economy," according to the Report of the Working Group on Savings (RBI, 1982). The paper, therefore, attempts to examine, over the seven five year Plans, the pattern of allocation of resources by households and the pattern of financing investment (i.e. capital formation) by the private corporate business and government sectors¹. In the process, the structural changes in their resource mobilization and the importance of financial institutions also are brought out.

* Shri K. S. Ramachandra Rao is Assistant Adviser in the Department of Statistical Analysis and Computer Services. The author wishes to thank Shri O. P. Singh for his computational assistance.

1. The basic data for the exercise are drawn from the Flow-Of-Funds Accounts published by the Reserve Bank of India and the National Accounts Statistics published by the Central Statistical Organisation (C. S. O). Data for the period from 1980-81 onwards relate to new series of National Accounts. For the purpose of this article, the year 1979-80 which had an Annual Plan, has been included in the Fifth Plan; for the Seventh Plan only the first three years of the Plan, viz., 1985-86 to 1987-88 are included for which the required data are available. The coverage of the years in each plan is as under:

I Plan	: 1951-52 - 1955-56	IV Plan	: 1969-70 - 1973-74
II Plan	: 1956-57 - 1960-61	V Plan	: 1974-75 - 1979-80 [@]
III Plan	: 1961-62 - 1965-66	VI Plan	: 1980-81 - 1984-85
Annual Plans	: 1966-67 - 1968-69	VII Plan	: 1985-86 - 1987-88 (so far)

@ V Plan was terminated with 1978-79 but 1979-80 is also included in this Plan for analysis in this article.

Sectoral Classification

2. Following the classification adopted in the Flow-of-Funds Accounts, the economy is broadly divided into six sectors: banking; other financial institutions; private corporate business; government; rest of the world; and household. The first two sectors, viz., banking and other financial institutions, are financial intermediaries whose function is to borrow for lending; they mobilize resources from savers and lend to the investing sectors. The household sector is the surplus sector whose saving exceeds investment. The surplus resources are lent to the rest of the economic units either directly to investing sectors or through financial intermediaries. The private corporate and government sectors are considered as deficit sectors because their investment exceeds own saving. The resource gap is financed through borrowing from external sources, both domestic and foreign.

Financial Claims Issued

3. During the process of achieving the targetted output growth and saving and investment rates, financial activity keeps pace with real activity which can be judged from the ratio of financial instruments issued to Gross Domestic Product at current market prices². The ratio recorded a steady increase from 4.4 per cent in the First Plan to 26.3 per cent in the Sixth Plan which further rose to 30.1 per cent in the first three years of the Seventh Plan period (Table 1). The average domestic saving rate (gross) also steadily increased from 10.4 per cent in the First Plan to 21.9 per cent in the Fifth Plan but slipped to 20.3 per cent and 20.7 per cent, respectively, during the Sixth Plan and the first three years of the Seventh Plan. The Intermediation Ratio, defined as the ratio of new financial instruments issued by financial institutions to those issued by the non-financial sectors, measures the strength of financial institutions vis-a-vis the financial superstructure. The ratio increased steadily from 0.38 in the First Plan to 0.94 in the Seventh Plan, showing the growing importance of financial institutions in the mobilisation of resources and their reallocation for investment.

2 A few other ratios are also worked out for this purpose

Table 1. Saving, Capital Formation and Financial Claims

(Rupees Crore)

Sr. No.	Period	Gross Saving	Domestic Capital Formation	Total Financial Claims Issued	Financial Claims of Financial Institutions [@]
		2.	3.	4.	5.
1.	I Plan (1951-52 to 1955-56)	5,217 (10.4)	5,408 (10.8)	2,221 (4.4)	607 (0.38)
2.	II Plan (1956-57 to 1960-61)	8,206 (12.3)	10,127 (15.3)	6,325 (9.5)	2,046 (0.48)
3.	III Plan (1961-62 to 1965-66)	14,321 (14.3)	16,745 (16.7)	12,302 (12.2)	4,001 (0.48)
4.	Annual Plans (1966-67 to 1968-69)	13,708 (14.8)	15,884 (17.2)	11,357 (12.2)	3,859 (0.51)
5.	IV Plan (1969-70 to 1973-74)	39,486 (17.2)	41,288 (18.0)	32,203 (14.1)	14,131 (0.78)
6.	V Plan (1974-75 to 1979-80)	114,763 (21.9)	116,293 (22.2)	119,366 (22.5)	50,082 (0.72)
7.	VI Plan (1980-81 to 1984-85)	183,353 (20.3)	213,943 (23.6)	241,737 (26.3)	105,264 (0.77)
8.	VII Plan (1985-86 to 1987-88)	183,885 (20.7)	215,558 (24.4)	269,808 (30.1)	130,587 (0.94)

Note: 1. Figures in brackets in columns 2, 3 and 4 are percentages to Gross Domestic Product at current market prices and those in column 5 relate to Intermediation Ratio, worked out as average of annual rates.

2. V Plan period includes also 1979-80 for which there was Annual Plan.

3. VII Plan period covers only the first three years of the Plan.

@ Includes banking and other financial institutions.

4. Total financial claims issued in the economy recorded a multifold increase during the seven plan periods. In absolute terms, the volume of claims issued increased from a low level of Rs. 2,221 crore in the First Plan to Rs. 241,737 crore in the Sixth Plan and further to Rs. 269,808 crore in the Seventh Plan period (Statement 1). Among the different sectors, Banking witnessed a significant rise in its share from 16.6 per cent of total claims issued in the First Plan to 34.5 per cent in the Seventh Plan, the maximum rise being recorded during the Fourth Plan period which

Statement 1: Financial Claims issued in the Indian Economy - By Sectors

Sector	(Rupees Crore)							
	I Plan	II Plan	III Plan	Annual Plans*	IV Plan	V Plan£	VI Plan	VII Plan®
1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Banking	368 (16.6)	1,547 (24.4)	2,786 (22.6)	2,586 (22.8)	10,302 (32.0)	35,398 (29.7)	75,146 (31.1)	93,196 (34.5)
2. Other Financial Institutions	239 (10.8)	499 (7.9)	1,215 (9.9)	1,273 (11.2)	3,829 (11.9)	14,684 (12.3)	30,118 (12.5)	37,391 (13.9)
3. Private Corporate Business	492 (22.1)	934 (14.8)	1,735 (14.1)	1,245 (11.0)	3,215 (10.0)	11,697 (9.8)	27,038 (11.2)	25,422 (9.4)
4. Government	966 (43.5)	3,356 (53.1)	5,446 (44.3)	5,052 (44.5)	11,057 (34.3)	39,193 (32.8)	88,989 (36.8)	96,772 (35.9)
5. Rest of the World	-178 (-8.0)	-542 (-8.6)	74 (0.6)	13 (0.1)	298 (0.9)	6,084 (5.1)	112 (.)	-4,357 (-1.6)
6. Households	334 (15.0)	531 (8.4)	1,046 (8.5)	1,188 (10.4)	3,502 (10.9)	12,310 (10.3)	20,335 (8.4)	21,384 (7.9)
7. Total Claims Issued	2,221 (100.0)	6,325 (100.0)	12,302 (100.0)	11,357 (100.0)	32,203 (100.0)	119,366 (100.0)	2,41,737 (100.0)	2,69,808 (100.0)

Note: Figures in brackets are percentages to total claims issued.

* Relate to 1966-67, 1967-68 and 1968-69.

£ Includes also 1979-80.

@ Includes 1985-86, 1986-87 and 1987-88, provisional.

started immediately after nationalisation of commercial banks. However, the banking sector had a lower share of around 30 per cent during the Fifth and the Sixth Plan periods. The growing importance of the financial sector after the Fourth Plan is reflected also in a rising share of the issues made by other financial institutions. Amongst non-financial sectors, the government sector accounted for the largest share in the total issue at 43.5 per cent in the First Plan which fell to 32.8 per cent in the Fifth Plan period, but increased to 35.9 per cent in the Seventh Plan. The private corporate business sector, although accounted for 22.1 per cent in the First Plan period had a lower share of about 9-11 per cent in the Sixth and the Seventh Plan periods. The share of households in total claims issued, represented as its borrowing, fluctuated between 8-15 per cent over the Plans and stood at around 8 per cent in the Seventh Plan. In absolute terms, all the sectors registered multifold rise in the claims issued by them.

5. Total financial claims issued in the economy are broadly classified into currency, deposits, securities of government and private sectors, small savings, provident fund, life insurance fund, trade credit, and other foreign claims. Among these, currency and deposits, government securities and loans and advances accounted for higher shares in all the Plan periods and stood at 27.8 per cent, 16.4 per cent and 20.1 per cent, respectively, during the Seventh Plan period. (Statement 2). The instruments like, small savings, life insurance fund and provident fund, had their shares fluctuating in a narrow range during the seven Plan periods. It may be pointed out that during the Sixth and the Seventh Plan periods, about 10 per cent and 18 per cent of total claims issued, respectively could not be classified under any identifiable instrument.

Financial Surplus of Household Sector

6. Household sector which covers all individuals, non-government non-corporate enterprises engaged in farm and non-farm business (like, sole proprietorships, partnerships and non-profit institutions), is the surplus sector and acts as both consumer and producer. Its saving accounted for about three-fourths of gross domestic saving. Household saving comprises its saving in the form

Statement 2 : Financial Claims Issued in the Indian Economy - By Instruments

(Rupees Crore)								
Claims	I Plan	II Plan	III Plan	Annual Plans*	IV Plan	V Plan ^s	VI Plan	VII Plan ^o
1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Currency Deposits [£]	334 (15.0)	1,490 (23.6)	2,576 (20.9)	2,326 (20.5)	8,999 (27.9)	34,581 (29.0)	69,450 (28.7)	75,028 (27.8)
2. Securities	648 (29.2)	1,905 (30.1)	2,845 (23.1)	2,005 (17.7)	6,362 (19.8)	24,907 (20.9)	48,099 (19.9)	61,225 (22.7)
a) Government	399 (18.0)	1,861 (29.4)	1,788 (14.5)	1,423 (12.6)	4,924 (15.3)	15,135 (12.7)	34,125 (14.1)	44,184 (16.4)
b) Others	249 (11.2)	44 (0.7)	1,057 (8.6)	582 (5.1)	1,438 (4.5)	9,772 (8.2)	13,974 (5.8)	17,041 (6.3)
3. Loans & Advances	636 (28.6)	2,000 (31.6)	5,032 (40.9)	4,824 (42.5)	7,826 (24.3)	31,543 (26.4)	61,929 (25.6)	54,222 (20.1)
4. Small Savings	241 (10.9)	403 (6.4)	669 (5.5)	413 (3.6)	1,288 (4.0)	3,523 (3.0)	10,345 (4.3)	11,201 (4.2)
5. Life Fund	126 (5.7)	203 (3.2)	451 (3.7)	489 (4.3)	1,324 (4.1)	3,338 (2.8)	6,073 (2.5)	6,555 (2.4)
6. Provident Fund	183 (8.2)	389 (6.1)	778 (6.3)	752 (6.6)	2,414 (7.5)	7,857 (6.6)	13,951 (5.8)	15,644 (5.8)
7. Trade Debt	34 (1.5)	33 (0.5)	62 (0.5)	114 (1.0)	1,291 (4.0)	3,536 (2.9)	6,261 (2.6)	321 (0.1)
8. Foreign Claims Not-Elsewhere Classified	36 (1.6)	30 (0.5)	-	10 (0.1)	126 (0.4)	1,638 (1.4)	611 (0.3)	-1,719 (-0.6)
9. Others Elsewhere Classified	-17 (-0.7)	-128 (-2.0)	-111 (-0.9)	424 (3.7)	2,573 (8.0)	8,443 (7.0)	25,018 (10.3)	47,331 (17.5)
10. Total Claims Issued	2,221 (100.0)	6,325 (100.0)	12,302 (100.0)	11,357 (100.0)	32,203 (100.0)	119,366 (100.0)	2,41,737 (100.0)	2,69,808 (100.0)

Note : Figures in brackets are percentages to total claims issued.

* Relate to 1966-67, 1967-68 and 1968-69.

\$ Includes also 1979-80.

@ Includes 1985-86, 1986-87 and 1987-88.

† Includes compulsory deposits held with RBI under the Govt. scheme from 1971-72.

of physical assets and financial assets (net of financial liabilities). It may be seen from Statement 3 that saving in the form of physical assets accounted for 78 per cent of its total gross saving which decreased to 63 per cent in the Fifth Plan, almost the same share as that in the Third Plan. The share, however, further decreased to 52-54 per cent in the Sixth and the Seventh Plans. Thus, the financial saving increased its share over the Plan periods.

7. Household saving in financial assets is derived as increase in financial assets net of increase in financial liabilities. The increase in financial assets jumped up from Rs. 1,227 crore in the First Plan to Rs. 12,707 crore in the Fourth Plan and further to Rs. 91,676 crore in the first three years of the Seventh Plan. At the same time, its financial liabilities, i.e., borrowing from all institutional agencies, also increased, in absolute terms, from Rs. 334 crore in the First Plan to Rs. 21,384 crore during the Seventh Plan period but its share in gross financial assets fluctuated in the range of 24-28 per cent. Thus, the net financial saving of households increased from a very low level of Rs. 893 crore in the First Plan to Rs. 9,206 crore in the Fourth Plan which further went up to Rs. 70,292 crore in the Seventh Plan (first three-year period), raising its share in gross saving to 48 per cent from 22 per cent during the period under review.

8. Households allocated their surplus resources (a) to financial institutions mainly in the form of currency, deposits, life insurance and provident funds, and units of Unit Trust of India and (b) to deficit sectors, viz., private corporate and government sectors, through shares, debentures, non-banking deposits, trade debt and small savings. The share of banking sector in the financial surplus (financial assets less financial liabilities), also known as financial saving, more than doubled from 24 per cent to 52 per cent between the First and the Fifth Plan periods but fell to 38 per cent by the Seventh Plan. The influence of bank branch expansion and thus the increasing banking habit was seen, to some extent, between the Second and the Third Plan periods initially and again after nationalisation of commercial banks, when the share of banks spurted. However, during the Sixth and the Seventh Plans, its share decreased to 45 per cent and 38 per cent, respectively. Other financial institutions (OFIs) accounted for about 22 to 29 per

Statement 3 : Distribution of Financial Surplus of Household Sector

(Rupees Crore)								
Item	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan ^(a)	VI Plan	VII Plan ^(b)
1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Gross Saving	4,027	6,151	8,875	10,306	27,798	81,736	1,35,575	1,45,131
2. Gross Capital Formation	3,134 (78)	4,267 (69)	5,593 (63)	7,906 (77)	18,592 (67)	51,261 (63)	72,875 (54)	74,839 (52)
3. Surplus Resources ^(c) (1-2)	893 (22)	1,884 (31)	3,282 (37)	2,400 (23)	9,206 (33)	30,475 (37)	62,700 (46)	70,292 (48)
4. Financial Uses	1,227	2,415	4,328	3,588	12,707	42,785	82,680	91,676
5. Financial Sources	334	531	1,046	1,188	3,501	12,310	19,980	21,384
6. Financial Surplus (4-5)	893 (100)	1,884 (100)	3,282 (100)	2,400 (100)	9,206 (100)	30,475 (100)	62,700 (100)	70,292 (100)
7. Discrepancy (4-6)	-	-	-	-	-	-	-	-
8. Financial Surplus Allocated to								
A. By Sectors								
i. Banking	213 (24)	675 (36)	1,646 (50)	970 (40)	4,645 (51)	15,739 (52)	28,146 (45)	26,894 (38)
ii. Other Financial Institutions	168 (19)	419 (22)	843 (26)	908 (38)	2,687 (29)	8,158 (27)	14,926 (24)	20,001 (28)
iii. Private Corporate Sector	275 (31)	281 (15)	253 (8)	89 (4)	945 (10)	2,790 (9)	5,675 (9)	5,334 (8)
iv. Government	237 (26)	509 (27)	540 (16)	433 (18)	928 (10)	3,788 (12)	13,953 (22)	18,063 (26)

(Contd.)

(Contd.)

Statement 3 : Household Sector - Savings, Investment and Financial Surplus (Concl.)

Item	(Rupees Crore)								
	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan ^(a)	VI Plan	VII Plan ^(b)	
1.	2.	3.	4.	5.	6.	7.	8.	9.	
B. By instruments									
i. Currency	164 (18)	507 (27)	912 (28)	558 (23)	2,498 (27)	4,923 (16)	10,315 (17)	10,125 (15)	
ii. Deposits ^(d)	162 (18)	550 (29)	1,378 (42)	1,258 (53)	4,941 (54)	20,338 (67)	34,854 (56)	36,196 (51)	
iii. Non-Banking Deposits	80 (9)	94 (5)	240 (7)	235 (10)	400 (4)	2,235 (7)	3,990 (6)	5,350 (8)	
iv. Shares & Securities	265 (30)	385 (20)	89 (3)	- (-)	-19 (-)	1,171 (4)	4,595 (7)	7,269 (10)	
v. Loans & Advances	-333 (-37)	-531 (-28)	-1,046 (-32)	-1,187 (-50)	-3,410 (-37)	-12,021 (-39)	20,075 (-32)	21,384 (-30)	
vi. Small Savings	231 (26)	358 (19)	574 (17)	354 (14)	661 (7)	1,879 (6)	7,457 (12)	10,352 (15)	
vii. Life Insurance Funds	116 (13)	189 (10)	445 (14)	476 (20)	1,323 (14)	3,344 (11)	6,069 (10)	6,513 (9)	
viii. Provident Fund	184 (20)	389 (21)	777 (24)	752 (31)	2,414 (26)	7,767 (25)	14,043 (22)	15,644 (22)	
ix. Trade Debt (net)	24 (3)	-57 (-3)	-87 (-3)	-37 (-1)	398 (4)	839 (3)	1,510 (2)	277 (-)	

Note : Figures in brackets for item 8 are percentages to item 6 and those for items (2) & (3) are to item (1).

a) Includes also 1979-80.

b) Relate to 1985-86, 1986-87, 1987-1988 Provisional.

c) Unadjusted for net capital transfer receipts.

d) Includes compulsory deposits held with the Reserve Bank of India from Fourth Plan onwards.

cent of financial saving except during the Annual Plans period when the share was 38 per cent. In absolute terms, the finances lent to OFIs were on the rise from the Fifth Plan onwards. The private corporate business sector which received funds directly from households, through shares, debentures, non-banking deposits and trade credit accounted for only about 8-10 per cent of the financial saving from the Fourth Plan onwards. This lower share may be seen even in spite of a spurt in the issue of shares and debentures by the non-government companies during the eighties. Households direct finances to government sector decreased from 26-27 per cent in the first two plan periods to about 12 per cent in the Fifth Plan period. The share, however, picked up remarkably to 22 per cent and 26 per cent in the next two Plans, respectively. This is mainly because of the household investment in small savings which attract substantial fiscal concessions. This spurt can also be seen in the instrument-wise distribution of the household financial saving.

9. Considering households' financial saving by type of instruments, saving in currency accounted for 27 per cent of financial saving which remained more or less stable during the Second to the Fourth Plans. In subsequent Plans, it decreased and reached 15 per cent by the Seventh Plan. At the same time, the share of deposits with the banking sector³, on the other hand, increased from 18 per cent in the First Plan to 54 per cent in the Fourth Plan but rose sharply to 67 per cent during the Fifth Plan. This steep rise can partly be attributed to the introduction of Compulsory Deposit Scheme (Additional Emoluments and Income Tax Payers) by Government of India in 1974. However, deposits' share fell to 51 per cent during the first three years of the Seventh Plan period. The decrease in the share during the Sixth and the Seventh Plan periods was offset by the rise in the share of small savings to a large extent and also by the investment in corporate and other securities whose shares increased although marginally to 15 per cent and 10 per cent in the Seventh Plan, respectively, from 7 per cent and negligible share in the Fourth Plan period. While the share of life insurance fund decreased to 9 per cent in the Seventh Plan from 14 per cent during the Third and the Fourth Plans, the share

3. Relates to the Banking System which includes the Reserve Bank of India.

of provident funds hovered around 22-26 per cent and stood at 22 per cent in the Seventh Plan period. As the household sector covers both consumers and non-corporate producers, it borrows from various institutional agencies, besides investing in various financial instruments described above. The household borrowing as a proportion of financial surplus, fluctuated in the range of 28-39 per cent during the period under review except in the Annual Plans period when the share was maximum at 50 per cent. The share stood at 30 per cent in the Seventh Plan period.

10. The influence of the issuance of corporate securities, like convertible debentures, issues of non-government and government companies and the introduction of new saving schemes by Government, such as Kisan Vikas Patra, Indira Vikas Patra, National Savings Schemes, is reflected in an increase in the share of the securities and small savings while those of deposits with banks and holding of cash balances decreased. Household deposits with non-banking companies also showed a rising trend subsequent to the Fourth Plan period.

Financing of Capital Formation by Government Sector

11. The Government sector comprises central and state governments, local authorities (including their departmental undertakings) and non-departmental commercial undertakings (other than financial) of government. The Government sector acts both as investor and as financial intermediary: for example, central government invests in shares of government companies and extend loans and advances to state governments, local bodies and government companies. Similar is the case with State governments. However, the financial activity of the sector is less compared with its real activity in capital formation and production of goods and services and thus it is considered as an investing sector.

12. Its gross capital formation amounted to Rs. 1,678 crore in the First Plan and increased to Rs. 99,686 crore in the Sixth Plan and further rose marginally in the first three years of the Seventh Plan (Statement-4.) While 52 per cent of its gross capital formation was financed from its own saving (gross) in the First Plan, the share was lower and fluctuated between 33 to 45 per

Statement 4 : Financing of Capital Formation by Government Sector

(Rupees Crore)								
Item	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan ^(a)	VI Plan	VII Plan ^(b)
1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Gross Savings	873 (52)	1,451 (34)	3,175 (40)	2,139 (33)	6,868 (42)	22,903 (45)	25,332 (25)	14,138 (14)
2. Gross Capital Formation	1,678	4,284	7,978	6,534	16,518	51,085	99,686	99,896
3. Resource Gap (c) (2-1)	805 (48)	2,833 (56)	4,803 (60)	4,395 (67)	9,650 (58)	28,182 (55)	74,354 (75)	85,758 (86)
4. Financial Sources	966	3,357	5,446	5,052	11,055	39,194	88,990	96,772
5. Financial Uses	83	441	1,040	953	3,170	8,912	15,081	16,345
6. Financial Deficit (4-5)	883	2,916	4,406	4,099	7,886	30,282	73,909	80,427
7. Discrepancy (3-6)	-78	-83	397	296	1,764	-2,100	445	5,331
8. Financial Deficit Financed by								
A. Sectors								
i) Banking	371 (42)	1,502 (52)	1,489 (34)	1,032 (25)	4,690 (59)	13,999 (46)	40,867 (55)	36,602 (46)
ii) Other Financial Institutions	136 (16)	390 (13)	514 (12)	360 (9)	2,002 (25)	6,943 (23)	11,315 (16)	14,666 (18)
iii) Private Corporate Sector	-38 (-4)	-89 (-3)	-116 (-3)	-41 (-1)	-259 (-3)	-1,212 (-4)	-1,984 (-3)	-679 (-1)
iv) Households	237 (26)	509 (17)	541 (12)	433 (10)	929 (12)	3,788 (12)	13,954 (19)	18,063 (22)
v) Rest of the World	98 (11)	842 (29)	2,211 (50)	2,037 (50)	238 (3)	5,069 (17)	10,428 (14)	10,016 (13)
iv) Unclassified	79 (9)	-238 (-8)	-234 (-5)	278 (7)	286 (4)	1,695 (6)	-673 (-1)	1,759 (2)

(Contd....)

(Contd. . . .)

Statement 4 : Financing of Capital Formation by Government Sector (Concd.)

(Rupees Crore)								
Item	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan ^(a)	VI Plan	VII Plan ^(b)
1.	2.	3.	4.	5.	6.	7.	8.	9.
B. Instruments								
i) Currency & Deposits	98 (11)	70 (2)	-12 (-)	-65 (-2)	-112 (-1)	1,198 (4)	11,529 (15)	10,578 (13)
ii) Securities	400 (45)	2,063 (71)	2,037 (46)	1,303 (32)	4,189 (53)	14,484 (48)	31,380 (43)	42,011 (52)
iii) Loans & Advances	-72 (-8)	511 (17)	1,640 (37)	1,627 (40)	804 (10)	5,732 (19)	8,753 (12)	12,394 (15)
iv) Small Savings	240 (27)	403 (14)	670 (15)	413 (10)	1,287 (16)	3,523 (11)	10,345 (14)	11,201 (14)
v) Social Security ^(d) Funds	100 (11)	172 (6)	347 (8)	297 (7)	962 (13)	2,696 (9)	5,310 (7)	6,875 (9)
vi) Trade Debt (net)	-	-	42 (1)	191 (5)	47 (1)	193 (1)	-265 (-)	-4,567 (-6)
vii) Foreign Claims Not Classified Above	40 (5)	-57 (-2)	-82 (-2)	-14 (-)	-185 (-2)	-507 (-2)	-1,810 (-3)	-2,779 (-3)
viii) Unclassified	77 (9)	-246 (-8)	-236 (-5)	347 (8)	894 (11)	2,963 (10)	8,665 (12)	4,714 (6)

Note : Figures in brackets for item (8) are percentages to item (6) and those for items (1) & (3) are to item (2).

(a) : Includes also 1979-80.

(b) : Relate to 1985-86, 1986-87 and 1987-88, Provisional.

(c) : Unadjusted for net capital transfers receipts.

(d) : Includes life insurance fund and State and public provident funds.

cent during the Second and the Fifth Plan periods. This share dwindled precipitately to 25 per cent and 14 per cent, respectively, during the Sixth Plan and the Seventh Plan (3 years) periods. Thus, the government sector had financed as large as 75 to 85 per cent of its capital formation from domestic and foreign borrowing during the last two Plans compared with 55 to 65 per cent in the earlier Plans. In other words, the government's dependence on external sources became overwhelmingly large during the Sixth and the Seventh Plan periods mainly due to the poor generation of own saving.

13. The resource gap represents the excess of investment over saving and capital transfers whereas the financial deficit denotes the financial sources net of financial uses, obtained from the Flow-of-Funds Accounts. Data on capital transfers are, however, not presented. The financial uses represent government assistance to other domestic units, such as, co-operative banks and societies, and households, and also to foreign units besides its cash balances. The financial deficit should normally match with resource gap. However, a discrepancy is noticed and it is large at 10.6 per cent of the investment in the Fourth Plan, perhaps in the absence of the data on capital transfers. The financing pattern is discussed in terms of financial deficit.

14. Gross borrowing⁴ (financial sources) of government recorded a phenomenal rise from Rs. 966 crore in the First Plan to Rs. 88,990 crore in the Sixth Plan and further to Rs. 96,772 crore in the three year period of the Seventh Plan. The government sector financed its financial deficit mainly through its borrowing from banking, except in the Third Plan and the Annual Plans period, and from other financial institutions from the Fourth Plan onwards. The banking sector financed 42-55 per cent of the financial deficit in all plan periods except during the Third Plan and the Annual Plans when its share was only 34 per cent and 25 per cent, respectively. In absolute terms, the borrowing (net) from banking sector steeply increased from Rs. 13,999 crore in the Fifth Plan to Rs. 40,867 crore in the Sixth Plan. During the Third and the Annual Plans periods, Rest of the World (i.e., foreign

4. Borrowings from various institutional agencies net of repayments.

sector) financed 50 per cent of the deficit while it accounted for about 13-17 per cent from the Fifth Plan onwards. During the Fourth and the Fifth Plan periods, other financial institutions, viz., IDBI, LIC, UTI, general insurance companies, etc., financed one-fourth of the deficit which decreased to about 18 per cent in the Seventh Plan period. Although the household sector financed one-fourth of the gap through provident fund and small savings in the First Plan, the share decreased and hovered around 10-12 per cent up to the Fifth Plan. But in the subsequent Plan periods the share increased to 19 per cent in the Sixth Plan and further to 22 per cent in the Seventh Plan as observed earlier.

15. The government sector preferred to finance its deficit mainly through issuance of securities (including Treasury bills) which accounted for about 45-50 per cent of the deficit in almost all Plans. It financed about 10-15 per cent of the deficit through loans, except in the Third and the Annual Plans, when the share was about 40 per cent perhaps because of large external borrowing. Small savings continued to share about 10-15 per cent of the deficit and showed some rise between the Fifth and the Sixth Plan periods.

Financing of Capital Formation by Private Corporate Business Sector

16. The private corporate business sector comprises non-government non-financial companies and co-operative non-credit societies. Saving and capital formation of the sector increased from Rs. 455 crore and Rs. 681 crore, respectively, in the First Plan to Rs. 13,428 crore and Rs. 39,765 crore in the Sixth Plan (Statement 5). The sector financed 67 per cent of its capital formation from its saving in the First Plan while only 47 per cent was financed in the Third Plan. However, the share of saving in investment increased to 60 per cent in the Fourth and the Fifth Plan periods. During the Sixth and the Seventh Plans, about 35 per cent of the investment only was financed from its saving, leaving a large resource gap of about 65 per cent to be financed from external sources.

Statement 5 : Financing of Capital Formation by Private Corporate Business Sector

Item	(Rupees Crore)							
	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan ^(a)	VI Plan	VII Plan ^(b)
1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Gross Savings	455 (67)	907 (48)	1,821 (47)	1,316 (51)	3,943 (60)	8,346 (60)	13,428 (34)	14,360 (37)
2. Gross Capital Formation	681	1,885	3,850	2,575	6,576	13,852	39,765	38,700
3. Resource Gap ^(c) (2-1)	226 (33)	978 (52)	2,029 (53)	1,259 (49)	2,633 (40)	5,506 (40)	26,337 (66)	24,338 (63)
4. Financial Sources	493	934	1,735	1,244	3,216	11,696	27,701	25,122
5. Financial Uses	77	110	138	110	1,085	2,832	7,643	8,034
6. Financial Deficit (4-5)	416	824	1,597	1,134	2,131	8,864	20,058	17,388
7. Discrepancy (3-6) ^(c)	-190	154	432	125	502	-3,358	6,279	6,950
8. Financial Deficit								
Financed by								
A. Sectors								
i. Banking	63 (15)	363 (44)	813 (51)	696 (61)	581 (27)	2,719 (31)	6,404 (32)	6,332 (36)
ii. Other Financial Institutions	40 (10)	82 (10)	354 (22)	226 (20)	431 (20)	1,403 (16)	5,273 (26)	6,025 (35)
iii. Government	29 (7)	95 (12)	115 (7)	68 (6)	200 (9)	597 (7)	837 (4)	-235 (-1)
iv. Households	275 (66)	281 (34)	253 (16)	89 (8)	945 (44)	2,791 (31)	5,674 (28)	5,334 (31)
v. Rest of the World	8 (2)	61 (7)	62 (4)	60 (5)	-67 (-3)	-109 (-1)	157 (1)	-180 (-1)
vi. Unclassified	1 (-)	-58 (-7)	- (-)	-5 (-)	41 (2)	1,463 (16)	1,714 (9)	111 (-)

(Contd. . . .)

Statement 5 : Private Corporate Business Sector - Savings, Investment and Financial Deficits

Item	(Rupees Crore)						
	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan ^(a)	VII Plan ^(b)
1.	2.	3.	4.	5.	6.	7.	8.
B. Instruments							
i) Currency & Deposits	-48 (-12)	-28 (-3)	-60 (-4)	-21 (-2)	-409 (-19)	-512 (-6)	-1,743 (-8)
ii) Securities	199 (48)	257 (31)	457 (29)	179 (16)	446 (21)	1,305 (15)	4,269 (21)
iii) Loans & Advances	239 (57)	672 (82)	1,290 (81)	1,056 (93)	1,174 (55)	4,588 (52)	11,680 (58)
iv) Trade Credit (net)	24 (6)	-62 (-8)	-90 (-6)	-79 (-7)	463 (22)	1,037 (12)	1,382 (7)
v) Unclassified	2 (1)	-15 (-2)	-	-1 (-)	457 (21)	2,446 (27)	4,471 (22)
							3,858 (22)

Note : 1. The coverage of years in each plan is given in the Text :

2. Figures in brackets for item (8) are percentages to item (6) and those for items (1) and (3) are to item (2).

(a) Includes also 1979-80.

(b) Relate to 1985-86, 1986-87 and 1987-88, Provisional.

(c) Unadjusted for net capital transfer receipts.

17. A large discrepancy between resource gap and financial deficit may be seen during the Fifth to the Seventh Plan periods. Statement 5, however, does not present data on net capital transfer receipts due to non-availability of details for all Plan periods. The financial deficit was higher than the resource gap in the Fifth Plan while the reverse was the case for the next two Plan periods. The large difference may be due to the increasing transfers of non-financial nature, such as, capitalisation of reserves (issuance of bonus shares), non-operating surplus (which do not form part of saving), non-matching intra-sectoral transactions under financial sources and uses, etc. Another reason for the large discrepancy may be under- or over-estimation of capital formation or saving or financial sources/uses. There appeared to be large amounts of transfers during the Sixth and the Seventh Plan periods; if the financial deficit essentially represents such transfers, about 15-18 per cent of the capital formation seemed to have been financed through this source.

18. With these limitations in the background, the financing pattern has been discussed in relation to the sector's financial deficit. The borrowing (i.e., financial sources) from other economic units recorded steep rise from the Fifth Plan period onwards commensurate with the rise in the sector's capital formation. Banking sector emerged as a single largest source in financing the capital formation of the sector, whose share increased from 15 per cent to 61 per cent during the First and the Annual Plan periods. This share fell sharply in the Fourth Plan period and regained only gradually thereafter. This relative decline in the share of bank finance for the private corporate sector is explained by a number of supply and demand factors, as also institutional changes. First, there were severe recessionary conditions in Indian industry for about a decade during the 1970's and demand for bank credit slowed down. Second, term finance, which was provided by banks before the mid-1960's began to be rendered by term-finance institutions. Third, with the implementation of inventory and receivable norms since the middle of the 1970's some vigour has been introduced in the scrutiny regarding the drawal of bank credit by medium and large-scale industries. Finally, with the increase in household saving, companies have also resorted to larger resources directly from the household sector.

19. The other financial institutions which were mostly set up in the Third Plan, financed 20-26 per cent of the resource gap during the Third and the Sixth Plans, except in the Fifth Plan, as against 10 per cent in the first two Plans. The other financial institutions stepped up their financing activity in the Seventh Plan, thus raising its share to 35 per cent. Although the household sector financed 66 per cent of the gap in the First Plan, its share nose dived to 16 per cent in the Third Plan and further to 8 per cent during the Annual Plans. However, the share increased to 44 per cent in the Fourth Plan which again decreased to around 28-38 per cent in the subsequent periods. In absolute terms, however, there was a steep rise between the Fifth and the Sixth Plan periods. The direct finances from the Rest of the World sector accounted for 4 to 7 per cent of the deficit during the Second Plan and the Annual Plans. There was a net outflow of funds to the Rest of the World sector during the Fourth and the Fifth Plan periods as also in the Seventh Plan.

20. The private corporate business sector financed its resource gap through loans and advances to a greater extent which accounted for more than 80 per cent of the deficit during the Second Plan to the Annual Plans, whereas the share was about 50-60 per cent in other Plan periods, except in the Seventh Plan when the share was only 39 per cent. Issuance of securities was the next source of finance which recorded increase in its share after the Fifth Plan period and accounted for 36 per cent of the gap in the Seventh Plan. There was net outflow of funds in the form of trade credit during the Second Plan to the Annual Plans and the trend reversed to net borrowing of 22 per cent in the Fourth Plan. The share, however, decreased to 7 per cent in the Sixth Plan. About one-fifth of the financial deficit could not be classified under any instrument from the Fourth Plan onwards but, as explained earlier, the bulk of this should be explained by transfers of a non-financial nature.

21. The Indian economy has witnessed significant progress in terms of the issuance of financial claims over the Plan periods to provide finances for investment purpose. Besides fiscal incentives the setting up of financial institutions during the sixties and nationalisation of commercial banks supported the process of

raising the levels of savings and capital formation. The share of secondary securities in the total issues increased during the planning era and their growth vis-a-vis primary securities was indicated by the intermediation ratio which rose from 0.38 to 0.94 during the period under review.

22. There has been a shift in the saving pattern of households from saving in physical assets to saving in financial assets as also in the composition of financial savings. The increasing diversification of the economy has been shown by the fall in the share of currency holding in financial savings. Household saving in primary securities, viz., shares & securities and small savings, has recorded a rise after the Fifth Plan as against a decline in the share of deposits. Household preference is thus seemed to divert to primary securities from bank deposits.

23. It is observed for the Seventh Plan period that the government sector financed only 15 per cent of its investment from its own saving. The government sector, as stated earlier, consists of general government (i.e., government administration and departmental enterprises) and non-departmental enterprise. It is observed from the data on gross saving that the general government incurred huge dissavings (e.g., -Rs 3,710 crore in 1987-88 and -Rs 6,022 crore in 1988-89) during the late eighties while the non-departmental enterprises had savings of Rs. 10,571 crore and Rs. 12,368 crore in 1987-88 and 1988-89, respectively. Thus, the low share of saving in investment in this sector could mainly be attributed to the general government's dissaving which stems from its rising revenue account deficit, which in turn is due to rising consumption expenditure. A factor that has contributed to the bulging of financial issues in the economy is the phenomenal growth of financial deficit - and debt - of the government sector, particularly during the Sixth and the Seventh Plan periods. Corroborative evidence suggests that while resource mobilisation has been substantial, it is the rising share of non-development expenditure, or consumption expenditure, in total expenditure, that is responsible for dissavings in the general government.

24. The private corporate business sector financed only about 35 per cent of its gross capital formation from its own saving

during the Sixth and the Seventh Plans. Thus, the sector depended heavily on external sources. Banking sector which financed the gap to a large extent during the Third Plan and the Annual Plans, assisted only to the extent of about 35 per cent to bridge the gap in the recent Plans. Other financial institutions, viz., IDBI, UTI, LIC, IFC, etc., came into prominence by financing about 25 to 35 per cent of the resource gap of the sector. A distinct change discernible in the Seventh Plan period has been the more rapid increase in the share of corporate securities, and a decline in the share of loans and advances, in financing the corporate sector's financial deficit.

References

1. Divatia, V.V. and Venkatachalam, T.R., (1976) 'Flow of Funds Accounts', *Reserve Bank Staff Occasional Papers*, Vol. I, No. 2, Bombay, December.
2. Central Statistical Organisation, *National Accounts Statistics*, 1989 and earlier issues. CSO, Delhi.
3. Rangarajan C., (1984) 'Financial Infrastructure and Economic Development', Rajmitra B. D. Amin Memorial Lecture Series, Indian Chemical Manufacturers' Association, Bombay, March.
4. Reserve Bank of India (RBI) *Chart Book on Financial Indicators*, Bombay, 1978.
5. Reserve Bank of India (RBI) 'Financial Flows in The Indian Economy' *Reserve Bank of India Bulletin*, March 1967, July 1969, August 1975.
6. Reserve Bank of India (RBI) (1982) *Report of the Working Group on Savings* (Chairman: K. N. Raj) (Bombay: February).
7. Reserve Bank of India: *Report on Currency and Finance*, Vol. I & II, 1988-89 and earlier issues, Bombay.
8. Reserve Bank of India, (1980) 'Flow of Funds Accounts in the Indian Economy, 1970-71 to 1976-77', *Reserve Bank of India Bulletin*, Bombay, March.
9. Reserve Bank of India, (1988) 'Flow of Funds in the Indian Economy, 1976-77 to 1980-81', *Reserve Bank of India Bulletin*, Bombay, December.

Rural-Urban Income Series : Some Estimates

Deepak Mohanty and A. George[®]

I. INTRODUCTION

IN the formulation of the Eighth Five-Year Plan, the rural sector has come to occupy the centre stage. Another thrust area has been employment generation. However, the appraisal of rural sector is often constrained by the absence of a comprehensive estimate of rural income comparable with national income. Considering the demand for rural and urban estimates of income by planners, policy makers and parliamentarians, the Central Statistical Organisation (CSO) initiated its first study for the estimation of domestic product by rural and urban areas for 1970-71 after the release of the 1971 Population Census data on workers by industrial categories (CSO, 1989 b). Subsequently, the CSO released the estimates of rural income by industry of origin for the year 1970-71 in 1980-81 and, following the 1980-81 Population Census, the rural income estimates for the year 1980-81 were released in 1988-89.

2. Thus, there has been a considerable time-lag in the availability of point estimates of rural income for the years 1970-71 and 1980-81. Understandably so, since the rural income estimates are prepared following mostly the 'income approach' whereby per worker value added in each industry is multiplied by the number of workers separately for urban and rural areas. The non-availability of a time series on rural income stems from the absence of a time series on working force. Nonetheless, the CSO

[®] Shri Deepak Mohanty is Assistant Adviser and Shri A. George, Assistant Research Officer in the Department of Economic Analysis and Policy. The authors are grateful to Dr D.K. Bhatia, Adviser, for his valuable suggestions.

relies on its own estimates of working force by detailed industrial classes and related indicators to generate year-wise estimates of value added in the unorganised sub-sectors of manufacturing, trade, transport and other services for the purposes of the National Accounts Statistics (NAS). Apart from inter-censal growth rates for the main workers' category, the CSO makes adjustments for subsidiary workers and marginal workers and also uses some physical indicators for extrapolating the working force. (For a detailed discussion, see Chapter 17 of CSO, 1989). Employment statistics in the public and organised private sectors are available from official sources. Some specific rounds of National Sample Survey (NSS) also provide information on employment separately for rural and urban sectors and by major industrial categories. Keeping in view these relevant statistics, the present paper makes an attempt to provide a set of time series data on rural and urban incomes. With the help of these estimates and other available statistics, an assessment has been made of the trends in rural and urban per capita incomes over the past four Five-Year Plan periods.

II. RURAL – URBAN INCOME ESTIMATES

CSO's Decennial Series

3. The share of the rural areas in Net Domestic Product (NDP) by industry of origin for the years 1970-71 and 1980-81, as estimated by the CSO, are presented in Table 1. As would be expected, bulk of the primary activities is centred in rural areas. However, the share of rural areas in primary sector NDP dropped slightly from 95.8 per cent in 1970-71 to 93.6 per cent in 1980-81 due largely to declines in the rural shares in fishing and mining and quarrying. A drop in rural share of fishing from 76.4 per cent to 70.4 per cent during the period indicates a faster growth of marine fishing since the entire inland fish catch is treated to be in rural areas. Even the rural share in NDP originating in agriculture dropped from 96.9 per cent in 1970-71 to 95.2 per cent in 1980-81 reinforcing the trend towards growing urbanisation.

4. The rural share of secondary sector showed a notable increase from 30.9 per cent in 1970-71 to 35.2 per cent in

Table 1 : Rural Share of Net Domestic Product (NDP)

(In percentages)

Sector	1970-71	1980-81	Compound growth rate * between 1970- 71 and 1980-81 (percentage per annum)
1. Primary sector	95.76	93.58	-0.23
1.1 Agriculture	96.91	95.24	-0.17
1.2 Forestry	88.16	96.73	0.93
1.3 Fishing	76.42	70.75	-0.82
1.4 Mining & quarrying	60.86	54.75	-1.05
2. Secondary sector	30.95	35.25	1.31
2.1 Manufacturing	25.40	31.84	2.29
2.2 Construction	43.23	45.62	0.54
2.3 Electricity, gas and water	39.94	40.07	0.03
3 Tertiary sector	28.77	34.02	1.69
3.1 Transport, Storage and communication	22.30	22.99	0.31
3.2 Trade, hotels, and restaurants	18.17	30.34	5.26
3.3 Banking & insurance	19.25	15.70	-2.02
3.4 Real estate	48.41	49.98	0.32
3.5 Public administration	42.20	34.28	-2.06
3.6 Others	37.88	42.85	1.24
Total Net Domestic Product (NDP)	62.79	58.85	-0.65

Source: CSO, *Monthly Abstract of Statistics*, July 1989.

1980-81, primarily on account of a growth in the share of rural manufacturing from 25.4 per cent to 31.8 per cent underlining the importance of unregistered manufacturing in our domestic product¹. The tertiary sector is considered to be the hub of urban activity. Interestingly, the rural share of tertiary sector which was 28.8 per cent in 1970-71 increased to 34.0 per cent in 1980-81. But the highest increase was recorded in the rural share of 'trade, hotels and restaurants' from 18.2 per cent in 1970-71 to 30.3 per cent in 1980-81 which could be attributable to the growing commercialization of agriculture and larger movements of people between rural and urban areas. At the same time, the possible 'Push' factors tending to drive agricultural workers into non-agricultural activities even with low productivity and incomes following the force of casualisation of labour and declining trends in labour absorption in agriculture have been recognised even in official literature (Planning Commission, 1989).

Thus, the estimate for 1970-71 juxtaposed with that of 1980-81 shows a clear shift in the pattern of rural income during the decade of the seventies - the rural share of tertiary sector grew by 1.7 per cent per annum followed by 1.3 per cent per annum for the secondary sector, whereas the share of primary sector shrank at the rate of 0.2 per cent per annum.

Annual Series

5. Total rural NDP (TRNDP) can be obtained as a product of net value added in each industry ($NVAI_i$) and the respective rural share (RS_i) summed up over all the industries. That is,

$$TRNDP = \sum_{i=1}^n NVAI_i \cdot RS_i$$

The year-wise estimates of $NVAI_i$ are available from the NAS and by interpolating RS_i for each industry we have estimated TRNDP by industry of origin for the period 1970-71 to 1979-80. The estimates are presented in statement I.

1. Significantly the share of unregistered manufacturing in total manufacturing increased from 45.5 per cent in 1970-71 to 46.3 per cent in 1980-81.

6. The trend that has emerged over a decade and consistent with a tendency towards urbanisation is more likely to persist in the medium-term than get reversed abruptly. For the subsequent period upto 1988-89, we have worked out estimates of TRNDP by extrapolation of the respective rural shares in industries other than agriculture and trade. *Agriculture being primarily a rural occupation* it would be unrealistic to presume that the share of rural sector would slide below 95.2 per cent (actual for 1980-81) in the 1980s. As regards 'trade, hotels and restaurants', the drop in the share of urban sector and consequent rise in the share of rural sector coincided with a fall in organised sector employment in this segment from 6.61 lakh in 1970-71 to 3.98 lakh in 1980-81. Subsequently, the organised sector employment in this industry recovered a small part of the lost ground and increased to 4.22 lakh in 1987-88. However, with the tempo of 'Green Revolution' having levelled off, it is unlikely that the share of rural sector would show the kind of increase observed during the 1970s. As such for the purpose of our estimation of rural income for the 1980s, we have assumed the rural share of agriculture and trade at 95.2 per cent and 30.3 per cent, respectively. The estimate of rural NDP by industry of origin, at constant (1980-81) prices for the years 1980-81 to 1988-89 are presented in statement II.

The Urban Share

7. The estimate of NDP originating in the urban sector has been derived as a residual by subtracting the estimate of rural NDP from total NDP and the data for the years 1970-71 to 1988-89 are presented in statements III and IV. The estimates indicate that the share of rural income in total NDP declined from 60.2 per cent during the last four years of the Fourth Five Year Plan to 58.2 per cent during the Sixth Five Year plan and further to 55.9 per cent during the first four years of the Seventh Five Year Plan. Lest this should be misconstrued, it may be pointed out that the share of rural population as well as workers have also been declining over the Five Year Plans as a consequence of the growing urbanisation². Moreover, during the span of these two decades, the drop

2. As per the census data, the share of rural population in total population declined from 80.2 per cent in 1970-71 to 76.9 per cent in 1980-81.

in the share of rural income has been less than the fall in the share of agriculture in NDP indicating the growing diversification of rural economy.

8. The changes in sectoral composition of rural income over the Plans, that emanate from our estimates, are given in Table 2. It can be seen that the relative importance of primary sector, particularly agriculture in terms of its contribution to total rural income, declined from 63.7 per cent in Fourth Five Year Plan to 54.5 per cent during the Seventh Five Year Plan. The share of the secondary sector increased from 11.1 per cent to 17.9 per cent during the period as a sequel to the increase in the share of manufacturing from 7.0 per cent to 13.3 per cent. The share of the tertiary sector also moved up steadily from 16.6 per cent during the Fourth Five Year Plan to 22.8 per cent during the Seventh Five Year Plan.

9. Viewed from the standpoint of an alternative sectoral classification, the fall in the share of commodity producing sectors³ in total rural income from 79.3 per cent during the Fourth Five Year Plan to 72.6 per cent during the Seventh Five Year Plan, has been compensated for by a rise in the share of essential infrastructure⁴. Unlike in the urban sector, the share of 'public administration and defence' in the rural areas hovered around 2.8 per cent of total rural income.

10. An analysis of growth rates indicates a narrowing down of growth differential between rural and urban incomes. While the annual growth of rural income (0.9 per cent during the last three years of the Fourth Five Year Plan was much lower than the annual growth of urban income (2.4 per cent) during the Fifth Five Year Plan, the growth rate of rural income (4.5 per cent) compares well

3. Comprises all primary activities and manufacturing. This restrictive definition has been adopted because electricity has had to be included under essential infrastructure.

4. Includes construction, electricity, gas and water supply, transport, storage and communication, trade hotels and restaurants, banking and insurance. For more detailed discussion on the importance of essential infrastructure in economic development, see Mohanty and Raghavan (1990).

Table 2 : Sectoral Composition of Rural NDP at 1980-81 Prices

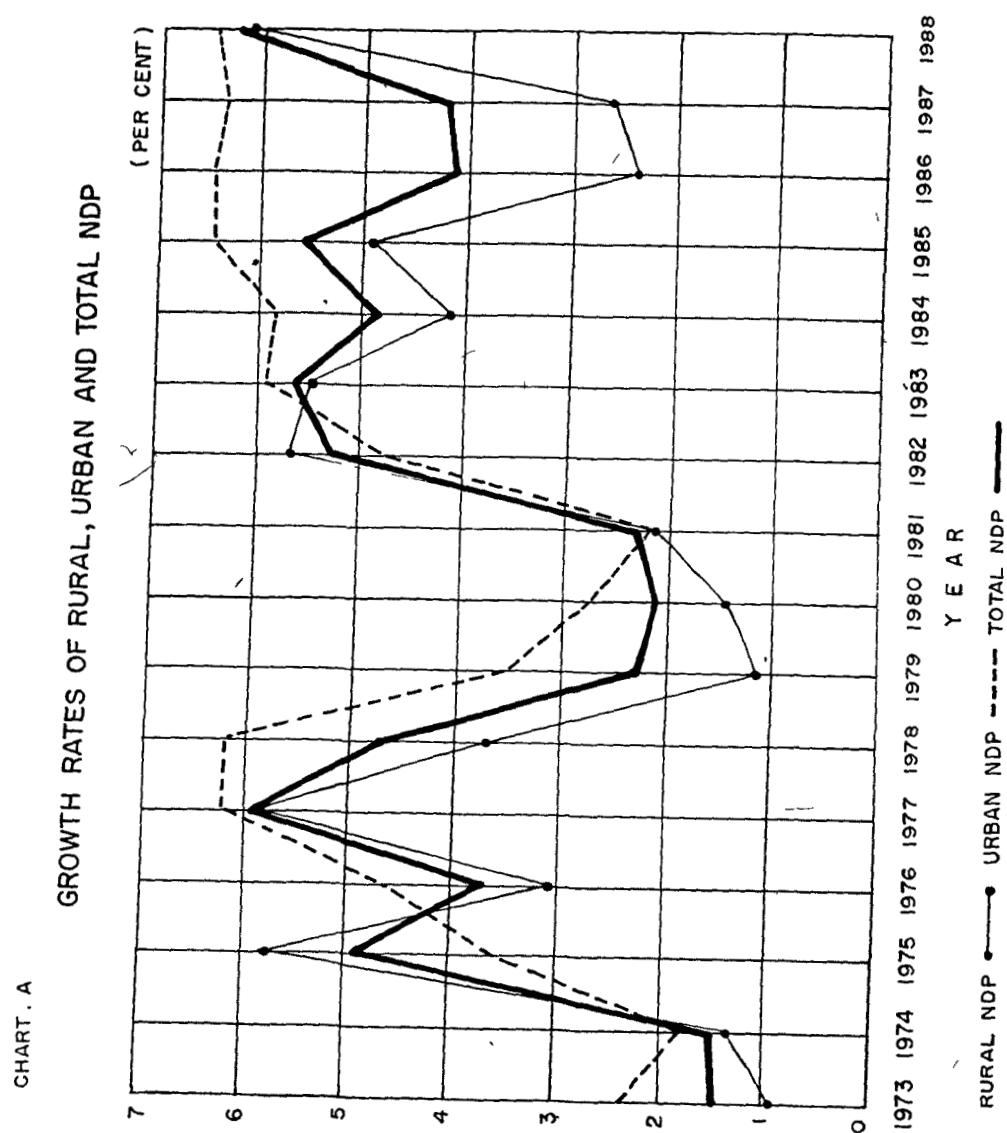
(In Percentages)

Sector	IV Plan	V Plan	VI Plan	VII Plan
1. Primary sector	72.30	69.17	64.40	59.31
1.1 Agriculture	63.65	60.98	58.42	54.49
2. Secondary sector	11.12	12.58	14.71	17.88
2.1 Manufacturing	6.99	8.18	10.27	13.29
3. Tertiary sector	16.58	18.25	20.88	22.81
4. Commodity producing sector (1 + 2.1)	79.29	77.35	74.67	72.60
5. Essential infrastructure	9.58	11.48	13.50	14.56
6. Other services	8.37	8.52	9.10	9.89
7. Public administration and defence	2.76	2.65	2.73	2.95
8. Total Rural NDP (1+2+3 = 4+5+6+7)	100.0	100.0	100.0	100.0

Note: Estimates for the Fourth and the Seventh Five Year Plans relate to last four years and first four years of the Plans, respectively.

Source: Compiled from Statements I and II.

with that of urban income (5.4 per cent). During the Sixth Five Year Plan period the yearly growth of rural income (5.8 per cent) exceeded that of urban income (4.0 per cent) due to an excellent agricultural performance in 1980-81 and 1983-84. During the first four years of the Seventh Five Year Plan, despite erratic agricultural performance the growth in rural income has been quite high at 5.4 per cent per annum. The three-year moving averages of



growth rates of rural and urban incomes as well as the overall NDP are presented in chart A, which indicates somewhat of an upward shifting of the growth curve for rural incomes during the 1980s. This is corroborated by the estimates of annual compound growth rates of incomes in the two sectors during 1980s; the rural incomes at 5.6 per cent per annum which turns out to be higher than the growth in urban incomes at 5.4 per cent per annum. This could well provide a clue to the rise in consumption of sophisticated urban goods in rural areas⁵. In general, the rural and urban sectors seem to have contributed equally to the process of acceleration of economic growth of the 1980's.

III. PER CAPITA NDP

11. The all-India population increased from 541 million in 1970-71 to 679 million in 1980-81 and is further projected to have touched 800 million in 1988-89. The share of rural population has fallen from 80.2 per cent in 1970-71 to 76.9 per cent in 1980-81. As regards the subsequent years, the "Expert Committee on Population Projections" [Census of India -1961 (1988)] has projected that the share of rural population would decline to 74.7 per cent in 1985-86 and further to 72.5 per cent in 1990-91. Thus, the share of rural population is presumed to have declined at an exponential rate of 0.5 per cent per annum during the first half of the eighties and at 0.6 per cent per annum during the second half. Taking these parameters for projecting rural population, per capita rural and urban NDP for the eighties have been worked out and the same are presented in Table 3.

12. It can be seen that the average per capita urban NDP in real terms (1980-81 prices) which had declined from Rs. 2,945 in Fourth Five Year Plan to Rs. 2,939 in Fifth Five Year Plan, increased marginally to Rs. 3,019 during the Sixth Five Year Plan. As against this, the average per capita rural NDP in real terms has shown a steady increase from Rs. 1,136 in the Fourth Five Year Plan to Rs. 1,318 during the Sixth Plan. As a result, the ratio of rural to urban income increased from 1.00 to 2.59 in the Fourth

5. For a further exposition of this issue, see Mohanty and George (1990)

Table 3 : Per Capita NDP at 1980-81 Prices

(In Rupees)

	Rural	Urban	All-India	Rural to Urban Ratio
IV Plan				
a.	1136	2945	1503	1.00 : 2.59
b.	1136	2871	1497	1.00 : 2.53
V Plan				
a.	1212	2939	1588	1.00 : 2.42
b.	1286	3096	1692	1.00 : 2.41
VI Plan				
a.	1318	3019	1727	1.00 : 2.29
b.	1395	3120	1829	1.00 : 2.24
VII Plan				
a.	1475	3344	1960	1.00 : 2.27
b.	1619	3485	2112	1.00 : 2.16

Notes :

1. 'a' indicates average for the Plan
2. 'b' indicates terminal year of the Plan.
3. Estimates for the Fourth and Seventh Five Year Plan relate to last four years and first four years of the Plans, respectively.

Five Year Plan to 1.00 to 2.29 during the Sixth Five Year Plan. As regards the Seventh Five Year Plan, notwithstanding a substantial increase in per capita urban NDP to Rs. 3,344, the ratio of rural to urban per capita income showed further improvement to 1.00 to 2.27.

13. Finally, a comparison of sectoral composition of rural income at current and constant prices reveals that during the eighties, the income terms of trade within the rural sector has shifted in favour of non-agricultural incomes. Keeping in view the declining share of agriculture in rural income, a narrowing down of the gap between urban and rural per capita incomes points to an increase in rural share of non-agricultural income.

14. A major caveat that should be added before concluding this paper is that an increase in per capita rural NDP may have been accompanied by increased inequality, particularly in the distribution of the benefits of the Green Revolution⁶.

REFERENCES

1. Census of India - 1981: Occasional Papers, No.4(1988) *Report of the Expert Committee on Population Projections*, January.
2. Central Statistical Organisation (1989a): *National Accounts Statistics, New Series 1950-51 - 1979-80* June.
3. Central Statistical Organisation (1989 b): "Estimates of Rural and Urban Income, 1980-81", *Monthly Abstract of Statistics*, July.
4. Central Statistical Organisation (1989 c): *National Accounts Statistics: Sources and Methods*, October.
5. Central Statistical Organisation (1990): *National Accounts Statistics*, March.
6. Chakravarty, Sukhamoy (1987): *Development Planning: the Indian Experience* (Clarendon Press, Oxford)
7. Datt, Ruddar (1990): "Unemployment and Growth Process in India", *Financial Express*, August 30.
8. Dev, Mahendra S.(1990): "Non-Agricultural Employment in Rural India", *Economic and Political Weekly*, June 14.
9. Ghosh, Arun (1990): "NSS consumer Expenditure Data: A Rejoinder", *Economic and Political Weekly*, January 27.
10. Minhas, B. S.(1990): "NSS Consumer Expenditure Data: A comment", *Economic and Political Weekly*, January 27.
11. Mohanty D. and George, A. (1990): "Rural sector - Non-Agricultural Income Flows", *The Economic Times*, August 11.
12. Mohanty, D. and Raghavan, V.(1990): "New Series of National Accounts Statistics and Structure of Indian Economy", *Economic and Political Weekly*, July 17.
13. Nagaraj, R.(1990): "Growth Rate of India's GDP, 1950-51 to 1987-88" *Economic and Political Weekly*, June 30.
14. Planning Commission (1989): *Seventh Five Year Plan, 1985-90: Mid-Term Appraisal*, New Delhi
15. Reserve Bank of India (1989): *Report on Currency and Finance, 1988-89*, Vol. II.

6. "Thus, while the Green Revolution increased output, it conferred more than proportionate benefits to the better-off farmers in the infrastructurally better endowed regions" (Chakravarty, 1987, p.27) Though Chakravarty was making this observation in reviewing the initial years of the Green Revolution, the basic thrust of this conclusion remained valid even for the most recent period.

Statement I: Rural Income During the 1970's
(Rural NDP at Factor Cost at 1980-81 Prices)

Sector - Industry	1970- 71	1971- 72	1972- 73	1973- 74	1974- 75	1975- 76	1976- 77	1977- 78	1978- 79	1979- 80
(Rs. Crore)										
1. Primary Sector	37703	36835	34823	37316	36622	41486	38881	42803	43640	37668
1.1 Agriculture	33478	32408	30354	32909	31835	36461	33980	38305	38908	33237
1.2 Forestry	3127	3296	3301	3237	3557	3690	3599	3212	3418	3141
1.3 Fishing	473	502	510	518	557	589	560	550	574	564
1.4 Mining and quarrying	625	629	658	652	673	746	742	736	740	726
2. Secondary Sector	5314	5526	5793	5914	6517	6535	7300	7975	8783	8509
2.1 Manufacturing	3242	3424	3635	3883	4073	4222	4729	5157	5970	5847
2.2 Construction	1846	1858	1910	1789	2197	2015	2233	2481	2431	2304
2.3 Electricity, gas & water supply	226	244	248	242	247	298	338	337	382	358
3. Tertiary Sector	7858	8249	8583	8948	9435	10127	10667	11317	12192	12677
3.1 Transport, storage & communication	434	445	483	501	567	626	683	695	752	795
3.2 Trade, hotels etc.	1736	1860	1961	2149	2363	2720	2957	3374	3864	3925
3.3 Banking & insurance	343	373	389	383	338	395	470	501	569	537
3.4 Real estate	2088	2172	2251	2335	2418	2508	2578	2671	2766	2866
3.5 Public administration	1342	1404	1418	1452	1476	1518	1548	1578	1661	1742
3.6 Other services	1915	1995	2081	2129	2273	2360	2431	2498	2580	2812
Total Net Domestic Product (NDP)	50875	50610	49199	52178	52574	58148	56848	62095	64615	58854

(For source and estimation procedure, see the text)

Statement II : Rural Income During the 1980's
(Rural NDP at Factor Cost at 1980-81 Prices)

Sector - Industry	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
1. Primary Sector	42482	45009	44200	48934	48792	48845	48018	48196	56908
1.1 Agriculture	38149	40613	39960	44813	44685	44753	43891	44169	52812
1.2 Forestry	2959	2923	2721	2515	2495	2493	2402	2292	2252
1.3 Fishing	561	569	560	683	731	721	732	746	791
1.4 Mining and quarrying	807	904	959	923	881	878	993	989	1053
2. Secondary Sector	8919	9744	10228	11420	12306	13429	14641	15681	17187
2.1 Manufacturing	5953	6598	7215	8150	8859	9808	10819	11723	12999
2.2 Construction	2633	2785	2645	2842	2958	3091	3233	3312	3484
2.3 Electricity, gas & water supply	333	361	368	428	489	530	589	646	704
3. Tertiary Sector	13416	14048	14900	15599	16493	17708	18844	19920	21162
3.1 Transport, storage & communication	856	905	940	1005	1107	1221	1301	1431	1544
3.2 Trade, hotels etc.	4345	4627	4884	5137	5353	5790	6131	6349	6847
3.3 Banking & insurance	533	562	640	666	732	811	895	951	1045
3.4 Real estate	2959	3071	3189	3365	3501	3650	3811	3971	4126
3.5 Public administration	1819	1811	1962	1980	2134	2248	2422	2618	2739
3.6 Other services	2904	3072	3285	3446	3666	3988	4284	4600	4861
Total Net Domestic Product (NDP)	64817	68801	69328	75953	77591	79982	81503	83797	95257

(For source and estimation procedure, see the text)

Statement III : Urban Income During the 1970's
(Urban NDP at Factor Cost at 1980-81 Prices)

Sector - Industry	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
1. Primary Sector	2,035	2,077	2,063	2,189	2,252	2,560	2,482	2,686	2,799	2,553
1.1 Agriculture	1,067	1,092	1,078	1,225	1,244	1,492	1,453	1,704	1,804	1,599
1.2 Forestry	420	408	371	334	331	306	262	202	182	136
1.3 Fishing	146	161	168	177	196	215	210	213	229	231
1.4 Mining and quarrying	402	416	446	453	481	547	557	567	584	587
2. Secondary Sector	12,287	12,539	12,880	13,051	12,686	13,592	14,803	15,727	17,176	16,247
2.1 Manufacturing	9,521	9,755	10,047	10,404	10,577	10,622	11,528	12,176	13,650	12,936
2.2 Construction	2,425	2,417	2,460	2,284	1,738	2,522	2,768	3,045	2,955	2,775
2.3 Electricity, gas & water supply	341	367	373	363	371	448	507	506	571	536
3. Tertiary Sector	17,975	18,507	18,900	19,387	20,016	21,441	22,404	23,478	25,078	25,140
3.1 Transport, storage & communication	1,512	1,543	1,670	1,727	1,944	21,40	2,325	2,357	2,540	2,674
3.2 Trade, hotels etc.	7,820	7,862	7,782	7,991	8,227	8,865	9,011	9,597	10,247	9,694
3.3 Banking & insurance	1,440	1,604	1,714	1,731	1,568	1,875	2,287	2,499	2,909	2,817
3.4 Real estate	2,225	2,300	2,370	2,442	2,514	2,591	2,645	2,725	2,803	2,887
3.5 Public administration	1,837	1,992	2,085	2,210	2,324	2,473	2,607	2,747	2,988	3,236
3.6 Other services	3,141	3,206	3,279	3,287	3,439	3,497	3,529	3,553	3,591	3,832
Total Net Domestic Product (NDP)	32,297	33,123	33,843	34,627	34,954	37,593	39,689	41,891	45,053	43,940

(For source and estimation procedure, see the text)

Statement IV : Urban Income During the 1980's
(Urban NDP at Factor Cost at 1980-81 Prices)

Sector - Industry	(Rs. Crore)									
	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	
1. Primary Sector	2,913	3,140	3,169	3,455	3,457	3,481	3,577	3,619	4,165	
1.1 Agriculture	1,907	2,030	1,997	2,240	2,233	2,237	2,194	2,208	2,639	
1.2 Forestry	100	99	92	85	84	84	81	77	76	
1.3 Fishing	239	246	249	312	343	347	362	378	410	
1.4 Mining and quarrying	667	765	831	818	797	813	940	956	1,040	
2. Secondary Sector	16,381	17,488	18,085	19,693	20,678	22,001	23,353	24,348	25,954	
2.1 Manufacturing	12,745	13,661	14,445	15,764	16,560	17,704	18,846	19,706	21,075	
2.2 Construction	3,138	3,287	3,091	3,289	3,388	3,506	3,629	3,679	3,830	
2.3 Electricity, gas & water supply	498	540	549	640	730	791	878	963	1,049	
3. Tertiary Sector	26,028	27,383	29,292	30,740	32,792	35,542	38,131	40,541	43,555	
3.1 Transport, storage & communication	2,868	3,021	3,124	3,328	3,652	4,009	4,257	4,664	5,009	
3.2 Trade, hotels etc.	9,977	10,625	11,213	11,793	12,292	13,295	14,075	14,577	15,720	
3.3 Banking & insurance	2,861	3,090	3,605	3,845	4,326	4,910	5,547	6,035	6,790	
3.4 Real estate	2,961	3,053	3,151	3,303	3,416	3,538	3,670	3,799	3,922	
3.5 Public administration	3,488	3,585	4,005	4,167	4,629	5,027	5,582	6,216	6,696	
3.6 Other services	3,873	4,009	4,194	4,304	4,477	4,763	5,000	5,250	5,418	
Total Net Domestic Product (NDP)	45,322	48,011	50,546	53,888	56,927	61,024	65,061	68,508	73,674	

(For source and estimation procedure, see the text)

Planning for Agricultural Transformation

Review and Prospects for Indian Agriculture

Mridul K. Saggar and V. Sunder Raghavan*

INDIAN agriculture has made significant strides during successive decades of planning. In spite of the set-backs due to periodical droughts and the pressure generated by the population increasing at a rate of above 2.0 per cent per annum, foodgrains production has increased by 3.4 times over the planning era and per capita availability of essential commodities such as cereals, sugar, edible oils, tea, eggs and milk, has also increased so as to make some improvement in the quality of life of the masses. The rise in the marketable surplus of cereals has helped the country become self-sufficient. Moreover, we have been able to build up a sufficient level of buffer stock which together with the Public Distribution System (PDS) has provided a food security net to the population, insulating the poor and the vulnerable from weather-induced fluctuations in prices and output.

2. Notwithstanding these significant gains on the agricultural front, the failure to take production on a higher growth path despite technological transformation has exposed certain structural limitations of the Indian agriculture and raised crucial questions about the adequacy of planning in this sector, as also the role allocated to the sector in the economy as a whole. The long-term growth in Indian agricultural production has been of the order of 2.6 per cent per annum falling well short of the growth rate of 4.0 per cent expected by the planners. A more disconcerting feature is the sign of deceleration in both foodgrains and non-foodgrains production after the technological breakthrough in the mid-sixties. Moreover,

* Shri Mridul K. Saggar and Shri V. Sunder Raghavan are Research Officers in the Department of Economic Analysis and Policy.

critical shortages persist in case of pulses and oilseeds and these have not only important implication in nutritional terms but also in terms of income levels of the farmers in dry and unirrigated areas.

3. This paper purports to examine the trends in agricultural production in the larger context of the stimuli provided by the policy initiatives taken under different five year plans. The task of examining the role of planning in agricultural transformation is formidable. Considering the variegated nature of the issues involved, we have chosen to focus only on the production aspect. However, the analytical framework by no means precludes forays into issues of resource allocation, prices, land-use pattern, supply of inputs, etc. and above all, issues of institutional changes concerning land-man relationships which are considered necessary to maintain sound theoretical underpinnings to the analysis.

4. The paper is schematized under four sections. Section I revisits the performance of agriculture under various plans before and after the introduction of new technology. Sections II and III review the trends in production of major agricultural crops over the plan period and examine significant changes in trends for these crops after the mid-sixties and during the eighties. Section IV analyses the emerging challenges for the Eighth Plan in the light of crop and regional imbalances.

I. Review of the Performance

5. The First Five Year plan was launched in 1951-52 with agriculture as its mainstay. The crop yields then were so low that given adequate irrigation, supplies of fertilizers, improved seeds and implements, education of farmers in using better methods, promotion of the co-operative movement and the reform of the antiquated land systems, immense scope existed for large increases in the levels of production and productivity over relatively short periods. Planning for agricultural transformation began in this context.

The Pre-Green Revolution Period

6. Agriculture was accorded the highest precedence in the

First Plan. Out of the total public sector outlay of Rs. 2317 crore, Rs. 823 crore or 35.5 per cent was earmarked for agriculture, rural development, co-operation, irrigation and flood control. In terms of resource allocation, agriculture was never accorded a similar priority in any subsequent plan (see Table 1).

7. The performance of agriculture during the First Plan was also an unparalleled success. The plan target of 61.6 million tonnes foodgrains production was surpassed by a wide margin and cereal imports were progressively cut to a meagre 0.6 million tonnes in 1954-55. Prices of foodgrains also slumped and an impression of sufficient marketable surplus was generated¹. The foodgrains production target was exceeded in the Second Plan too but serious shortages emerged and following the stagnation of foodgrains output during the first three years of the Third Plan, cereal imports touched a record level of 10.3 million tonnes or 16.6 per cent of domestic production in 1965-66. Foodgrains production at 72.3 million tonnes in the terminal year of the Third Plan was not only wide off the 100 million tonnes target, but also below the base level for the Third Plan. Pressure of shortages spilled over to the prices during the Second and Third Plans, completely wiping off the additions made to the consumption basket of the poor due to significant absolute fall in prices of cereals and other food articles during the First Plan. As for non-foodgrains production, except for oilseeds in the First Plan and sugarcane in the Second and Third Plans, targets were generally not realised (Table 2).

8. In all, the compound annual growth rate of agricultural production averaged 3.1 per cent for the entire per-Green Revolution period. Non-foodgrains production increased faster than the foodgrains production, but in terms of expectations, the performance of both left a lot to be desired. This prompted several

1. When the First Plan was formulated, prices of wheat and rice were 5 to 5¹/₂ times higher than their pre-war levels. Therefore, ensuring that food prices are stabilized so that they remain within the poor's budget, became one of the major concerns of the Plan. Judged in this context, the 23 per cent fall in food prices in the First Plan period should qualify as one of the important landmarks in the history of Indian Planning. The Index Number of Wholesale Prices for Food Articles (Base 1952-53 = 100) declined from 112.5 in 1951 to 86.6 in 1955-56.

Table 1: Agriculture in Public Sector Plan Outlays/Expenditure

Table 1: Agriculture in Public Sector Plan Outlays/Expenditure											(Rupee crores)	
Five Year Plans	Agriculture (including co-operation) ¹		Rural Development (excluding co-operation & special areas programme) ²		Irrigation (including flood-control) ³		Agriculture, Irrigation & Rural Development (including Special Areas Programme) ⁴		All-Sectors (i. e. Total Public Sector Plan)			
	Out-lay	Ex-pen-diture	Out-lay	Ex-pen-diture	Out-lay	Ex-pen-diture	Out-lay	Ex-pen-diture	Out-lay	Ex-pen-diture		
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.		
First (1951-52 to 1955-56)	238 (10.3)	211 (10.8)	116 (5.0)	79 (4.0)	469 (20.2)	434 (22.1)	823 (35.5)	724 (36.9)	2317 (100.0)	1960 (100.0)		
Second (1956-57 to 1960-61)	275 (5.7)	216 (4.7)	227 (4.7)	219 (4.6)	486 (10.1)	515 (11.2)	988 (20.6)	950 (20.7)	4800 (100.0)	4600 (100.0)		
Third (1961-62 to 1965-66)	768 (9.5)	528 (6.2)	322 (4.0)	288 (3.4)	837 (10.3)	937 (10.9)	1927 (23.8)	1753 (20.4)	8099 (100.0)	8576 (100.0)		
Annual (1966-67 to 1968-69)	664 (10.0)	547 (8.3)	67 (1.0)	97 (1.5)	732 (11.0)	794 (12.0)	1463 (22.0)	1438 (21.7)	8665 (100.0)	8625 (100.0)		
Fourth (1969-70 to 1973-74)	2059 (12.9)	1649 (10.5)	115 (0.7)	115 (0.7)	1641 (10.3)	1911 (12.1)	3815 (24.0)	3675 (23.3)	15902 (100.0)	15779 (100.0)		
Fifth (1974-75 to 1978-79)	3356 (8.5)	3217 (8.2)	412 (1.0)	604 (1.5)	4432 (11.3)	4752 (12.1)	8650 (22.0)	8741 (22.2)	39322 (100.0)	39426 (100.0)		
Sixth (1980-81 to 1984-85)	6440 (6.6)	7323 (6.7)	4754 (4.9)	6297 (5.8)	12160 (12.5)	10930 (10.0)	24834 (25.5)	26130 (23.9)	97500 (100.0)	109292 (100.0)		
Seventh (1985-86 to 1989-90)	10524 (5.8)	12686 (5.7)	8906 (4.9)	14195 (6.4)	16979 (9.4)	16719 (7.5)	38713 (21.5)	47036 (21.2)	180000 (100.0)	222164 (100.0)		

Notes:

- * Anticipated (projected under the assumption that for the terminal year of the Plan, expenditure will equal annual plan outlay)
- 1) Includes crop husbandry, soil and water conservation, animal husbandry and dairying, fisheries, management of natural disasters, investment in agricultural financial institutions, cooperation, agricultural research & education, forestry & wild life, agricultural marketing & rural godowns, food storage & warehousing & food processing & plantation.
- 2) Includes land reforms, IRDP and related special employment programmes, NREP, RLEGP and Integrated Rural Energy Programme.
- 3) Includes major and medium irrigation, minor irrigation, Command Area Development & Flood control & Anti-Sea Erosion.
- 4) Special Areas Programme includes Hill Areas, Border Area Development Programme, Western Ghat Development Programme, North-Eastern Council and other Area Development Programmes.

Table 2 : Agricultural Production - Plan targets and achievements

Plan Terminal Years	Foodgrains (in million tonnes)					Major Non-Foodgrains*			
	Rice	Wheat	Coarse cereals	Pulses	Total Food-grains	Oil-seeds	Cotton (Lint)	Raw Jute (J)/ Mesta (JM)	Sugar-cane (gur- G/cane-C)
1. 1949-50	(A) 23.54	6.39	16.83	8.16	54.92	5.23	2.75	3.11 ^J	4.9 ^G
2. 1955-56	(T) --	--	--	--	61.60	5.50	4.22	5.39 ^J	6.3 ^G
(First Plan)	(A) 27.56	8.76	19.49	11.04	66.85	5.73	4.18	4.23 ^J	6.0 ^G
3. 1960-61	(T) 28.5-	10.5-	23.0-	11.5-	75.00	7.00	5.50	5.00 ^J	7.1 ^G
(Second Plan)	(A) 29.5	11.5	24.0	12.0					
4. 1965-66	(A) 34.58	11.00	23.74	12.70	82.02	6.98	5.60 [@]	4.13 ^J	8.0 ^G
(Third Plan)	(T) --	--	--	--	100.00	9.80	7.00	6.20 ^J	10.0 ^G
5. 1973-74	(A) 30.59	10.40	21.42	9.94	72.35	6.40	4.85	4.48 ^J	11.8 ^G
(Fourth Plan)	(T) 52.00	24.00	38.00	15.00	129.00	10.50	8.00	7.40 ^J	15.0 ^G
6. 1978-89	(A) 44.05	21.78	28.83	10.01	104.67	9.39	6.31	6.22 ^J	14.4 ^G
(Fifth Plan)	(T) 54.00	38.00	34.00	14.00	140.00	12.50	8.00	7.70 ^{JM}	170.00 ^C
7. 1984-85	(A) 53.77	35.51	30.44	12.18	131.90	10.10	7.96	8.33 ^{JM}	151.66 ^C
(Sixth Plan)	(T) 63.00	44.00	32.10	14.50	153.60	13.00	9.20	9.08 ^{JM}	215.00 ^C
8. 1989-90	(A) 58.34	44.07	31.17	11.96	145.54	12.95	8.50	7.79 ^{JM}	170.32 ^C
(Seventh Plan)	(T) 73-75	56-57	34-35	15-16	178-183	18.00	9.50	9.50 ^{JM}	217.00 ^C
(A)\$	72.8	52.5	34.0	13.4	172.7	17.16	11.49	8.35 ^{JM}	210.40 ^C

Notes: (1) * Oilseeds and sugarcane is measured in million tonnes; cotton and jute & mesta are measured in million bales. of 170 kgs & 180 kgs each.

G-indicates sugarcane measured in terms of Gur & C-in terms of cane. J-Indicates Jute only. JM indicates Jute & Mesta.

(2) T : Original Plan targets; A: Achievements.

(3) @ As the second Plan targets for foodgrains, oilseeds, cotton, jute & sugarcane were revised to 80.5, 7.6, 6.5, 5.5 and 7.8, respectively, realised cotton output in 1960-61 is lower than the revised target.

(4) \$: Anticipated production.

economists to subscribe to the view of 'urban bias' [see, for instance, Lipton (1968, 1975) and Chaudhri (1978)]. The view attributes the low growth of agricultural output to low priority accorded to agricultural sector by the planners in matters of resource allocation. During the entire period of the first three plans, the share of agriculture, rural development and irrigation in the total public sector expenditure amounted to 22.6 per cent, which was lower than the share of industry. This certainly lends credence to the urban-bias hypothesis as the now available series for capital-output ratios show that the ratio increased from 1.4 to only 1.6 for agriculture during the period as against a sharp rise from 0.8 to 2.0 for Manufacturing (registered and unregistered) and 1.4 to 3.4 in case of registered manufacturing, where the planned investment was distinctly made (see table 3)².

Table 3 : Net Fixed Capital-Output Ratio

Year,	Agriculture	Registered Manufactur- ing	Total Manufactur- ing	Total All Sectors
1950-51	1.37	1.40	0.83	2.31
1955-56	1.30	2.15	1.16	2.20
1960-61	1.29	3.04	1.66	2.27
1965-66	1.59	3.38	1.96	2.57
1970-71	1.40	3.30	2.18	2.45
1975-76	1.49	3.12	2.24	2.52
1980-81	1.47	3.10	2.32	2.53

Source : C. S. O.

2. For one of the earliest works in the area, Mukherjee (1969) may be cited.

9. Furthermore, Ashok Mitra (1963, 1977) argued that from the point of view of resource mobilisation, the agricultural sector was being undertaxed, as the share of agriculture in tax revenue was lower than its share in national product and the sector had a sizeable untapped taxable capacity in terms of considerable income and wealth inequalities in rural sector. The view was later supported by Ved Gandhi (1966) and the Raj Committee (1982) also proposed an Agricultural Holdings Tax. Lipton (1969) and Shetty (1971), however, found evidence to the contrary. In addition, taking cognizance of some movement of terms of trade in favour of agriculture during the period, there does seem to be merit in the argument that more resources could have been generated for agriculture sector during the period, both from the sector itself and from other sectors. This was important because stock of reproducible capital at the time of Independence was very low and large investments in creation of infrastructure for agriculture, in particular minor and major irrigation, was a necessary condition for rapid increase in agriculture production notwithstanding the doubts expressed on this by Schultz (1964)³.

10. Another area of major concern to the planners was the need for institutional reforms. Despite appropriately worded paragraphs in successive Five Year Plans assigning high priority to land reforms, implementation was tardy and left a lot to be desired⁴. Even then, the abolition of Zamindari, by the implementation of the Zamindari Abolition Act in the early 1950s, did constitute a major step as it made available large areas of farm land for redistribution and also brought more than 20 million of tenants

-
3. A word may be said here about the great debate stimulated by Professor Theodore Schultz's observation that India "already has three times as much land under irrigation as Japan - measured on a per capita basis. Yet India has invested large sums, during recent years, in still more irrigation". Responding to this Professor Dantwala (1967) commented, "It is absurd to measure irrigation requirement on a per capita basis. The only sensible basis of judging the requirement is the soil-climate complex. 55 per cent of Japan's arable land was irrigated in 1962 as against only 15 per cent in India. In a country where the major threat to farming is drought, irrigation must have the highest priority".
4. On Land reforms see Krishna (1959), Ladejinsky (1965, 1972), Dandekar and Rath (1971), Khusro (1973) and Swamy (1984).

into direct relationship with the state [Planning Commission (1960), p. 221.]. Land ceilings were, however, not properly enforced and the record on the redistribution of surplus land as well as land consolidation was poor. It may be said that the potentialities of land reforms were not fully exploited. The loss on this count is obvious since literature shows that more often than not, farm size has inverse relationship with farm productivity⁵.

11. As regards the impact of prices on production, available evidence on shift in terms of trade and movements in price indices suggest that farm prices had poor relationship with agricultural output and did not constitute a disincentive for production. Furthermore, the quantum of imports under PL-480 did not depress cereal prices. Dantwala (1967) notes that in years of very low cereal prices (1954-56), PL-480 imports were negligible. This justifies the general view among planners that the policy should be to augment per capita availability of cereals and maintain price stability, so as to keep them within the reach of the poor. Indeed, Dantwala, Mitra and Dharam Narain cogently argued that high agricultural prices in absence of suitable technology cannot raise production to any significant extent and that in any case such an approach will injure poor [Vyas (1986)]. Apparently, technology was the most critical constraint during the period. Also, high open market prices do not necessarily ensure high farm-gate prices.

The post-Green Revolution Period

12. With the possibilities of further expansion in area under cultivation becoming increasingly less by the mid-sixties and diminishing returns having set in, as less and less resource-rich land was added at the margin, the need to push the production frontier outwards through some kind of technological breakthrough

5. An intense debate on the relationship between farm size and productivity took place in the sixties. A.K. Sen, A.M. Khusro, G.R. Saini and Hanumantha Rao expounded the hypothesis of inverse relationship. However, Ashok Rudra, A.P. Rao, Krishna Bhardwaj and Usha Rani maintained that the relationship was indeterminate. Lately, Sen and Rudra (1980) have tried to synthesise their views. They have expressed the opinion that inverse relationship is more often confirmed than rejected, even though no generalisation is possible.

was increasingly recognised by the planners. It was in this context that a package of new agricultural practices was introduced on a country-wide scale since the mid-sixties. High-yielding Variety (HYV) seeds were imported from Mexico and the Philippines and the use of related package of inputs was promoted. This technological transformation had important ramifications for the future of Indian agriculture in terms of its impact on output, employment, incomes and ecological dynamics.

13. Agricultural sector continued to account for less than a quarter of the total plan outlay or expenditure during this period. The share of agriculture and co-operation declined sharply since the Fifth Plan while that of irrigation and flood control was perceptibly lower in the Seventh Plan. However, there has been a marked jump in allocation for rural development since the Sixth Plan due to thrust to rural poverty and employment generation programmes, viz. IRDP, NREP and RLEGP.

14. If the 'urban-bias' hypothesis is accepted as a valid proposition for the pre-Green Revolution period, it should be *prima facie* accepted for the post-Green Revolution period also. However, evidence on the movement of terms of trade in this period is much more blurred and the issue is further complicated by rapid growth in resources, cycled and recycled by banking and financial intermediaries, that are not strictly captured by plan statistics. Total institutional outstanding direct finances to agriculture and allied activities increased from Rs. 14.30 crore at end-June, 1968 to Rs. 24,047 crore at end-June 1989. There was also an impressive rise in indirect finance to agricultural sector. As per the All-India Debt and Investment Surveys, the share of institutional agencies in total debt owed by rural households steadily increased from 17.3 per cent in 1961 to 29.2 per cent in 1971 and further to 61.2 per cent in 1981 [Gothoskar (1988)]; the corresponding share in the case of cultivator households also doubled from 31.7 per cent in 1971 to 63.2 per cent in 1981 [RBI, 1987]. The growth of institutional finance constituted a particularly important supportive policy measure to the transformation of Indian agriculture during the period.

15. On terms of trade and the response of marketed surplus

and output to prices, considerable literature has mushroomed in recent period. Thamarajakshi (1977) showed a shift in terms of trade in favour of agriculture from 1968-69 to 1973-74. More recent estimates by Kahlon and Tyagi (1983), combining farm-gate prices with weights obtained from the 26 th Round of the NSS (1978), showed a clear declining trend since the mid-sixties in terms of trade of agriculture vis-a-vis non-agriculture. This constituted a strong rebuttal of the Mitra (1977) doctrine that agriculture as a whole received returns in excess of what it merited and that, since the mid-sixties, this trend had become stronger than it was before. However, Kahlon and Tyagi's methodology has been put to intensive scrutiny by Nalini Vittal (1986) and numerous doubts of crucial nature have been raised. On the relationship between prices, farm output and marketable surplus, Thamarajakshi (1969) and Saith (1978) show that marketed surplus is a function of output. Further, Thamarajakshi (1977) shows output to be a function of lagged terms of trade and a time factor subsuming technology. Krishna (1982) also emphasises the role of technology. Mention may also be made of the interesting results of Rao (1971) showing irrigation as a key cause for incremental output and not prices. These are issues of immense relevance to policy formulations because Ahluwalia (1978) in his celebrated paper had established an inverse relationship between rural poverty and per capita output for rural population. The rural poverty in turn was found to be having a positive relationship with prices by Dharam Narain [Mellor and Desai (1986)]. Griffin and Ghose (1979) and Saith (1981) found a strong positive relationship of rural poverty with time after accounting for variations in prices and per capita output though a weak relationship is discerned by Ahluwalia (1978).

16. However, the most fundamental of the debates concerning the performance of agriculture in the post-Green Revolution period revolves round the appropriateness of the "new technology". Protagonists of the technology make production their strongest argument while the detractors summarise their concern along the following lines: "The new technology in agriculture has failed to increase the rate of growth of output in agriculture sector. On the other hand, it has increased income and wealth inequalities in the rural areas. In fact, Green Revolution has never occurred in the Indian case. What is being called as Green Revolution was at best

an evolution and not a revolution. The fault lies with inherent disadvantages with the new technology in Indian circumstances.⁶

17. It is indeed true that the rate of growth of output instead of increasing has somewhat declined after the introduction of new technology⁷. But, as we shall see in Sections II and III, new technology has improved yields at a higher rate than that realised before the mid-sixties. With possibilities of area expansion drying up, production after the mid-sixties would have stagnated but for the improvement of yields brought about by technology infusion.

18. The production and its pattern during the post-Green Revolution period was favourably affected by a series of special area-specific and crop-specific thrust programmes implemented by the government, starting with the Intensive Agricultural District and Intensive Agricultural Area Programmes, which formed the basis of HYV seeds propagation since the mid-sixties. Following the mid-Term Appraisal of the Fourth Plan, a number of programmes were launched for commercial crops⁸. The schemes such as the Small Farmers Development Agencies (SFDA) and Marginal Farmers & Agricultural Labourers (MFAL) programme taken up on a pilot basis during the Fourth Plan, were adopted on a large scale in the Fifth Plan. The Sixth Plan schemes of IRDP, NREP and RLEGP had spill-over benefits for agriculture though their efficacy was limited by the leakages in implementation. Under the Seventh Plan, a Special Rice Production Programme (SRPP) was taken up in the Eastern Region and following the mid-Term Appraisal, a Special Foodgrains Production Programme (SFPP) was launched in 1988-89 in 169 districts of 14 States to increase production of five focus crops - rice, wheat, maize, arhar and gram. Besides, several other programmes were taken up for non-foodgrains

6. For greater insight into the debate, see Chaudhri (1978) and Ladejinsky (1973).

7. This is borne out by the studies of individual researchers as well as official statistics, published by the Ministry of Agriculture (1989).

8. They include Intensive Cotton District Programme, Extension of Hybrid-4 Cotton, Development of Cotton in Sunderbans of West Bengal, Intensive Jute District Programme, Development of Soyabean and Development of Sunflower. Besides these commercial crop programmes, Drought Prone Areas Programme (DPAP) was also introduced following the Mid-Term Appraisal.

crops⁹. The readiness of the Indian farmer to adopt the technology packages offered under these programmes constituted the biggest asset for Indian agriculture, enabling the government and the farmers to strike a fruitful partnership and resulting in opening new vistas for the Indian planning.

19 Even then, realised production during the period was generally short of the plan targets. The plan targets were, however, accomplished in case of oilseeds during the Sixth and Seventh Plan and in case of cotton during the Fifth Plan; while they were surpassed in case of jute and mesta during the Fifth Plan and cotton during the Seventh Plan. Also, the performance of foodgrains production during eighties was notably robust and the deficits from targets were not large.

20. Irrespective of the advances and inadequacies on the front of output trends of various crops, the new technology has established one merit that it is improving yields. What has caused worry for the planners is its equity aspect. Mechanisation of agriculture displaces human labour and to that effect it is labour-saving. However, larger harvests and multiple cropping increase the demand for labour. The net-effect cannot be determined *a priori*¹⁰. However, since adoption of new technology is not evenly spread across regions and across social classes, there is reason to believe that disparities may have increased as a result of the Green Revolution. Herein lies the relevance of land reforms, as the fault is not inherent in technology, since land size is not positively related to productivity. Despite the problems arising in the

9. They include National Oilseeds Development Project (NODP) launched in 1985-86, and Oilseeds Production Thrust Project (OPTP) and Special Jute Development Programme (SJDP) launched in 1987-88. Also, in May 1986, a Technology Mission on Oilseeds (TMO) was launched to provide for crop production technology, post-harvest technology, input and service support to farmers and price support, storage, processing and marketing support for the oilseeds crop. Besides these programmes for commercial crops, a National Pulses Development Programme (NPDP) was also launched in 1986-87.

10. On the impact of mechanisation on labour demand Billings and Singh (1969), Raj (1972), NCAER (1973), Ladejinsky (1973), Rao (1975, 1990) and Bhalla (1989) may be referred.

adoption of new technology because of its high cost, import and energy-intensity and some divergence between technically optimum input dose and economically optimum input dose, new technology is a plus-sum game¹¹. The endeavour of the state policy should be to broad-base the benefits out of such technology for in the words of Dantwala (1970), "if, as a result of HYV transformation, disparities are widened it will at least be a consequence of an upward thrust; and those who would be pushed ahead would not necessarily be a privileged few". In totality, given the institutional transformation *pari passu* with the technology transformation, more potentialities of the Indian farms can be harnessed. Nevertheless, increased productivity and increased per capita availability of some commonly consumed agricultural commodities are important achievements during the period which cannot be overlooked¹².

II. Trends in Production

21. One of the major concerns regarding agricultural performance in recent years has been the fears expressed about a deceleration in production of both foodgrains and non-foodgrains crop. There is a growing literature on the subject since the seventies. Patnaik (1981) showed that "there was a marked deceleration in growth rates, not only of the total agricultural produce but also of foodgrains produces seperately". However, Patnaik's analysis was based on end-point comparisons of three-year averages and could therefore, be misleading. Isher Ahluwalia (1985) found that the growth rate decreased slightly in the post-Green Revolution period but the decline was statistically insignificant. Kannan (1984) presented evidence of deceleration in case of non-foodgrains crop and no deceleration in case of foodgrains.

22. The hypothesis that growth rates have not fallen after the

11 For instance, Minhas and Srinivasan (1972) and Parikh and Srinivasan (1974) demonstrate that fertiliser application was subject to diminishing returns with economically optimum dose being less than technically optimum. It is fallacious to generalise these results to say that physical or financial returns with fertiliser application are less than without it.

12. The point has also been recognised in Approach to the Eighth Five Year Plan : Towards Social Transformation (Planning Commission, May 1990).

introduction of new technology has also received some support in recent years. Srinivasan (1979) found that there was "no evidence of either acceleration or deceleration" in the output of food crops over the period 1949-50 to 1977-78. In a more detailed analysis in which state-level trends were also analysed, Alagh and Sharma (1980) found that estimated growth rates in the period 1969-70 to 1978-79 are generally higher than those in the period 1960-61 to 1969-70. Samant (1983) showed that the compound growth rate of foodgrains production from 1950-51 to 1967-88 was 2.2 per cent per annum, which rose to 2.5 per cent per annum when the period was extended till 1980-81.

Hypothesis of Deceleration in the Post-Green Revolution Period

23. Since evidence available in existing literature has not conclusively settled the question of validity of deceleration hypothesis, we decided to undertake our own analysis taking cognizance of a more recent period, extending up to 1988-89, the latest year for which the data are available as of now. We estimated annual average compound growth rates using semi-log/exponential trend $\log Y = a + bt$ (1) equations for major agricultural crops for the following periods:

- i) long-term trend : 1949-50 to 1988-89
- ii) Pre-Green Revolution (GR) trend : 1949-50 to 1964-65
- iii) Post-Green Revolution (GR) trend : 1967-68 to 1988-89
- iv) The present decade trend : 1980-81 to 1988-89.

The results obtained are presented in Table 4¹³.

24. It may be observed that the total agricultural production (all-crops) measured in terms of All-India Index Numbers (base triennium ending 1969-70 = 100) showed an annual average

13. The choice of the exponential functions, though not beyond dispute, is now well established in the literature on trends in agricultural production. For understanding the issues involved in the choice of the function, see Vaidyanathan (1979), Dandekar (1980), Rao (1980), Krishnaji (1980), Chattopadhyay and Bhattacharya (1986), and Reddy (1987). The choice of other trend functions available include linear trend, second degree polynomial, logistics and gompertz curve.

Table 4 : All-India Agricultural Growth Rates

Crop		1949-50 to 1988-89	1949-50 to 1964-65	1967-68 to 1988-89	1980-81 to 1988-89
1. Foodgrains	A	0.61**	1.41**	0.22*	-0.27
	P	2.65**	2.96**	2.68**	2.68*
	Y	1.72**	1.43**	2.10**	2.63**
2. Non-Foodgrains	A	0.99**	2.52**	0.42**	-0.49
	P	2.61**	3.54**	2.57**	2.73**
	Y	1.18**	0.93**	1.57**	2.11**
3. All-Crops	A	0.69**	1.61**	0.27**	-0.34
	P	2.63**	3.13**	2.64**	2.69**
	Y	1.56**	1.30**	1.92**	2.45**
4. Rice	A	0.84**	1.33**	0.56**	0.28
	P	2.54**	3.49**	2.60**	3.20*
	Y	1.70**	2.13**	2.06**	2.91**
5. Wheat	A	2.58**	2.68**	2.02**	0.53
	P	5.89**	3.99**	5.27**	3.94**
	Y	3.21**	1.27**	3.17**	3.37**
6. Coarse cereals	A	-0.15	0.90**	-0.97**	-1.35**
	P	1.21**	2.23**	0.42	0.74
	Y	1.23**	1.29**	1.34**	0.51
7. Pulses	A	0.27**	1.90**	0.30*	-0.23
	P	0.37*	1.39*	0.74	1.55
	Y	0.26*	-0.23	0.51	1.73*
8. Oilseeds	A	0.85**	2.69**	0.17	-0.22
	P	2.04**	3.18**	1.91**	3.49*
	Y	0.80**	0.20	1.47**	2.51*
9. Cotton (Lint)	A	0.24	2.47**	-0.35	-2.06**
	P	2.25**	4.56**	1.83**	-0.61
	Y	2.00**	2.04**	2.18**	2.68
10. Jute & Mesta	A	0.79**	3.86**	0.45	-2.01
	P	1.48**	4.20**	1.95**	1.62
	Y	0.75**	0.73**	1.38**	2.31*
11. Sugarcane	A	1.84**	3.27**	1.53**	1.26
	P	2.96**	4.26**	2.70**	2.08
	Y	1.16**	1.12**	1.16**	0.80*

- Notes: 1) A = Area, P = Production and Y = Yield; A/P/Y are dependent variables for equation (1): $\log Y = a + bt$.
2. Growth Rates (r) are arrived at by adjusting the exponential trend coefficient (b): $r = [\text{antilog}(b)] - 100$. The choice of exponential trend is well established in the literature on trends in agricultural production. Dandekar (1980) may be cited for the methodological issues in this regard.
- 3) ** Indicates that trend coefficient (b) is statistically different from zero at 1 per cent level of significance.
* Indicates that trend coefficient (b) is statistically different from zero at 5 per cent level of significance

compound growth rate of 2.6 per cent over 1949-50 to 1988-89. The growth rates obtained in the post-GR period and in the present decade are not different from this. However, when compared to the average growth rate of 3.1 per cent per annum for the pre-GR period, there has been some deceleration in agricultural production in the post-GR period. However, there is a major qualitative difference in the growth pattern between the two periods. Yield growth rate improved significantly from the annual average compound rate of 1.3 per cent in pre-GR period to 1.9 per cent in post-GR phase, while the area growth rate slumped from 1.6 per cent to mere 0.3 per cent over the same period. It is obvious that while growth prior to the introduction of new technology in the mid-sixties came largely from expansion in area, that in the post-GR period was almost exclusively on account of higher productivity.

25 The deceleration in post-GR period *prima facie* seem to be spread across foodgrains and non-foodgrains, as area expansion for both tapered off after the mid-sixties. Area growth rates for foodgrains and non-foodgrains declined from 1.4 per cent and 2.5 per cent in the pre-GR period to 0.2 per cent and 0.4 per cent, respectively, in the post-GR period. The yield growth rates for foodgrains and non-foodgrains, over the same period, showed improvement from 1.4 and 0.9 per cent to 2.1 and 1.6 per cent, per annum. While the production growth rates in post-GR period of 2.7 per cent and 2.6 per cent, respectively, for food and non-food crops are not sizeably different from their long-term growth rates, they are clearly lower than their pre-GR growth rates of 3.0 and 3.5 per cent, per annum, respectively.

26 Analysing the growth over major crops separately, it is obvious that wheat is the mainstay of the new technology. With the sole exception of wheat, the compound annual average growth rates for production in post-GR phase are significantly lower than those obtained for the pre-GR period. Marked deceleration is noticed in cases of rice, pulses, oilseeds, cotton, raw jute & mesta and sugarcane while production of coarse cereals suffered absolute stagnation after the mid-sixties. Only in case of wheat the growth rate improved significantly from 4.0 per cent per annum prior to the mid-sixties to 5.3 per cent per annum after the introduction of new technology.

27. The trend of improving yields as a result of new technology is somewhat less pronounced in contrast to decelerating production. Trend in yields improved significantly in cases of wheat, oilseeds and jute & mesta, while no perceptible change occurred in cases of rice, coarse grains, pulses, cotton and sugarcane. The pace of area expansion was lower in case of all these major crops after the mid-sixties.

A Statistical Comparison of Growth Rates

28. It is possible that the exclusion of 1965-66 and 1966-67 because of droughts and consequent loss of information may have lowered the post-GR^{*} production growth rates. To test the deceleration hypothesis statistically we computed the growth rates afresh in a more rigorous framework in which a slope and an intercept dummy were introduced to test for a break at the mid-sixties. Strictly speaking, the year 1965 marks a cut-off point for the introduction of new technology and therefore, the post-GR period has been re-defined as 1965-66 to 1988-89 in subsequent analysis in this section.

Exponential trend formulations of the type:

$$\text{Log } Y = a_1 + b_1 t + a_2 D + b_2 tD \dots \dots (2)$$

were estimated for major crops for the period 1949-50 to 1988-89, with $D = 0$ for 1949-50 to 1964-65 and $D = 1$ for 1965-66 to 1988-89¹⁴. The results in its summary form with statistical comparison of all-India growth rates are given in Table 5.

14. In such a formulation the coefficient of time (b_1) indicates the growth rate for the first period, while the sum of this coefficient and the coefficient of the multiplicative dummy term i.e., ($b_1 + b_2$) indicates the growth rate for the second period. The coefficient of the multiplicative dummy term if statistically significant show acceleration or deceleration, when the sign is positive or negative, respectively. The coefficients of dummy variables alone show shift in intercepts. For details on methodology see Damodar Gujarati (1984).

Table 5 : Statistical Comparison of Growth Rates

Crop		Pre-Green Revolution Period (1949-50 to 1964-65)	Post-Green Revolution Period (1965-66 to 1988-89)	Statistically Significant Change in Growth Rate
1. Foodgrains	A	1.41	0.33	Fall
	P	2.96	3.06	--
	Y	1.43	2.34	Rise
2. Non-Foodgrains	A	2.52	0.44	Fall
	P	3.54	2.65	Fall
	Y	0.93	1.67	Rise
3. All Crops	A	1.61	0.35	Fall
	P	3.13	2.93	--
	Y	1.30	2.12	Rise
4. Rice	A	1.33	0.63	Fall
	P	3.49	2.91	--
	Y	2.13	2.29	--
5. Wheat	A	2.68	2.50	--
	P	3.99	6.17	Rise
	Y	1.27	3.57	Rise
6. Coarse Cereals	A	0.90	-0.86	Fall
	P	2.23	0.45	--
	Y	1.29	1.52	--
7. Pulses	A	1.90	0.26	Fall
	P	1.39	1.01	--
	Y	-0.23	0.82	--
8. Oilseeds	A	2.69	0.17	Fall
	P	3.19	2.11	--
	Y	0.20	1.63	Rise
9. Cotton (Lint)	A	2.47	-0.35	Fall
	P	4.56	1.97	Fall
	Y	2.04	2.32	--
10. Raw Jute & Mesta	A	3.86	0.18	Fall
	P	4.20	1.80	Fall
	Y	0.73	1.41	--
11. Sugarcane	A	3.27	2.56	Fall
	P	4.26	2.72	Fall
	Y	1.12	1.32	--

- Notes : 1) A = Area, P = Production, Y = Yield, A/P/Y are dependent variables for equation (2) : $\log Y = a_1 + b_1 t + a_2 D + b_2 t D$.
- 2) The pre-GR growth rate is computed as $[\text{Antilog}(b_1) - 1] 100$
The post-GR growth rate is calculated as $[\text{Antilog}(b_1 + b_2) - 1] 100$
- 3) Rise/Fall indicate that the slope dummy coefficient (b_2) is positive/negative and is statistically different from zero at 5 per cent level of significance. In other words, it indicates that the post-GR growth rate is statistically different from pre-GR growth rate. Dash indicates that b_2 is statistically not significant at 5 per cent level.

29. It may be seen that there is a statistically significant fall in production growth rate of non-foodgrains only from 3.5 per cent in pre-GR period to 2.7 per cent in the subsequent period, while foodgrains growth rate is marginally higher in post-GR phase. Thus, the break has occurred only in the case of non-food crops. The deceleration hypothesis is valid in case of non-food crops but does not appear to be valid in case of total agricultural production. When compared to the results obtained in Table 4, there does appear to be a case that exclusion of first two years in Table 4 in the post-GR phase may have lowered the growth rates. As for area and yield, growth rates in post-GR period were statistically lower in case of area and statistically higher in case of yield for foodgrains as well as non-foodgrains.

30. Analysing the trends across major crops, a statistically significant drop in growth rates is observed for production of cotton, jute & mesta and sugarcane while, as is generally believed production of wheat was found to be on a higher growth path. In case of rice, coarse cereals, pulses and oilseeds, the pre mid-sixties and the post mid-sixties growth rates were statistically not different from each other.

31. Considering the trends in area and yields, there were significant declines in area under all the major crops, except wheat. Yield growth was, however, statistically higher only in cases of wheat and oilseeds. Presumably, productivity improvements in cases of rice, coarse cereals, pulses, cotton, jute & mesta and sugarcane have not been sufficient to off-set the impact of their lower area expansion.

32. It is clear that the *prima-facie* evidence of deceleration obtained from Table 4 does not get support from Table 5, except in case of non-foodgrains. It may also be observed that the post-GR period include as many as 8 years of drought of moderate or severe intensity, as specified in Table 6, in contrast to only one drought year in pre-GR period. This may have had the effect of lowering post-GR growth rates introducing a bias in favour of deceleration hypothesis. The practice of excluding the initial drought years in post-GR period is questionable as it removes the bias against deceleration hypothesis, but does not correct the bias in its favour.

Table 6 : Drought years in Planning Era

Year	Area of the country affected	Category	Ranking
1951-52	33.2	Moderate	5
1965-66	42.9	--do--	3
1966-67	32.3	--do--	7
1972-73	44.4	Severe	2
1974-75	29.3	Moderate	9
1979-80	39.4	--do--	4
1982-83	33.1	--do--	6
1985-86	30.1	--do--	8
1987-88	49.2	Severe	1

III. Trends in the Eighties

33. While literature comparing agricultural growth during the pre-GR and post-GR periods is common and considerable there are not many studies analysing growth in the more recent period (Rao, 1989). Our results for the eighties show that output during the current decade has grown more or less at the same rate as it has been rising since the mid-sixties. The growth rates for production in the current decade are also not much different from their long-term trend rates, though growth in the eighties continue to be somewhat lower than harnessed in pre-GR period.

34. Two striking features about the growth in the eighties are: (i) significant improvement in yields and (ii) marginal decline in area under crops. The compound annual average growth rates in yields for foodgrains, non-foodgrains and all-crops improved to 2.6 per cent, 2.1 per cent and 2.5 per cent, respectively, during the eighties which are higher than the growth rates of 2.1 per cent, 1.6 per cent and 1.9 per cent, respectively, obtained between 1967-68 and 1988-89. In contrast, area under both foodgrains and non-foodgrains, declined marginally during the eighties as against low but significant positive growth rate obtained for the

period 1967-68 to 1988-89 (Table 4).

35. Across major crops, amongst foodgrains, output of rice increased at an annual average compound growth rate of 3.2 per cent in the eighties, which is considerably higher than the long-term growth rate of 2.5 per cent and the post-GR growth rate of 2.6 per cent. More importantly, rice output in the eighties is growing at a rate which is only marginally lower when compared to the pre-GR growth rate of 3.5 per cent. The breakthrough in rice production during the eighties has been on account of special attention being paid to the Eastern region since the Sixth Plan, which includes the launching of the SRPP and the SFPP-Rice under the Seventh Plan, so as to increase output through enhanced productivity. Rice yields increased at a rate of 2.9 per cent, per annum in the eighties, which compares favourably to the growth rates of 2.1 per cent each for the pre as well as post-GR phase. Area under rice cultivation has been stagnating in the eighties despite considerable expansion in area under rabi (summer) rice in Eastern States in recent years, which is discussed in more detail later in this section.

36. The success story of rice has raised hopes for a more widespread dispersal of agricultural growth. However, not much comfort can be drawn from this as output of other cereals has decelerated. Growth in wheat output declined to 3.9 per cent, per annum in the eighties which is lower than the growth of 5.3 per cent per annum for the entire post-GR period. Though productivity growth has been higher in the eighties, output growth has returned to the path realised prior to the introduction of HYV seeds and related technology because expansion in area under wheat came to a halt in the mid-Seventies.

37. As for coarse cereals, it is disconcerting to note that there has been a statistically significant decline in area under them at an annual compound growth rate of 1.4 per cent in the eighties and 1.0 per cent after the mid-sixties. More importantly, there has been no significant improvement in yields of these cereals in the eighties as against the growth of 1.3 per cent per annum, both in pre as well as post-GR periods. This does not augur well for dryland areas, where income levels of farmers are well below the desired levels.

38. Notable improvement in pulses yield in the eighties, showing a statistically significant growth of 1.7 per cent per annum was another positive feature of agricultural growth in the eighties. As a result, despite a fall in the area under cultivation, pulses production increased at a rate which was more than the pre-GR growth rate. This has important nutritional implications as pulses constitute a basic source of protein intake in the country¹⁵.

39. Regarding non-foodgrains, notable breakthroughs have been achieved in oilseeds production; it increased at an annual compound growth rate of 3.5 per cent in the eighties which has been considerably higher than the post-GR growth rate of 1.9 per cent and even higher than the pre-GR growth rate of 3.2 per cent per annum, when output grew almost exclusively on account of expansion in area. Moreover, growth in the eighties is spread over different oilseeds, including the relatively newly-introduced soyabean. Also, the quantum jumps in yields is indicative of the success of programmes launched for the oilseeds crop¹⁶.

40. However, trends in the production of two major fibres—cotton and raw jute & mesta—are somewhat disconcerting. Despite noticeable improvements in productivity of both, production decelerated on account of sharp declines in area under both these crops each at a rate of about 2.0 per cent per annum. As both these crops have considerable export potential, these trends need to be reversed in order to mitigate pressures on domestic prices and to augment export earnings¹⁷.

41. Sugarcane production during the eighties increased at a

15. According to the norms prescribed by the Indian Council of Medical Research (ICMR), the average per capita requirement of pulses for an Indian is 47 gms. per day. The actual domestic availability of pulses has been chronically below this level. During the current decade, it has ranged between 33.0 to 41.9 gms. per day.

16. The rapid increase in oilseeds output in the late eighties has reduced the country's dependence on edible oil imports. This may, however, have involved some welfare loss on account of trade diversion, which is beyond the scope of analysis undertaken here.

17. However, there has been a remarkable increase in cotton production in the terminal year of the present decade that has not been accounted for in our analysis.

rate of 2.1 per cent per annum indicating marginal deceleration. This deceleration is of considerable significance as consumption demand is outstripping the supplies. More significantly, yields improved at a rate less than those obtained in the earlier years, indicating lower productivity improvements in the current decade.

42. In totality, there appears to be some deceleration in the output growth of wheat, coarse cereals, cotton, raw jute and mesta and sugarcane during the eighties due to stagnancy in area. These decelerations are counterbalanced by the higher growth path achieved in rice and oilseeds production and hence indices of total foodgrains and non-foodgrains production hardly show any significant difference in growth during the 1980's than that in the whole of the post-GR period. Notable improvements in yields have been achieved during the decade for all major crops except coarse grains and sugarcane.

43. Perhaps the most striking feature of agricultural development during the eighties has been the spread of agricultural growth to Eastern India, which has materialised largely due to special efforts to boost rice production in that region¹⁸. The growth rates achieved are comparable to those realised at the time of the late sixties in case of wheat and this success qualifies to be called the "Second Green Revolution", even though its impact on the national level growth has not been as dramatic as it was in case of wheat soon after the mid-sixties. To be more precise, if 'Green Revolution' was a 'Wheat Revolution', the recent phenomenon may be called a 'Rice Revolution'.

44. We have computed the exponential growth rates for the four Eastern States for the period 1970-71 to 1988-89, and for its two sub-periods 1970-71 to 1979-80 and 1980-81 to 1988-89 using equation (1). The results are presented in Table 7.

18. SRPP was implemented in the Eastern States of Assam, Bihar, Orissa, West Bengal, Tripura and some districts in East Uttar Pradesh and East Madhya Pradesh. Also, following the Report of the Committee on Agricultural Productivity in Eastern India (1984), appointed by the RBI, jointly with NABARD, steps were taken up to step up credit flows to the region.

Table 7 : Agricultural Growth Rates in Eastern States

Region	Kharif Rice						Rabi Rice						Total Rice						Total Foodgrains					
	1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89		1970-71 to 1988-89	
	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P
1. Assam	0.90**	1.65**	0.66	0.47	0.20	0.27	1.47**	0.66	0.20	0.27	2.57**	1.64	0.20	0.27	2.57**	1.64	0.20	0.27	2.57**	1.64	0.20	0.27	2.57**	1.64
	0.74**	0.74**	-0.80	0.27	0.47	0.27	-0.80	0.27	0.47	0.27	-0.91	0.27	0.47	0.27	-0.91	0.27	0.47	0.27	-0.91	0.27	0.47	0.27	-0.91	0.27
2. Bihar	0.02	1.11	0.45	3.57	0.18	3.39	0.65	0.45	0.18	3.39	-3.07	-1.65	0.18	3.39	-3.07	-1.65	0.18	3.39	-3.07	-1.65	0.18	3.39	-3.07	-1.65
	1.09	1.09	-0.20	3.39	0.18	3.39	-0.20	3.39	0.18	3.39	1.40	1.40	0.18	3.39	1.40	1.40	0.18	3.39	1.40	1.40	0.18	3.39	1.40	1.40
3. Orissa	-0.58**	0.83	-1.22	2.19	0.22	1.97	-0.92*	-1.22	0.22	1.97	0.99*	2.01	0.22	1.97	0.99*	2.01	0.22	1.97	0.99*	2.01	0.22	1.97	0.99*	2.01
	1.42*	1.42*	-0.28	2.19	0.22	1.97	-0.28	2.19	0.22	1.97	1.01	1.01	0.22	1.97	1.01	1.01	0.22	1.97	1.01	1.01	0.22	1.97	1.01	1.01
4. West Bengal	-0.21	1.58*	0.42	4.84	-0.11	4.96*	0.03	0.42	-0.11	4.96*	6.06**	6.20**	-0.11	4.96*	6.06**	6.20**	-0.11	4.96*	6.06**	6.20**	-0.11	4.96*	6.06**	6.20**
	1.80**	1.80**	0.39	4.96*	4.96*	4.96*	0.39	4.96*	4.96*	4.96*	0.13	0.13	4.96*	4.96*	0.13	0.13	4.96*	4.96*	0.13	0.13	4.96*	4.96*	0.13	0.13
5. Eastern India (1+2+3+4)	-0.09	1.30*	0.09	3.30	0.10	2.77*	0.16	0.09	0.10	2.77*	3.43**	4.61**	0.10	2.77*	3.43**	4.61**	0.10	2.77*	3.43**	4.61**	0.10	2.77*	3.43**	4.61**
	1.31*	1.31*	-0.20	3.30	0.10	2.77*	-0.20	3.30	0.10	2.77*	0.29	0.29	0.10	2.77*	0.29	0.29	0.10	2.77*	0.29	0.29	0.10	2.77*	0.29	0.29

- Notes : 1. Area = A, P = Production and Y = Yield; A/P/Y are dependent variables for equation (1) : $\log Y = a + bt$.
2. Growth Rates (r) are arrived at by adjusting the exponential trend coefficient (b)/r = [Antilog (b) - 1] 100
3. ** indicates that trend coefficient (b) is statistically different from zero at 1 per cent level of significance. * indicates that trend coefficient (b) is statistically different from zero at 5 per cent level of significance.
4. The growth rates over the periods 1970-71 to 1988-89 and 1980-81 to 1988-89 were compared statistically by applying the F-test for testing the equality of regression coefficients.
- @ mark against the 1970-71 to 1988-89 growth rates indicate that the growth rates for its two sub-periods are statistically different at 5 per cent level of significance for the F-ratio.

45. The four Eastern states, viz., Assam, Bihar, Orissa and West Bengal, in aggregate, show an annual growth rate of 3.7 per cent in foodgrains production during the eighties as compared to near stagnancy in the seventies. The noticeable jump in production is mainly on account of rice production; it increased at 4.2 per cent per annum in the eighties, brought about by a yield improvement at a rate of 3.1 per cent per annum, against no improvement both in production and yield in the seventies. Another distinguishing feature of this rice success story is the widespread adoption of summer rice cultivation by farmers in that area, leading to a high growth rate of 9.3 per cent in area and 13.4 per cent in production for summer rice cultivation in the eighties, in contrast to stagnancy of seventies. Kharif rice production, which still accounts for a major share, increased at a rate of 3.3 per cent in the eighties, due largely to productivity growth of 2.8 per cent, as against no growth both in yield and output during the seventies.

46. Across the four Eastern states, performance of Bihar, Orissa and particularly West Bengal has been impressive during the eighties. Improved yields have not been realised in the case of Assam, where despite impressive growth in area, production and yields of summer rice during the eighties, the overall rice, as also total foodgrains production continued to stagnate¹⁹. Nevertheless, output growth rates of 11.1 per cent, 9.7 per cent, 6.5 per cent and 15.4 per cent in case of rabi rice for Assam, Bihar, Orissa and West Bengal respectively and an overall foodgrains growth of 3.5 per cent in Bihar and 6.3 per cent in West Bengal, testifies to the success in tapping the hitherto unutilised potential in the region.

IV. Challenges for the , Nineties

47. The next phase of development focusing on issues of poverty and unemployment will call for renewed efforts to propel agricultural production on a higher growth path. Generation of additional resources and building up of an efficient institutional set-up

19. Even though yield and its growth rate in case of Assam does not compare favourably with the other Eastern States, one redeeming feature is that strictly in a statistical sense, the yield growth rates for the eighties are higher than in seventies, as revealed by the F-test.

should form the basis of what may be called a two-pronged strategy for agricultural development in the next decade.

48. It must be recognised that while different sectors competing for scarce resources in an economy, often lead to conflict of interests and so it inevitably invites some degree of trade-off in policy making, the linkage of farm sector growth to other sectors is so strong that a higher agricultural growth constitutes a necessary condition for the development of other sectors of the Indian economy²⁰. Farm output determines not only the per capita income of the farm sector, and so to a great extent the standard of living in rural India, but it also determines the nutritional standards of the urban poor.

49. In a country, where only a small section of the population possesses reasonable purchasing power, the objective of improving farm incomes will have to be balanced with the need to keep farm prices in check. This can only be done by raising the output and productivity of the farm sector. This has to be the central thrust of the development programmes in years ahead.

50. Raising productivity is as much a task of institutional reforms as of technological breakthrough. Dryland technology is now available which can significantly improve the yields with investments in conservation, storage and recycling of monsoon rains, contour bunding and ploughing. Large scale financing of watershed development, holds promise for immense improvement in productivity of unirrigated tracts²¹. This needs to be combined with a massive land development programme comprising soil consolidation and land levelling, reclamation of barani, usar and other degraded lands and implementation of a "treepatta" scheme on a larger-scale as part of the wasteland development programme²².

20. The hypothesis of strong linkages between agriculture and industry is supported by Rangarajan (1982) and an updated version of Rangarajan's model by Isher J. Ahluwalia also comes to a similar conclusion.

21. This has been noted in the Draft Agricultural Policy Resolution (1990) and the Approach Paper to the Eighth Plan (1990).

22. The National Wasteland Development Board (NWDB) was established in 1985 with a task to bring 5 million hectares of wasteland under cultivation every year.

51. If food requirement in the 1990's are to be met, there is a need for immediate steps to reverse the alarming trend of complete stagnation and perhaps a marginal decline in area under crops during the eighties, as revealed by our analysis in Section III. As already stated, particularly worrisome is the statistically significant decline of 1.4 per cent per annum in area under coarse cereals during the decade. This may be corrected through massive financing of wasteland development and cultivation in rainfed/dryland regions as also by offering incentive prices to producers through intensive procurement operations by the Government.

52. The need for this is further underscored by the requirements of an accelerated annual growth of 3.3 per cent in foodgrains production in the nineties, so as to meet the projected foodgrains needs of 240 million tonnes by the turn of the century²³. With the production of foodgrains in Punjab stagnating during the Seventh Plan and the country's wheat output decelerating in the eighties, it needs to be realised that the possibilities of incremental output are becoming narrower and narrower. Deceleration in wheat output in the eighties may be followed by deceleration in rice output in the later half of the nineties after the potentials in Eastern India are tapped. This may further necessitate a faster growth of coarse cereals, the planning for which has to begin now. It will be difficult to ignore the possibilities of area expansion, however limited as mere reliance on productivity enhancement is not sufficient for food security.

53. Restructuring of cultivation along principle of comparative advantage can also enable the country to harness higher value added in agricultural sector besides reaping welfare gains in the process. Enormous possibilities exist in fibres (specially cotton) and plantation (specially tea) sectors in this regard²⁴. In order to produce sufficient surpluses in these crops, strategies to bring more land under cultivation need to be devised on a priority basis.

23. As the projected requirement of 240 million tonnes by 2000 A.D. require a 3.3 per cent per annum growth in foodgrains, the growth target of 6.0 per cent for agriculture in Draft Agricultural Policy resolution appears unrealistic.

24. For instance, Ministry of Agriculture is planning to shift area under coffee to tea cultivation in some tracts of South India.

54. As for oilseeds/edible oils, import substitution efforts need to be structured along efficient lines²⁵. Possibilities of palm oil cultivation should be assessed and plans for its plantation should be implemented during the Eighth Plan, so that near self-sufficiency is achieved in the latter half of the nineties, when there may not be any net drain of foreign exchange from oilseeds sector²⁶.

55. The persistence of regional imbalances in agriculture sector requires continued planned intervention in which area-specific programmes will continue to play a vital role. The success story of the Eastern Region, discussed in Section III, bears testimony to this. While scope for incremental rice cultivation in Eastern belt still remains to be fully tapped, greater attention is now required for the Southern Region where foodgrains output has stagnated for large parts of the eighties. Higher investment in irrigation schemes (including the repletion of the ground water resources) should form the central thrust of programmes for this region under the Eighth Plan.

56. All these policy prescriptions require increased outlays and investment in this sector. Several researchers have recently analysed the issues concerning decline in real investment in agriculture during the Sixth and Seventh Plan periods. They include Patnaik (1987), Rath (1987) and Rao (1989). In this context, the proposals for stepping up Government outlays, earmarked for agricultural development, have a strong rationale.

57. Likewise, the role of institutional credit in augmenting the production potentials of agriculture requires to be reinforced. There has been a sizeable expansion in rural credit facilities over the planning era, reflected in a phenomenal rise in the share of institutional credit from about 4 per cent before the advent of planning in 1951 to 61 per cent of the total debt owned by the rural households in 1981. The rural credit structure nevertheless suffers from certain infirmities. The high and growing incidence of overdues is progressively eroding the credit cycle. Furthermore, in the

25. The welfare loss on account of trade diversion for an inefficient import-substitution can be sizeable and needs to be guarded against.

26. Palm Oil trees take 4 to 5 years to mature.

Table 8 : Size Distribution of Operational Holdings in India (Based on Official Agricultural Census)

Size group (hectares)	Category of farmers	No. of holdings (in million)			Area operated (in million hectares)			Area per operated holding (in hectares)		
		1960-61	1970-71	1980-81	1960-61	1970-71	1980-81	1960-61	1970-71	1980-81
1) Upto 1.0	Marginal	19.90 (40.7)	35.68 (50.6)	50.52 (56.5)	8.78 (6.7)	14.55 (9.0)	19.80 (12.2)	0.44 (-6.8)	0.41 (-6.8)	0.39 (-4.9)
2) 1.0 to 2.0	Small	10.88 (22.3)	13.43 (19.1)	16.08 (18.0)	16.00 (12.2)	19.28 (11.9)	22.96 (14.1)	1.47 (-2.0)	1.44 (-2.0)	1.43 (-0.7)
3) 2.0 to 4.0	Semi-Medium	9.22 (18.9)	10.68 (15.2)	12.51 (14.0)	26.23 (20.0)	30.00 (18.5)	34.56 (21.2)	2.84 (-1.1)	2.81 (-1.1)	2.76 (-1.8)
4) 4.0 to 10.0	Medium	6.57 (13.4)	7.93 (11.2)	8.09 (9.1)	40.07 (30.4)	48.23 (29.7)	48.34 (29.7)	6.10 (-0.3)	6.08 (-0.3)	5.97 (-1.8)
5) 10.0 & above	Large	2.31 (4.7)	2.77 (3.9)	2.15 (2.4)	40.38 (30.7)	50.06 (30.9)	37.13 (22.8)	17.48 (+3.4)	18.07 (+3.4)	17.24 (-4.6)
Total	All-groups	48.88 (100.0)	70.49 (100.0)	89.35 (100.0)	131.46 (100.0)	162.12 (100.0)	162.79 (100.0)	2.69 (-14.5)	2.30 (-14.5)	1.82 (-20.9)

Notes: 1) Figures in parenthesis below No. of holdings and area operated, give percentage to the total.

2) Figures in parenthesis below area per operated holding give percentage change over the decade.

absence of cross-subsidisation in case of co-operatives and the Regional Rural Banks, the prevailing lending rates are proving to be economically unviable²⁷. Lending to non-farm agricultural activities such as animal husbandry and social forestry and strengthening of appropriate linkages between production and market centres has been not up to the desired scale. Corrective measures in these areas will have to be implemented with great urgency²⁸.

58. The allocation of funds within the rural sector also needs a closer look. Larger investments in irrigation schemes and allocation of more funds to modern technologies, such as the bio-technology, should pay adequate dividends. Bio-technology has tremendous potentialities, specially technology relating to bio-fertilisers, bio-pesticides, tissue culture based products, bio-mass and forestry products, bio-control agents, veterinary improvements, aqua-culture products and food-processing. These may directly or indirectly change the face of agriculture in times to come²⁹. More funds to sustain research in this area will have to be generated, even if returns may not be immediate.

59. The issues concerning India's food economy, discussed extensively by Tyagi (1990), will also need to be paid due attention. While the dual market system cannot be done away with, steps are needed to ensure that food subsidies largely benefit the downtrodden. Also, the food security net needs to be built in such a way that the burden of procurement are shared more evenly between States and the benefits accrue to producers of coarse cereals as well.

60. A renewed thrust on land reforms can in a single stroke

27. Agricultural Credit Review Committee (1989), has suggested lending at a concessional rate for small and marginal farmers and at a general rate for others, so as to improve the financial viability for the rural lending institutes.

28. A comprehensive analysis of the issues concerning rural credit was made by the Governor of the Reserve Bank in his inaugural address at a seminar on 'Rural Credit - Issues for 1990s', organised by Institute of Development Studies, Jaipur on August 27, 1990.

29. For a more comprehensive understanding of the role of bio-technology see Jain, et. al. (1990).

contribute to the production as well as equity aspect of Indian agriculture. Table 8 below shows a sizeable increase in number of small holdings of less than 1.0 hectares from 19.9 million in 1960-61 to 50.5 million in 1980-81. As a percentage of total holdings, the share has gone up from 40.7 per cent to 56.6 per cent. The area operated by small and marginal farmers has also increased to 42.8 million hectares or 26.3 per cent of total farmers in 1980-81 from 24.8 million hectares of 18.9 per cent in 1960-61. The average size of the holding has declined to 1.82 hectares in 1980-81 from 2.69 hectares in 1960-61. Fragmentation of land at this rate is alarming and indicates that the absorption of labour from farm sector to non-farm sector is not proceeding at a desired rate. Immediate steps for land consolidation and improvement of land records are called for. Lastly, while policies for strengthening the institutional structure for development of agriculture have been adopted and are in place, the key to their success lies in effective implementation - a theme on which more concerted attention, than hitherto, deserves to be given.

References:

1. Ahluwalia, I.J. (1985). *Stagnation Since the Mid-Sixties*, Oxford University Press.
2. Ahluwalia, M.S. (1978). "Rural poverty and Agricultural performance in India", *Journal of Development Studies*, 14, April, pp. 298-323.
3. Alagh, Y.K. and Sharma, P.S. (1980). "Growth of Crop Productions: 1960-61 to 1978-79 - Is it Decelerating?" *Indian Journal of Agricultural Economics*, Vol. XXXV, No.2 April-June.
4. Bhalla, S. (1989). "Employment in Indian Agriculture: Retrospect and Prospect", *Social Scientist*, Vol. 17, No. 56, May-June.
5. Billings, M. and Singh, A. (1969). "Labour and the Green Revolution: The Experience in Punjab", *Economic and Political Weekly*, December.
6. Chaudhri, Pramit (1978). *The Indian Economy: Poverty and Development*, (New Delhi: Vikas Publishing House).
7. Chattopadhyay, M. and Bhattacharya, G (1986). "Growth of Indian Agriculture: A Reappraisal", *Indian Journal of Agricultural Economics*, Vol.42, No.1 Jan-March.
8. Dandekar, V.M. (1980). Introduction, *Indian Journal of Agricultural Economics*, Vol.35, No.2, April-June.

9. Dandekar, V.M. and Rath, N. (1971), "Poverty in India." *Economic and Political Weekly*, January, rep. Indian School of Political Economy.
10. Dantwala, M.L. (1967), "Incentives and Disincentives in Indian Agriculture", *Indian Journal of Agricultural Economics*, Vol. XXII No. 2, April-June, pp 1-25.
11. Dantwala (1970), *Presidential Address to the Indian Economic Association Conference*.
12. Gandhi, V. (1966), *Tax Burden on Indian Agriculture* (Harvard Law School).
13. Gothoskar, S.P. (1988), "On Some Estimates of Rural Indebtedness," *Reserve Bank of India Occasional Paper*, December.
14. Government of India (1990), *Agricultural Policy Resolution – Draft*, Ministry of Agriculture, Department of Agriculture and Co-operation.
15. Griffin, K. and Ghose, A.K. (1979), "Growth and Impoverishment in Rural Areas of Asia", *World Development*, 7, April-May, pp. 361-83.
16. Gujarati, D. (1984), *Basic Econometrics* 2nd ed, McGraw-Hill.
17. Jain, S.C., et. al. (1980), *Biotechnology Based Agriculture and Food Products – A Perspective*, Government of India, Ministry of Science & Technology, Department of Biotechnology.
18. Kahlon, A.S. and Tyagi, D.S. (1983), *Agricultural Price Policy in India*, (New Delhi: Allied Publishers).
19. Kannan, R. (1984), "Growth Rates of Foodgrains Production in India (1950-51 to 1982-83)", *Reserve Bank of India Occasional Papers*, June.
20. Khusro, A.M. (1973), *Economics of Land Reforms and Farm Size in India*, (Delhi: MacMillan)
21. Krishna, R. (1959), "Agrarian Reform : The Debate on Ceilings", *Economic Development and Cultural Change*, January.
22. Krishna, R. (1982), "Some Aspects of Agricultural Growth, Price Policy and Equity in Developing Countries", *Food Research Institute Studies*, 18(3), pp 219-260.
23. Krishnaji, N. (1980), "Measuring Agricultural Growth", *Indian Journal of Agricultural Economics*, Vol. 35, No. 2, April-June.
24. Ladejinsky, W. (1965), *A Study of Tenurial Conditions in Package Districts*, Government of India.
25. Ladejinsky, (1972), "Land Ceilings and Land Reforms", *Economic and Political Weekly*, February.
26. Ladejinsky, (1973), "How Green is the Indian Green Revolution?" *Economic and Political Weekly*, December.
27. Lipton, M. (1969), "The Transfer of Resources from Agriculture to Non-Agricultural Activities: The Case of India", *IDS Communication Series No.* 109.
28. Lipton, (1975), "Urban Bias and Food Policy in Poor Countries", *Food Policy*, November.

29. Mellor, J. W. and Desai, G. M., eds. (1986), *Agricultural Change and Rural Poverty: Variations on a Theme on Dharam Narain* (Delhi: Oxford University Press, for International Food Policy Research Institute, Washington).
30. Minhas, B. S. and Srinivasan, T. N. (1972), "The New Agricultural Strategy : Some Policy Issues", in Chaudhri P., ed., *Readings in Indian Agricultural Development*, (London: Allen & Unwin).
31. Ministry of Agriculture, Government of India (1989), *Growth Rate in Agriculture* (New Delhi).
32. Mitra, A (1963), "Tax Burden on Indian Agriculture", in Braibanti, R & Spengler, J. J. eds., *Administration and Economic Development in India*, Dukep.
33. Mitra, (1977), *Terms of Trade and Class Relations*, (London : Frank Cass).
34. Mukherjee, M (1969), *The National Income of India: Trends and Structure*, (Calcutta: Statistical Publishing House).
35. National Council of Applied Economic Research (1973), *Impact of Mechanisation in Agriculture*, (Delhi: NCAER).
36. Parikh, K. and Srinivasan, T. N. (1974), "Optimum Requirements of Fertilisers", *Mimeo, Indian Statistical Institute*.
37. Patnaik, P. (1981), "An Explanatory Hypothesis on Industrial Stagnation", in Bagchi, A. K. and Banerjee, N., eds., *Change and Choice in Indian Industry*, (Calcutta: Bagchi & Co.).
38. Patnaik, P. (1987), "Recent Growth Experience of Indian Economy: Some Comments", *Economic and Political Weekly*, Annual No., May.
39. Planning Commission (1960), *Third Five Year Plan* (New Delhi).
40. Raj, K. N. (1972), "Mechanisation of Agriculture in India and Sri Lanka", *International Labour Review*, July-December.
41. Rangarajan, C. (1982), "Agricultural Growth and Industrial Policy in India", *Research Report 33, International Food Policy Research Institute*.
42. Rao, C. H. Hanumantha (1975), *Technological Change and Distribution of Gains in Indian Agriculture*, (Delhi: MacMillan).
43. Rao, C. H. Hanumantha (1989), "Technological Change and Distribution of Gains in Indian Agriculture: Emerging Trends and Perspectives", *Indian Journal of Agricultural Economics*, Vol. 35, No. 2, April-June.
44. Rao, S. K. (1971), "Interregional Variations in Agricultural Growth, 1952-53 to 1964-65: A Tentative Analysis in Relation to Irrigation", *Economic and Political Weekly*, July.
45. Rao, V. M. (1980), "Methodological Issues in Measuring Agricultural Growth: Lessons in Recent Researches", *Indian Journal of Agricultural Economics*, Vol. 35, No. 2, April-June.
46. Rath, N (1989), "Agricultural Growth and Investment in India", *Journal of Indian School of Political Economy*, Jan-June.

47. RBI (1987), 'All India Debt and Investment Survey : 1981-82 : Assets and Liabilities of Households : as on 31st June 1981', *Reserve Bank of India Bulletin*, September.
48. Reddy, V N. (1987), "On Estimating Gompertz Curve", *mimeo*, Indian Institute of Management, Calcutta.
49. Saith, A (1978), *Agrarian Structure, Technology and Marketed Surplus in the Indian Economy*, PhD. thesis, University of Cambridge.
50. Saith, A (1981), "Production, Prices and Poverty in Rural India", *Journal of Development Studies*, 17, Jan.
51. Samant, D.S. (1983), "Investigation of Hypothesis of Deceleration in Indian Agriculture", *Indian Journal of Agricultural Economics*, Oct-Dec.
52. Schultz, T.W. (1964), *Economic Crisis in World Agriculture*, (Ann Arbor, University of Michigan).
53. Sen, A.K. and Rudra, A. (1980), "Farm size and Labour Use: Analysis and Policy" *Economic and Political Weekly*, February, Annual No., pp 391-4.
54. Shetty, S.L. (1971), "An Inter-Sectoral Analysis of Taxable Capacity and Tax Burden", *Indian Journal of Agricultural Economics*, July-September.
55. Srinivasan, T.N. (1979), "Trends in Agriculture in India", *Economic and Political Weekly*, August, Special No.
56. Swamy, D (1984), Dynamics of Tenancy Reforms in India, *mimeo*, Dept. of Business Economics, University of Delhi.
57. Thamarajakshi, R (1966), "Intersectoral Terms of Trade and Marketed Surplus of Agricultural Produce: 1951-52 to 1965-66, *Economic and Political Weekly*, June.
58. Thamarajakshi, R. (1977), "Role of Price Incentive in Stimulating Agricultural Production in a Developing Economy", in Ensminger, D. ed, *Food Enough or Starvation for Millions*, (New Delhi: Tata-McGraw Hill: FAO)
59. Tyagi, D.S. (1990), *Managing India's Food Economy- Problems and Alternatives*, (New Delhi: Sage Publications).
60. Vaidyanathan, A (1979), *On Analysing Agricultural Growth*, Dr. Rajendra Prasad Memorial Lecture at the 33rd Annual Conference of Indian Society of Agricultural Statistics, Trichur.
61. Vittal, N. (1986), "Intersectoral Terms of Trade in India: A Study of Concept and Method", *Economic and Political Weekly*, December.
62. Vyas, V.S. (1986), "Poverty Agrarian Structure and Policy Options: A Note", in Mellor, J.W. and Desai, G.M., eds *Agricultural Change and Rural Poverty*, (Delhi: Oxford University Press for International Food Policy Research Institute, Washington).

Configuration of Industrial Growth In the Context of Indian Planning

Jag M. Chona*

Introduction

THIS paper seeks to trace the configuration of industrial growth against the perspective of planning that is used as an instrument to bring about a structural transformation of the Indian economy assisting a broad-based development. Rapid industrialisation and diversification of the economy constitute the core of development. That the economy has attained considerable diversification since the initiation of planned development is evident from the changing composition of net domestic product (NDP) as brought out in Table 1. A distinct picture emerging from it is the reduction in the share of agriculture with the corresponding gain spread over manufacturing, electricity and services sectors. However, this structural transformation over the near-four decades of planning has not been smooth or dramatic. In particular, the growth of industry has traversed a path which has been sometimes steady, sometimes jerky, essentially in response to vicissitudes of agriculture, planned investments efforts, and external shocks requiring domestic adjustments. The purpose of this paper is to portray this growth and structural change in Indian industry over the past forty years against the backdrop of the forces which have governed them.

2. In the context of industrialisation, important questions for consideration are : (i) industrial policy, with special reference to the roles to be assigned to the public and private sectors, and

* Shri Jag M. Chona is Adviser in the Department of Economic Analysis & Policy.

Table 1 : Composition of Net Domestic Product
(at 1980-81 Prices) during 1950-51, 1980-81 & 1988-89

	Relative Shares to NDP (In Percentages)			Growth rates* between 1980-81 and 1988-89
	1950-51	1980-81	1988-89	
1. Agriculture - Forestry & Fishery	57.2	39.9	34.9	3.75
2. Industry (a+b+c)	12.8	19.1	22.4	7.66
(a) Manufacturing	11.4	17.0	20.2	7.79
i) Registered	5.2	9.1	12.2	9.34
ii) Unregistered	6.2	7.9	8.0	5.75
(b) Electricity	0.3	0.8	1.0	9.70
(c) Mining	1.1	1.3	1.2	4.48
3. Construction	3.5	5.2	4.4	3.01
4. Railways	0.4	0.5	0.5	4.92
5. Other Services	26.1	35.3	37.8	6.40
Total NDP	100.0	100.0	100.0	5.55

* Compound growth rates based on data for respective end-points.

(ii) industrial priorities. In respect of industrial policy, it was clearly spelt out that the state would assume direct responsibility for the future development of industries on a wider area than before (Planning Commission, 1961, p. 392).

Industrial Priorities

3. Within the framework of the industrial policies, the expansion of industrial capacity was broadly to be conceived in terms of these priorities: (a) increased production of iron and steel and of heavy chemicals including nitrogenous fertilisers, and development of the heavy engineering and machine building industries; (b) expansion of capacity in respect of other basic and producer goods such as, aluminium, cement, chemicals, pulp, dyestuffs and phosphatic fertilisers and of essential drugs; (c) modernisation and re-equipment of important national industries which had already come into existence such as jute and cotton textiles and sugar; (d) fuller utilisation of existing installed capacity in industries where there were wide gaps between capacity and production; and (e) expansion of capacity for consumer goods keeping in view the requirements of common production targets for the decentralised sector of industry.

The First Plan

4. However, the basic thrust of the First Five Year Plan (1951-52 to 1955-56) was on the development of a strong agricultural base to support the drive towards industrialisation. It was perceived that, in the initial stages, the tempo of development essentially depended on the progress in agriculture and the agricultural surpluses mobilised. Apart from irrigation facilities, the Plan sought to develop industries subserving the needs of agriculture (fertilizers, power, etc.). Fuller utilization of capacity in agro-based industries like jute and cotton textiles, sugar and soap and expanding the capacity of industries producing pig iron and steel and heavy chemicals which are basic to the general development of the economy were also envisaged. Except for a limited provision for industries in the public sector, the responsibility for industrial development was that of the private sector. The bulk of the public sector outlay in industry was also for assisting private agencies.

5. The overall average growth during the First Plan was 6.5 per cent per annum punctuated by sharp annual variations (Table 2). Viewed this way, the progress would be seen to be not quite uniformly satisfactory if perceived against the background of the objectives, priorities and levels of capacity and production which had been envisaged for different industries when the Plan was drawn up (*ibid.*, p.387). In the public sector, delays in the execution of the iron and steel projects were perhaps unavoidable having regard to their complexity, the large investments involved and the necessity of carrying on negotiations with foreign parties in regard to both technical and financial assistance. Broadly speaking, the lag in private investment occurred in industries which required heavy capital investment and offered a relatively small profit margin such as aluminium, nitrogenous fertilisers, etc. Considering the fact that the intensive utilization of existing capacity and the preparation of the necessary ground for large-scale industrial development in the future were the avowed objectives of the First Plan, it could be said that on the whole, the results achieved during the period had been satisfactory. Even the capital goods sector emerged from the infant stage of development and laid the foundation for the expanded role to be envisaged in the Second and subsequent Plans.

Table 2 : Growth of Industrial Output : First Plan
(Based on Index of Industrial Production : 1956 = 100)

(In per cent)

Group Year\Weight	Mining and Quarrying (7.47)	Manufac- turing (88.85)	Electricity (3.68)	General Index (100.00)
1951-52	0.1	8.8	7.2	7.9
1952-53	2.9	1.5	5.1	1.8
1953-54	-1.5	4.0	8.9	3.6
1954-55	5.5	10.9	13.8	10.5
1955-56	2.8	9.0	13.8	8.6
First Plan	1.9	6.8	9.8	6.5

Balance between Consumption and Investments Goods Sectors

6. With a fairly strong agricultural base that was established in the wake of the First Plan, attention focussed on the need to impart an expansive push to the industrial sector, especially the investment (or capital) goods, so as to achieve a balance between consumption and investment goods sectors. For this balance, the basic issue is that an economy which is trying to raise its rate of growth by increasing its savings rate must not only save more, but also physically have the investment goods to expand its capital stock. A one-sector framework assumes away this problem by allowing the same goods to be consumed and invested. The problem was raised during the Soviet industrialisation debate of the 1920s when the Soviets decided to devote a large share of investable resources to produce investment goods with a view to raising the rate of growth. The planning model exercises of P.C. Mahalanobis, which formed the basis of the Second Five Year Plan, were greatly influenced by this debate.

7. The Mahalanobis' model exercises were, however, not without their shortcomings. Firstly, due to the existence of intermediate goods, and the production of both consumption and investment goods by particular sectors, it was difficult to isolate the latter two sectors; this made the model difficult to operationalise and it also implied that the model overemphasised the problem of the inability to shift capital. Secondly, it has been argued that developing countries like India did not need to allocate investment to the investment goods sector, if they wanted to grow faster, since they could import the investment goods they needed. However, since such countries faced foreign exchange constraints arising from limited export growth, they might not be able to import an adequate amount of investment goods. Thirdly, in the context of the Indian economy, the point was made that the overemphasis on the investment goods sector resulting from the use of Mahalanobis models led to the neglect of the agricultural sector and the consequent retardation of the economy. This drew attention to the basic argument that focussing on a dichotomy distinguishing two sectors made theoretical sense in isolating one problem for close scrutiny, but

such compartmentalisation was inadvisable in reality. Fourthly, the models assumed that the State could maintain full capacity utilisation in the economy but there was no guarantee that effective demand would be sufficient to attain it. More generally, the model was incomplete because it did not explore what was happening to demand, prices, income distribution, and so on, in the economy. And finally, the models concentrated on the nature of the products of the two or four sectors but abstracted from other important distinctions between them. For instance, investment goods production could generate important technological spinoff effects throughout the economy which not only strengthened the case for emphasising the investment goods sector in a closed economy but helped to extend it to an open economy as well since production, and not mere use, of investment goods led to technological improvements.

The Second Plan Progress

8. Notwithstanding these shortcomings, the economic philosophy adumbrated in the Mahalanobis two-sector and four-sector models permeated the design and formulation of the Second Five Year Plan (1956-57 to 1960-61). The assessment of the performance of the industrial sector during this Plan is presented in Table 3.

Table 3 : Growth of Industrial Output : Second Plan
(Based on Index of Industrial Production: 1956 = 100)

(Per cent)

Group Year\Weight	Mining and quarrying (7.47)	Manufac- turing (88.85)	Electricity (3.68)	General Index (100.00)
1956-57	4.6	8.6	12.2	8.4
1957-58	9.5	2.7	13.0	3.6
1958-59	5.6	2.8	14.9	3.5
1959-60	6.1	10.6	17.4	10.5
1960-61 [Ⓐ]	11.7	11.1	12.9	11.3
Second Plan	7.5	7.1	14.1	7.3

Ⓐ Variation of average of calendar year 1960 over 1959, since financial year data are not available.

9. In 1956-57, the first year of the Second Plan, there was a further marked stepping up of the development effort which was reflected in higher levels of investment in the public and private sectors. The rising trend of industrial production in the preceding two years continued in 1956-57 which recorded a growth rate of 8.4 per cent. Both capital and consumer goods industries principally contributed to this outcome. During the next two years, the Indian economy experienced severe foreign exchange bottleneck which triggered off a drastic slowdown in the rate of growth in industrial production which hovered around 3.5 per cent per annum. Apart from shortages of raw materials following the drastic import cuts, some slackening of demand in certain sectors of industry, particularly textiles, occurred due to a sharp fall in agricultural incomes in 1957-58. Within the manufacturing group which suffered the most in 1957-58 and 1958-59, a redeeming feature was the significant rise in the output of heavy and light industrial machinery, machine tools, and cement.

10. During the last two years of the Second Plan, the economic scenario was a mixed one of progress and strain. The outstanding feature of this phase was a marked recovery in the rate of growth of industrial output which exceeded 10 per cent per annum in contrast to 3.0 to 4.0 per cent in the preceding two years. The capital goods and intermediate products industries contributed significantly to the rise in industrial output; the consumer goods industries also showed increases though of smaller order. The acceleration in industrial growth was attributable to a number of factors which included (i) larger supply of essential raw materials following some liberalisation of imports, (ii) a revival in demand, both domestic and foreign, which enabled a further utilisation of existing industrial capacity, (iii) the going into production of some of the new units established in the immediate past, and (iv) an improvement in the labour situation. Given the thrust of the policy framework, the Second Plan recorded, on an average, a growth rate of 7.3 per cent per annum improving on the record of 6.5 per cent achieved in the First Plan. And all the three constituents of the general index, as presented in Tabel 3, performed better in the Second Plan. Alternatively, the estimated growth in basic and capital goods industries averaged 12.0 to 13.0 per cent per annum each, while that in intermediate and consumer goods

industries averaged 5.0 to 6.0 per cent per annum.

The Sixties

11. The 1960s saw two distinct phases : the first four years of the Third Plan experiencing fairly high and steady industrial growth, and the next four years covering also three Annual Plan years exhibiting distinct deceleration. The Third Plan was conceived as the first phase of a period of intensive development leading towards a self-reliant and self-generating economy. Accordingly, the Plan postulated an increase of 30 per cent in agricultural production, of 70 per cent in industry and of 30 per cent in national income. However, the immediate priorities of the Plan had to be re-examined with a view to adapting it to the urgent requirements of defence. In particular, plans for industry, transport, power and scientific and technical power were stepped up and a larger agricultural effort was proposed. An important lesson of the period was that defence and development had to be viewed together both in the Third Plan and subsequently at each step in terms of a common and continuing economic plan which comprehends production, transport, power, research training and use of technical and scientific man-power as well as wider social goals. While the importance of coordination and interrelated planning for industry, power and transport was stressed, a wide range of important tasks were assigned to the private sector.

12. During the Third Plan, industrial production increased, on an average, by 8.2 per cent annually though it fell short of the target of 11 per cent per annum. This growth was assisted by an increase of 8.2 per cent recorded by the manufacturing sector with other components of mining and electricity rising by 5.5 per cent and 13.5 per cent respectively. During the first four years, industrial production grew by nearly 9 per cent per annum but decelerated to 5.3 per cent in 1965-66 – the last year of the Third Plan. In fact, the period of deceleration started from the mid-sixties and continued till the end of the Sixth Plan punctuated by fluctuations in growth rate in certain years. However, in appraising the performance of the industrial sector, it is necessary to take note of the structural changes that occurred alongside the steady increases in output. As in the Second Plan, there was emphasis on

the development of new industries producing capital goods and basic and intermediate goods. The production performance of these industries during the Third Plan Period, as captured in Table 6, was quite encouraging. Whereas the annual increase in the output of basic metals has been of the order of 11.7 per cent, the metal products grew by 15 per cent. Chemicals and chemical products registered an increase of 8.4 per cent per annum. In the same period, output of industrial machinery went up by 18.1 per cent, of electrical machinery by 14.5 per cent and of transport equipment by 12.7 per cent. If in spite of these increases, the aggregate index showed only a rise of 8.2 per cent, it was because the additional output in consumer goods industries - which had a large weight in the total index - had been comparatively less. Whereas food manufacturing with a weight of 7.74 per cent increased by 4.4 per cent per annum, textiles with a weight of 17.43 per cent recorded an annual growth of only 2.1 per cent. In other words, production increases in the capital and intermediate goods industries which are crucial for the attainment of a self-reliant economy had been larger than in the general index.

Table 4 : Growth of Industrial Production : 1960s
(Based on Index of Industrial Production 1960 = 100)

(Per cent)

Group Year\Weight	Mining and Quarrying (9.72)	Manufa- cturing (84.91)	Electricity (5.37)	General Index (100.00)
1961-62	1.2	8.5	16.1	8.2
1962-63	13.0	9.1	11.7	9.5
1963-64	2.9	9.5	17.4	9.3
1964-65	(-)1.3	9.5	11.8	8.8
1965-66	11.5	4.4	10.3	5.3
Third Plan	5.5	8.2	13.5	8.2
1966-67	1.4	(-)0.2	9.3	0.7
1967-68	1.2	0.2	12.6	1.2
1968-69	4.5	6.4	14.1	6.9
Annual Plans	2.4	2.1	12.0	2.9

13. The Third Plan was followed by what has come to be known as a phase of Plan holidays covering the three Annual Plans period. There was a sharp deceleration in industrial output which grew by only 0.7 per cent in 1966-67 as compared with 5.3 per cent in the preceding year. In fact, the manufacturing sector recorded a negative growth of 0.2 per cent although electricity generation was fairly good registering an increase of 9.3 per cent. Virtually, a similar picture emerged in 1967-68 when overall industrial output increased by 1.2 per cent. In the third Annual Plan year of 1968-69, there was an improvement in the overall industrial performance, with the general index moving up by 6.9 per cent. The major contributory factor was the manufacturing sector where output accelerated from 0.2 per cent in the previous year to 6.4 per cent. For the three Annual Plans period taken together, industrial output increased on an average by a shade less than 3 per cent per annum which was much less than the annual average of 8.2 per cent for the Third Plan. Apart from the dramatic and all-round effects of the droughts of 1965 and 1966, on industrial production, a sharp fall in domestic investment adversely affected industrial output in general and the output of basic and capital goods industries in particular. There was a sharp dip in the output of basic metals and metal products, transport equipment, non-metallic minerals, food manufacturing and textiles.

The Seventies

14. The process of deceleration, begun in the mid-sixties, was virtually carried through the Fourth Plan when overall industrial production grew on an average by 4.2 per cent per annum (Table 5), marginally improving over the rate of 3 per cent recorded during the preceding three years. However, in 1969-70, the first year of the Fourth Plan - industrial production increased by 7.3 per cent assisted mainly by an intensive thrust of infrastructural sectors like electricity and minerals. And the industrial growth was also quite broadbased (Statement I). While substantial progress occurred in the basic and capital goods industries such as chemicals and chemical products, petroleum products and coal, non-metallic mineral products, basic metals and metal products, both electrical and nonelectrical machinery etc., consumer goods like textiles (weight 17.43 per cent) and paper also did well. Intermediate

goods too recorded reasonable growth rates.

Table 5 : Growth of Industrial Production
(Based on Index of Industrial Production : 1970 = 100)

(Per cent)				
Group	Mining and Quarrying	Manufa- cturing	Electricity	General Index
Year\Weight	(9.69)	(81.08)	(9.23)	(100.00)
1969-70*	3.9	6.1	14.2	7.3
1970-71*	(-)1.1	2.2	8.6	3.1
1971-72	2.5	5.4	8.7	5.7
1972-73	4.3	3.8	4.8	3.9
1973-74	0.8	0.8	1.6	0.8
Fourth Plan	2.1	3.7	7.6	4.2
1974-75	10.5	1.8	7.7	3.2
1975-76	11.6	5.6	14.8	7.2
1976-77	4.2	10.0	11.7	9.6
1977-78	2.5	3.3	3.2	3.3
1978-79	2.0	7.6	12.1	7.6
Fifth Plan	6.2	5.7	9.9	6.2
Annual Plan (1979-80)	0.7	(-)2.1	2.1	(-)1.4

* Based on the 1960 series of Index of Industrial Production.

15. There was a reversal of the process of acceleration in 1970-71 when industrial production dipped to 3.1 per cent and both the mining and electricity did not fare as well as in 1969-70. This phenomenon reflected the combined impact of both supply bottlenecks and demand constraints. In basic and capital goods industries, there was a considerable deceleration due to inadequate investment in the infrastructure sector generating less than

sufficient demand and impeding the fuller utilisation of capacities. The demand constraints were also evident such as in the case of textiles which recorded a negative growth rate of 2.2 per cent. Both these factors, viz., sluggishness in demand for investment goods and insufficient capacity could be traced to relatively slow increase in aggregate investment during the preceding few years.

16. There was an increase of 5.7 per cent in industrial production in 1971-72 which was mainly due to an improvement in the performance of the manufacturing group with a focus on the basic and capital goods industries. A special mention may be made of the chemical and chemical products sub-group, which recorded an increase of 15.3 per cent as compared with 6.2 per cent in the preceding year (Statement II). Several encouraging aspects included an easing of raw material shortages in some cases and increase in investment activity in others, which had a favourable impact on the demand for industrial products. The government had also taken some measures to encourage industrial output, such as blanket permission to 54 critical industries to expand output and diversify to the extent of about 100 per cent above their licensed capacity.

17. There was deceleration of industrial output from 5.7 per cent in 1971-72 to 3.9 per cent in 1972-73. Deceleration occurred in both the manufacturing and electricity sub-groups which was reflected in declines in the output of both basic and capital goods industries. There were some industries which had under-utilised capacity, like railway wagons, mining machinery, steel castings, machine tools and heavy structures. Utilisation of capacity in the motor vehicle group, however, was affected by paucity of supplies from ancillary units caused by labour strikes and/or inadequate supply of inputs. There was a sharp deceleration in the output of chemical and chemical products sub-group and an important infrastructural sub-group of petroleum products and coal registered a negative growth.

18. In the fiscal year 1973-74 which also witnessed an unprecedented inflation, there was a virtual stagnation—a rise of 0.8 per cent—in overall industrial production as compared to the rise of 3.9 per cent in 1972-73. Among the different groups of

industries, production in respect of consumer goods industries comprising food manufacturing and textiles with a weightage of 25.17 per cent declined (Statement II). There was a kind of a freeze in the output of chemical and chemical products and non-metallic mineral products (including cement). Basic metals and metal products registered declines and there was a sharp fall in the output of electrical machinery. In sum, stagnation embraced all major industrial categories: basic and intermediate goods industries, capital goods industries and consumer goods industries. By and large, it would appear that a combination of factors such as, supply bottlenecks including infrastructure constraints, demand constraints including inadequacy of investment, strained industrial relations, etc., contributed to poor industrial growth during the Fourth Plan period. On an average, industrial output grew by 4.2 per cent per annum which was much below the targeted growth rate of 8-10 per cent postulated in the Fourth Plan.

19. As a preface to an assessment of the industrial performance during the Fifth Plan, it may be in order to refer to the general economic scene on the eve of its launching. The unprecedented rate of inflation which constituted the central problem of the economy in 1973-74 overshadowing all others was followed by the restoration of a measure of balance in 1974-75. A combination of fiscal, monetary and administrative measures helped to bring down the inflation rate from the high levels reached earlier and, together with steps to improve raw material supplies and transport facilities, enabled the resumption of industrial growth.

20. Although the growth rate of 3.2 per cent in 1974-75 was by no means spectacular, it was noteworthy because it marked a recovery from the state of semi-stagnation of 1973-74. Nevertheless, the sluggishness of industrial growth was attributable to a variety of factors, the more important of which were continued power and fuel shortage in different parts of the country, transport bottlenecks, shortages of essential commodities, especially agricultural raw materials and labour unrest. With regard to the key infrastructural inputs, chemicals and chemical products recorded a decline; on the other hand, there was a virtual stagnation in the output of products of petroleum and coal and non-metallic mineral products. Transport equipment too recorded a decline.

However, the depressive effect of the performance in basic and intermediate goods industries was, to some extent, neutralised by a comparatively good performance of the capital goods industries such as electrical and non-electrical machinery, metal products, etc.

21. In the next two years, viz., 1975-76 and 1976-77, the industrial growth accelerated to 7.2 per cent and 9.6 per cent respectively. Improved supplies of inputs and the availability of supporting facilities like power and transport contributed to this increase. Public sector industries such as power generation, coal, steel and fertilisers recorded impressive gains. A noteworthy feature of the growth in industrial output in 1976-77 was that it was spread over a larger number of industries than in 1975-76. In the total index, the weight of industries which recorded higher output rose from 57.4 in 1975-76 to 79.1 per cent in 1976-77. It would not be inappropriate to conclude that in these two years of the Fifth Plan, it was the impressive record of the infrastructural sector which generated expansive impulses for other industries through the availability of inputs.

22. In the fiscal year 1977-78, the growth in industrial production again decelerated to 3.3 per cent from 9.6 per cent in 1976-77. The sluggishness in growth not only persisted throughout the year but was also widespread amongst all the four major industrial groups based on input-based classification. There was a slackening in investment and the shortage of power was especially pronounced in those parts of the country where the concentration of industry was quite high.

23. Industrial production recorded a higher growth rate of 7.6 per cent during 1978-79. The recovery in industrial output during the year was attributable to a sharp increase in electricity generation and to improved availability of essential raw materials as a result of imports and better stock management. Even so, data available for selected industries accounting for a total weight of 40 per cent in the general index of industrial production showed that the average ratio of utilisation to installed capacity in 1978-79 was only 77.4 per cent. Shortage of energy (coal, electricity, and fuel oil), transport bottlenecks and unsatisfactory labour

Table 6: Growth Rates in the Manufacturing Sector

(Base 1970 = 100)

Code No.	Industry/Group	Weight	Third Plan 1961-62 to 1965-66	Annual Plans			Fourth Plan 1969-70 to 1973-74
				1966-67	1967-68	1968-69	
20.	Food manufacturing	7.74	4.4	(-15.6	(-15.1	1.3	(-12.5
21.	Beverages@	0.69	8.7	3.2	(-15.0	10.2	16.2
22.	Tobacco@	2.21	--	--	--	--	1.6*
23.	Textiles	17.43	2.1	(-12.0	2.0	(-18.1	0.3
24.	Footwear	0.34	11.7	8.1	(-14.7	5.7	(-12.3
25.	Wood & Cork	0.49	18.8	(-10.9	9.4	6.5	(-11.3
27.	Paper	2.24	8.6	3.4	10.5	7.7	5.3
29.	Leather	0.32	4.2	3.8	(-18.0	(-19.9	(-14.7
30.	Rubber	2.22	8.5	5.2	3.1	24.8	2.2
31.	Chemical and Chemical Products	10.90	8.4	12.3	1.6	16.4	8.0
32.	Products of Petroleum & Coal	1.62	13.1	3.7	16.1	11.9	4.9
33.	Non-Metallic Mineral Products	3.33	6.2	10.0	5.0	(-10.1	7.1
34.	Basic Metals	8.84	11.7	5.2	(-15.5	11.7	0.5
35.	Metal Products	2.77	15.0	2.6	(-11.4	0.4	2.7
36.	Non-Electrical Machinery	5.55	18.1	19.7	2.6	11.5	11.1
37.	Electrical Machinery	5.30	14.5	16.2	4.9	15.9	8.2
38.	Transport Equipment	7.39	12.7	(-19.9	(-10.7	3.9	1.1
39.	Misc. Mfg. Industries	1.70	5.6	(-10.2	(-24.3	(-14.4	2.3
2-3	Manufacturing	81.08	7.8	1.2	(-10.6	6.2	4.1

Source: C. S. O.

@ The growth rates of beverages and tobacco have been shown combined at Code No. 21 upto the year 1968-69 by considering their combined weights as the group was combined at the old base (1960 = 100).

* Estimates.

Note: The data have been calculated on the basis of index to index variations after some adjustments for converting the data on the same base 1970 = 100.

relations continued to prevent better utilisation of the productive capacities.

24. Summing up the aforesaid review of the Fifth Plan, the overall industrial performance on an average at the rate of 6.2 per cent per annum was not much below the target of an annual growth rate of 7 per cent envisaged for the Plan period. The Fifth Plan was terminated in its fourth year (1978-79) and was followed by the Annual Plan for 1979-80 when the economy was under strain arising from both internal and international factors. Agricultural production was adversely affected by drought, while industrial output was markedly sluggish hampered by serious shortages of vital infrastructural inputs such as power and transport. The generation of power in the fiscal year 1979-80 rose by a mere 2.1 per cent and especially with the increase in demand from agricultural users, this token increase was of little significance following the drought. As a result of these factors, industrial production recorded an absolute decline of 1.4 per cent in 1979-80. An overall view of the industrial scene during the seventies which cover the Fourth Plan as well as the Fifth Plan leads to the conclusion that while there were modest increases in industrial output, the orders of increase were such that the thesis of industrial stagnation gained strong currency (Ahluwalia, 1985). In macro-economic terms, the confluence of a set of factors seems to have brought about this pervasive stagnation: adverse impact of poor agricultural growth affecting supplies of foodgrains as well as raw materials; inadequate demand for the traditional consumer goods industries; dilution of the importance of import substitution in industrial policy; defence imperatives and substantial diversion of resources for it; and above all, a persistent slowdown in public sector investment initially during the plan holiday period and subsequently during the Fourth and Fifth Plans period.

The Eighties

25. The Sixth Plan (1980-81 to 1984-85) and the Seventh Plan (1985-86 to 1989-90) were conceptualised against the above background. The eighties cover both these plans but there was an intensive accent on industrialisation in the Seventh Plan.

26. The Sixth Plan was launched in extremely difficult circumstances and had to contend with a number of unfavourable factors. The year 1979-80 witnessed a bad drought which affected agricultural production considerably. There was an absolute decline in GDP of nearly 5 per cent. The economy was also hit by the second oil shock. Consequently, savings and investment declined significantly thereby reducing the resource base of the Sixth Plan. And the functioning of the infrastructure, in particular, had been badly affected. Against this background, the Sixth Plan was launched with a very ambitious programme focussing on growth, poverty alleviation and self-reliance. In consequence of the application of investment to the infrastructural sector and better management of foreign exchange resources permitting selective increases in imported inputs, the constraints on inputs were eased giving an impetus to industrial growth.

27. There was a turnaround in the economy in 1980-81 when real national income grew by 7.4 per cent in contrast to an absolute fall of 5.2 per cent in the previous year. There was also a distinct recovery in industrial production as it grew by 4 per cent as against a decline of 1.4 per cent in 1979-80. This growth was improved upon in 1981-82 when industrial production touched the rate of 9.3 per cent aided by substantial growth in electricity and basic, capital and intermediate goods industries (Statement III). However, because of severe drought, the hydel generation was adversely affected in 1982-83 imparting contractionary impulses which were spread over a wide spectrum of industries. Consequently, industrial growth dipped to 3.2 per cent. The mobilisation of additional external borrowings had, no doubt, been close to target and a prudent foreign exchange reserves policy had been adopted in the initial years of the Plan both for protecting essential technological imports and for facilitating the required structural adjustment of the economy after the second oil shock of 1979. Nevertheless, investment in those sectors which are sensitive to real investment shortfalls and which have strong linkages throughout the economy, namely, irrigation (and agriculture in general), power, coal, railways and some segments of industry could not be protected against such shortfalls to the maximum extent possible. It was in recognition of such shortfalls that corrective action was taken effecting temporary shift of priorities in the

allocation of resources that was considered necessary so that the tempo already created was not disrupted and new starts were not severely affected. A conspicuous achievement of the period was the rapid increase in domestic crude oil output which resulted in 12.0 to 18.0 per cent increase in the index of 'mining and quarrying' for three years in succession (1981-82 to 1983-84). Pursuant to such corrective action, industrial production recorded growth rates of 6.7 per cent and 8.6 per cent in 1983-84 and 1984-85, respectively. And these growth rates were well distributed across the broad spectrum of industries, especially the capital goods industries. In such a milieu, though the Sixth Plan recorded an average industrial growth of 6.4 per cent per annum which was only marginally higher than that of 6.2 per cent per annum achieved in the Fifth Plan, the former was qualitatively different from the latter; above all, it broke the long spell of industrial stagnation and set a new trend of higher growth path (See Vijay Kelkar and Rajiv Kumar, 1990).

Table 7 : Growth of Industrial Production
(Based on Index of Industrial Production : 1980-81 = 100)

(Per cent)				
Group	Mining and Quarrying	Manufa- cturing	Electricity	General Index
Year\Weight	(11.46)	(77.11)	(11.43)	(100.00)
1980-81*	4.2	3.7	5.8	4.0
1981-82	17.7	7.9	10.2	9.3
1982-83	12.4	1.4	5.7	3.2
1983-84	11.7	5.7	7.6	6.7
1984-85	8.8	8.0	12.0	8.6
Sixth Plan	11.0	5.3	8.3	6.4

* Based on the 1970 series of Index of Industrial Production.

28. The Seventh Plan laid down a target of an annual industrial growth rate of 8 per cent and the actual performance of 8.4 per cent per annum on an average exceeded this target (Table 8). The power-coal-rail complex which was the key element in the

Table 8 : Growth of Industrial Production
(Base : 1980-81 = 100)

(Per cent)

Group Year\Weight	Mining and Quarrying (11.46)	Manufac- turing (77.11)	Electricity (11.43)	General Index (100.00)
1985-86	4.2	9.7	8.5	8.7
1986-87	6.2	9.3	10.3	9.1
1987-88	3.8	7.9	7.7	7.3
1988-89	7.9	8.7	9.5	8.7
1989-90	5.9	8.3	10.7	8.3
Seventh Plan	5.6	8.8	9.3	8.4

infrastructural base was strengthened. The real task was to ensure that the stimulus to industrial growth that came from infrastructural investments and from the policy changes was maintained. A number of initiatives were taken to simplify the industrial policy frame-work in order to stimulate industrial growth, modernisation and technological upgradation. The process of liberalisation and rationalisation was one of structured change. Delicensing and broad-banding were restricted primarily to areas of high technology (e.g., capital goods and electronics) industries linked with energy production and utilisation (e.g., electrical equipment and instrumentation) and mass consumer goods industries and industries with large demand and supply gaps. These changes were expected to enhance domestic competition by reducing barriers to entry and to more effective utilisation of capacity. An adjunct of this policy was a greater reliance on tariff and tax mechanisms to regulate prices and effective protection rather than on direct controls. Where price controls did apply their orientation was shifted in directions that stimulated productivity and production growth. The broad aims of these measures would continue to be reduction in cost, improved productivity, technological upgradation, improved capacity utilisation and faster investment. Another feature of industrial performance was that the expansion of industry was quite broad based. At the two-digit level, five of the industry groups

comprising nearly two-fifths of all industry recorded rates of growth exceeding 8 per cent. These high growth sectors were paper and paper products, chemicals, basic metals, metal products and electrical machinery and appliances. These industry groups include some consumer goods and capital goods and a large proportion of intermediate goods. The low growth sectors (food products, beverages and tobacco, jute goods, rubber and plastics, transport equipment) with growth rates less than 6 per cent were largely consumer goods sectors accounting for nearly 25 per cent of the index of industrial production. Of the remaining sectors, cotton textiles, textile products, leather goods and non-metallic minerals performed fairly well. Thus, the expansion of the industrial base in the country during the last five years has been of a wide ranging nature. The one sector which does stand out with a typically high growth rate is that of electrical machinery and appliances.

Use-Based Classification

29. We may now examine the growth profile of industry in the eighties along with that in the Fifth Plan derived from the use-based classification of industries. It is sometimes argued that the pattern of industrial growth that has emerged in India, especially in the 'eighties, reflects a distortion in that there has been a disproportionate growth of the consumer durables sector in relation to its weight in the general index. Apart from the fact that the production of such goods involves considerable import content, one cannot also ignore that it epitomises a skewness in the pattern of demand emanating principally from the upper crust of the society. A concern is also expressed that the strategy of industrialisation that has been followed in the 'eighties with a focus on basic and capital goods industries as well as consumer durables has not paid sufficient attention to the generation of employment which is central to the removal of poverty. In the same vein, it is argued that excessive concern with a growth rate syndrome that is sought to produce the trickle-down effects has led to a relative shift in emphasis in favour of a direct assault on poverty through various employment programmes and programmes which are designed to augment the assets base of the poor in rural and artisan industries. In short, the point is made that there has not been an integrated development of the industrial sector that would have ensured growth

with social justice. It is, therefore, considered necessary to examine the anatomy of industrial growth in the eighties in terms of the use-based classification of industries with emphasis on the growth behaviour of selected industries drawn from different groups.

30. For analytical purposes, the data on use-based industrial classification are divided into three sub-periods: Fifth Plan (1974-75 to 1979-80 i.e., 6 years), Sixth Plan (1980-81 to 1984-85) and Seventh Plan (1985-86 to 1988-89, i.e., 4 years). Together with these sub-periods, the annual compound growth rates of different industrial sectors are worked out for the period 1980-81 to 1988-89. During the Fifth Plan (including the Annual Plan Period of 1979-80), the annual compound rate for industrial output is estimated at 5.2 per cent (Table 9). A distinctive feature of the pattern of industrial growth is that the contribution of the basic goods group was greater than the weightage of this group in the general index. On the other hand, the contribution of the capital goods, the intermediate goods and the consumer goods groups were less than their respective weights in the general index. However, within the consumer goods group, there was a disparate movement in the contributions of durables and non-durables. The consumer durables sub-group contributed more to the increase in industrial production than its weight in the general index. The basic goods group had a maximum weightage of 32.28 per cent in the general index while the consumer durables sub-group had a minimum weightage of 3.41 per cent and their weighted sectoral contributions in the annual compound growth rate were 5.2 per cent, 2.1 per cent and 0.2 per cent, respectively.

31. During the Sixth Plan, there was a qualitative difference in the growth pattern in that unlike in the Fifth Plan, both the basic goods and the capital goods groups contributed more to the annual compound growth rate of 5.9 per cent than their respective weights in the general index; in fact, there was a fairly sharp rise in the contribution of the basic goods group following the step-up in crude petroleum output. On the other hand, both the intermediate goods and consumer goods groups made smaller contributions to industrial growth than their respective weights in the general index. However, there was a fairly sharp decline in the contribution of the

consumer goods group which was mainly concentrated in the consumer non-durables sub-group. The consumer durables sub-group made a larger contribution to industrial growth than its weight in the general index. The components of basic goods group (2.8 per cent), capital goods group (1.0 per cent), and consumer durables sub-group (0.3 per cent) accounted for a little over 69 per cent of the growth rate of 5.9 per cent during the Sixth Plan.

32. For the Seventh Plan period, these data are available for four years up to 1988-89. The annual compound rate of industrial output is estimated at 8.5 per cent. A discernible feature of the pattern of growth was that the contribution of the basic goods group (37.59 per cent) to industrial growth was less than its weight (39.42 per cent) in the general index as output growth in crude oil began to taper off. The contribution of the capital goods group (26.11 per cent) to industrial growth was much higher than the weight (16.43 per cent) in the general index. Like in the previous plans, the contribution of the intermediate goods group (15.46 per cent) to industrial growth was less than its weight (20.51 per cent). Again, like the previous plans, the contribution of the consumer goods group (20.85 per cent) was smaller than its weight (23.65 per cent). And within this group, the contribution of consumer durables sub-group (7.16 per cent) continued to be larger than its weight (2.55 per cent). The contribution of the consumer non-durables sub-group (13.69 per cent) was much less than its weight (21.10 per cent). There are two distinctive aspects of the pattern of industrial growth in the first four years of the Seventh Plan that should be taken note of. First, unlike in the previous plans, the basic goods group contributed less than its weight to industrial growth. Secondly, as in the previous plans, the consumer goods group contributed less than its weight to industrial growth although the relative weight of this group has declined over the plan periods.

33. For the 'eighties, i.e., 1980-81 to 1988-89, the annual compound rate of growth works out to 7.7 per cent. Both the basic goods and capital goods groups made larger contributions to industrial growth than their respective weights in the general index. These groups together account for nearly two-thirds of the growth rate of 7.7 per cent. Consistent with the trend observed during the

Table 9: Contribution of the Use-Based Groups to the Annual Average Growth Rate in General Index (Plan-wise data of compound growth rates)

(Per cent)												
Item	Fifth Plan (1974-75 to 1979-80)			Sixth Plan (1980-81 to 1984-85)			Seventh Plan (1985-86 to 1988-89) (4 years)			(1980-81 to 1988-89 (9 years)		
	Weight	Con-tribution	Weighted Dis-tribution of Over-all Growth by Sec-tors	Weight	Con-tribution	Weighted Dis-tribution of Over-all Growth by Sec-tors	Weight	Con-tribution	Weighted Dis-tribution of Over-all Growth by Sec-tors	Con-tribution	Weighted Dis-tribution of Over-all Growth by Sec-tors	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	
1. Basic Goods	32.28	41.1	2.1	33.23	48.0	2.8	39.42	37.59	3.21	46.87	3.37	
2. Capital Goods	15.25	14.7	0.8	14.98	16.7	1.0	16.43	26.11	2.18	21.12	1.60	
3. Intermediate Goods	20.95	17.7	0.9	21.33	14.7	0.9	20.51	15.46	1.32	15.73	1.25	
4. Consumer Goods, of which	31.52	27.5	1.4	30.46	20.5	1.2	23.65	20.85	1.77	16.28	1.49	
(a) Durable Goods	3.41	4.3	0.2	3.81	4.6	0.3	2.55	7.16	0.62	6.65	0.51	
(b) Non-durables	28.11	23.2	1.2	26.65	15.9	0.9	21.10	13.69	1.15	9.63	0.98	
Total:	100.00	100.0	5.2	100.00	100.0	5.9	100.00	100.00	8.50	100.00	7.71*	

Note: 1. Data for Fifth and Sixth Plans are based on index with 1970 = 100 and that for the Seventh Plan and for the period 1980-81 to 1988-89 are based on index with 1980-81 = 100.

2. Some minor adjustments have been done to derive at the contribution in view of non-availability of consistent data.

* Obtained as the average of annual growth rates for the period.

plan periods, the contribution of the intermediate goods group was less than its weight in the general index. The consumer goods group made a smaller contribution (16.28 per cent) to industrial growth than its weight (23.65 per cent) in the general index. However, within the group, there was a divergent movement in the contributions of durables and non-durables. The contribution of the durables sub-group (6.65 per cent) was more than twice its weight (2.55 per cent) in the index. On the other hand, the non-durables sub-group made a much smaller contribution (9.63 per cent) than its weight (21.10 per cent) in the general index.

Industry-wise Growth Profile

34. Table 10 sets out the data on the annual compound growth rates of production of selected industrial categories during the 'eighties in terms of the use-based classification and Table 11 on annual growth rates for individual products for the period 1980-81 to 1988-89.

35. Juxtaposing all these tabular data and having regard to the analysis in the preceding paragraphs, the main features of industrial growth recorded in the 'eighties are set out as follows. First, both the basic and capital goods groups together played a predominant role in industrial growth. Secondly, the importance of the intermediate goods group has declined in relation to its weight which is larger than the weight of capital goods group in the general index. Thirdly, the consumer goods group also suffered a decline in importance relative to its weight which is larger than the weight of the intermediate goods group. The loss of importance was mainly concentrated in the consumer non-durables sub-group; on the other hand, the consumer durables sub-group has gained in relative importance. What emerges, therefore, is that whereas the basic and capital goods sectors have strengthened the industrial base, the decline in relative importance of the intermediate goods sector is a matter of concern because there are industries in this sector which are labour-intensive and have both forward and backward linkage effects. Notwithstanding the small weight in the general index, there has emerged a disproportionate growth in the development of consumer durables. In comparison, the consumer non-durables or the wage goods sector with large employment

potential has receded in importance. These features of industrial growth have implications for industrial policy and the strategy for industrialisation in the coming years.

Table 10 : Annual Compound Growth Rate of Production of Selected Industries
1981-82 to 1984-85, 1984-85 to 1988-89 and 1981-82 to 1988-89
(Base 1980-81 = 100)

(Per cent)				
Industry	Weight	1981- 82 to 1984- 85	1984- 85 to 1988- 89	1981- 82 to 1988- 89
BASIC INDUSTRIES				
1. Electricity	11.4290	8.43	9.0	8.7
2. Coal (including lignite)	6.7886	5.95	7.3	6.7
3. Finished Steel (Saleable)	5.2092	-1.21	-1.0	7.1
4. Fertilizers (N & P)	2.1907	8.18	14.7	11.9
5. Cement (all kinds)	1.5983	12.71	9.8	11.06
6. Steel casting	0.8005	25.21	20.3	22.4
7. Pipes and tubes (spun pipes)	0.5819	12.65	8.8	11.3
8. Caustic soda	0.4035	6.76	4.9	5.7
9. Heavy Structural	0.2603	19.54	27.4	24.0
10. Aluminium ingots	0.1726	10.02	6.05	8.0
CAPITAL GOODS				
1. Commercial vehicles	1.3699	1.67	5.3	3.7
2. Auto ancillary and parts	1.3368	9.03	2.3	5.1
3. Electric motors (DGTD)	1.2871	2.57	2.3	2.4
4. Electric generators	0.6721	5.80	-9.4	-3.2
5. Machine Tools	0.6511	-32.50	43.1	3.67
6. Complete tractors	0.6223	0.27	6.6	3.8
7. Diesel engines	0.6034	-0.83	10.3	40.0
8. Railway wagons	0.5565	-9.7	13.6	3.0
9. Ball, Roller & Needle bearings	0.3947	7.46	23.0	16.1
10. Boilers	0.3907	9.67	37.8	-0.63
11. Computer & peripherals	0.3513	58.1	47.5	52.0

(Contd. . . .)

Table 10 (Contd.)

Industry	Weight	1981- 82 to 1984- 85	1984- 85 to 1988- 89	1981- 82 to 1988- 89
INTERMEDIATE GOODS				
1. Cotton yarn	5.7832	2.67	7.2	3.25
2. Petroleum Refineries & Products of Petroleum	1.5192	4.52	8.1	7.0
3. Jute & Mesta Textiles	1.9990	3.59	0.25	0.53
4. Nylon filament yarn	0.3394	4.09	3.6	7.4
5. Viscose filament yarn	0.3056	-7.72	20.7	7.6
CONSUMER GOODS INDUSTRY				
1. Cotton textiles (decentralised)	3.2425	8.29	2.3	4.8
2. Paper and paper boards	2.7662	4.50	10.5	7.9
3. Cotton cloth (mills)	2.9758	-27.41	1.8	-12.0
4. Sugar	1.7591	-2.2	11.7	5.5
5. Tea	1.0964	5.22	0.8	2.7
6. Wheat flour/maida	0.8035	14.17	6.2	9.4
7. Tetracycline	0.6851	-0.85	14.1	7.4
8. Vanaspati	0.5586	2.0	2.1	2.0
9. Penicilin	0.5048	-15.21	24.3	5.5
10. Telephone instruments	0.3461	83.06	7.4	17.7
11. Wrist watches	0.3295	2.73	12.9	8.4
12. Refrigerators	0.1452	21.1	17.98	16.5
13. Airconditioners	0.0241	-3.34	8.5	2.1
14. Cars	0.1403	20.4	11.06	20.3
15. Motorcycles	0.1823	16.1	12.91	20.4
	0.0535	-11.6	-4.77	-7.13
	0.2488	8.0	9.98	7.6
	0.1948	11.8	19.27	13.14

Table 11: Growth Rates in Selected Industries 1980-81 to 1988-89 (Base 1980-81 = 100)

Industries	Weight	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
1. Coal (Incl. lignites)	6.7886	+11.4	+9.7	+5.3	+5.9	+6.6	+4.5	+7.5	+8.9	+8.5
2. Crude Petroleum	2.4073	-10.7	+54.1	+30.1	+23.5	+11.4	+4.1	+1.0	-0.4	+5.5
3. Nitrogenous Fertilisers	1.5227	-2.8	+45.3	+8.9	+1.8	+12.4	+10.5	+25.0	+1.0	+22.0
4. Cement	1.5983	+5.9	+12.9	+9.5	+16.7	+12.0	+9.8	+10.4	+8.2	+10.9
5. Pig Iron (Saleable)	0.2061	+37.6	-12.6	-5.6	+27.5	-20.0	+3.0	+8.8	-4.6	-16.2
6. Copper Cathodes	0.1694	+16.0	+13.3	+14.6	+3.1	+14.7	-11.3	+15.8	-9.9	+27.7
7. Electricity generated	11.4290	+5.9	+10.2	+6.7	+7.6	+12.0	+8.3	+10.3	+7.6	+9.5
8. Motor Cycles	0.1823	+13.8	+11.4	+16.2	+18.9	+13.4	+37.4	+17.2	+13.4	+28.1
9. Cars	0.1403	-4.3	+35.8	+2.8	+7.1	+58.6	+18.1	+14.7	+37.7	+11.9
10. Scooters/Mopeds/Scooterettes	0.1948	+39.1	+17.7	+14.7	+2.4	+19.0	+33.0	+16.6	+10.8	-1.3
11. Autorickshaws	0.0337	+50.6	-3.7	+23.6	+20.4	+13.3	+16.8	+1.0	+17.0	+29.3
12. Telephone Instruments	0.3461	N.A.	+8.6	+39.3	+64.3	+2.8	+11.7	-21.2	+2.7	+47.3
13. Sugar	1.7591	+2.6	+34.4	+31.6	-16.9	-14.5	+10.3	+13.8	+13.6	+9.3
14. Baby Food	0.3817	+72.7	-33.0	+28.0	-20.6	+19.7	-5.8	+7.3	+40.1	+8.1
15. Beer	0.5817	+78.0	+9.8	+4.1	-1.7	+23.3	-0.2	-22.6	-12.2	+24.1
16. Fluorescent Tubes	0.0894	+19.5	+12.3	+4.5	+5.9	+14.8	+5.3	+10.3	+3.6	-5.1
17. Mining Machinery	0.0797	+36.1	+7.5	+55.1	-76.3	-3.6	+102.5	+39.3	-13.4	+9.1
18. Chem. & Pharm. Machinery	0.2593	+31.6	+10.0	+21.0	-64.0	+4.6	+119.8	+1.1	+1.9	+2.1
19. Ball & Roller Bearings	0.3947	+19.8	+3.3	+5.0	+9.7	+11.6	+27.3	+6.9	+13.9	+55.5
20. Agricultural Tractors	0.6223	+13.8	+18.4	-25.2	+20.5	+12.0	-10.1	+4.8	+3.7	+32.3
21. Domestic Refrigerators	0.1452	+28.0	+11.9	+17.2	+27.2	+19.2	+17.7	-12.8	+15.2	+39.0
22. Commercial Vehicles	1.3699	+24.9	+27.5	-5.9	+2.8	+9.5	+6.4	+2.9	+13.1	-0.9
23. Jeeps	0.2891	+27.0	+12.8	+7.9	+6.4	+8.6	+13.9	+2.1	+19.5	+8.0
24. Cotton Yarn	5.7832	+6.5	-3.6	-2.5	+8.5	+4.6	+5.0	+5.2	+1.9	+0.5
25. Jute Manufactures	1.9990	+4.1	-4.2	+0.3	-18.6	+25.8	-1.3	+3.0	-14.2	+15.8
26. PVC Resins	0.0880	-17.6	-11.9	+12.4	+53.7	+27.7	+30.5	+7.1	+16.2	+8.5
27. Polyester Filament Yarn	0.1607	+22.2	+45.4	+56.2	+92.0	+14.6	+23.6	+18.8	+31.3	+44.5
28. Nylon Filament Yarn	0.3394	+17.6	+15.0	+13.0	+19.2	+12.9	+11.4	-12.6	+1.2	+11.3
29. Computer Systems & Peripherals	0.3513	+4.85	+6.08	143.6	+60.0	+1.3	+68.1	+74.3	+67.3	-3.5

Looking Ahead

36. There is no doubt that the performance of the industrial sector during the Seventh Plan gives reasons for satisfaction. The rate of growth, the pace of modernisation, and the induction of new products and technologies have been more rapid than at any time in the recent past. The policy changes made in the past few years have clearly accelerated the pace of industrial growth and reinforced the modernising role of industrialisation in the development process. Looking ahead, the task is indeed two-fold : (a) restructuring the consolidation of enterprises to maximise the productivity of resource use for the attainment of Plan targets and (b) accelerating modernisation based on futuristic technologies so as to position the industry for more rapid development in the 1990s. The shift to a qualitatively new pattern of industrial growth would, therefore, call for the initiation of a different strategy. In consonance with our resource base, the strategy should rely on its potentially most reliable input, namely, scientific and technical knowledge. This notwithstanding, the progress has, however, not been satisfactory both with regard to the modernisation of the traditional industries and the rehabilitation of sick units. Apparently, the problems of these industries and several others cannot be solved without tackling the issue of surplus labour. It is, therefore, ineluctable to evolve a new approach that recognises the rights of labourers and provides suitable incentives to them.

Employment Aspects

37. Taking into account the employment characteristics of modern industry and given the pre-eminent position of basic and capital goods industries, it follows that there has not been a concomitant increase in employment in the wake of industrial growth that has taken place especially in the eighties. In a labour surplus economy, the orientation of industrial strategy has to be such as would absorb more labour especially when the absorptive capacity of agriculture has declined over the years. It is in this context that one has to appreciate the central thrust of the Eighth Plan on employment. While the Census data and the quinquennium data (up to its 43rd round), especially the latter, have made tremendous progress in providing information on the nature and the extent of

unemployment and under-employment, it would still be necessary to strengthen the data base further so as to provide an operational content to the decision concerning the adoption of a full employment programme. Development strategy with employment generation as the central focus would require rearrangement in the employment of resources from large capital-intensive industries to an investment activity such as, construction, road building, cottage industries, etc., that would generate employment opportunities. But, in such a milieu, the growth rate cannot be neglected because there is an organic link between acceleration in the growth rate and that in the generation of employment. It is not a question of an 'either-or' debate on growth rate syndrome versus employment but both have to be pushed simultaneously for there is a relationship of complementarity between them. What is implicit in the new approach to development strategy is the desirability of effecting a compositional shift in output that caters to the consumption requirements of larger and weaker sections of the population. An aspect related to this new approach is the growth of consumerism which has received much attention. If one examines the configuration of industrial scene in the eighties when the overall industrial growth increased at an annual compound rate of 7.7 per cent, then the contribution of consumer durables to industrial growth was no more than about 7 per cent. There is no doubt that strong growth of consumer durables in recent years is a response to the demand emanating from the upper sections of society. While one cannot deny that consumer durables have grown faster than any other sector of industrial production, their weight in the total index is, however, quite small. This position is likely to remain unaffected even after allowance is made for the fact that some of the output of basic and intermediate goods industries would have entered as inputs into the consumer durables. And the latter would have also generated employment opportunities. The compositional changes in output should be influenced by a package of policy measures that include licensing, fiscal incentives, income redistribution, etc. [See Rangarajan (1990)].

An Approach to Small Enterprises

38. Considerable attention has focussed on the need to develop small enterprises as an element of industrial policy

designed to ensure an integrated growth of industrial structure having regard to the resource endowment of the economy. The encouragement to small enterprises was, however, grafted onto an industrial policy intended primarily to foster the development of large scale capital-intensive industry. The *raison d'être* of industrial policy toward small enterprises stems from their role in the deconcentration of economic power as well as the creation of employment. The main link between the encouragement of small enterprises and reduced poverty and inequality is the increased demand for unskilled labour that is supposed to follow. The relatively high wages that prevail in large firms imply that income distribution can be improved by encouraging small firms. But the underlying presumption is that output would not fall as, otherwise, it would offset the redistributive effect that is hoped for. Much would, however, depend on the extent to which small and large enterprises are competitive. And to know whether there is much to be gained by a policy of encouraging small enterprises requires a disaggregated enquiry into the nature of markets since the degree of competitiveness between small and large enterprises would vary a great deal with the production sector.

39. However, one has to be clear about the concept of small enterprises that is germane to the employment argument. And in this context, a distinction has to be drawn between traditional small enterprises and modern small enterprises because most of the arguments that are adduced in favour of small enterprises really pertain to the former and do not have much relevance for the latter. The former are labour-intensive and largely rural or village enterprises using traditional methods-lacking power and machinery-for making traditional products. On the other hand, the latter are largely urban enterprises using both power and machinery and techniques of production for manufacturing modern products of more or less the same type as those produced by large enterprises. In the modern sector, although firms sometimes employ more sophisticated techniques than small firms, all are modern and mechanised. And within the modern industry, increase in the size of the enterprise is accompanied not only by technical changes but also by economies of scale. It may, therefore, be appropriate to examine how capital-labour ratios and labour productivity vary with the size of establishment. A main argument is that small

enterprises are labour-intensive and that labour-intensity of production is much to be desired when labour is plentiful and capital scarce. But, as mentioned earlier, the value of what is produced cannot be neglected and labour-intensity alone cannot be a criterion of social desirability. And it is argued that labour is not a completely free good and more complicated criteria are needed to decide whether one firm size is better than another as, for example, total factor productivity or social-cost benefit analysis. [See Little, et al (1987)].

40. It may be that some enterprises use little capital in small establishments and have high capital productivity and low labour productivity and vice versa with little variation between units of different size. Should this be so, the best way to increase labour-intensity of the economy would be to increase the demand for the products of enterprises that are typically labour-intensive and have high capital productivity. In this scenario, the size of establishment and supply-side intervention in favour of the small would be irrelevant. If, however, within an industry, small enterprises are more labour-intensive and have higher capital productivity than large enterprises and their products are competitive with those of the large enterprises, then supply-side intervention in favour of the small would be appropriate. It is, therefore, necessary to disaggregate, i.e., to examine how capital-intensity and capital and labour productivity vary with size within industries and sub-industries that are sufficiently narrowly defined for the products of the different establishments to be competitive with each other. Quite often, high quality and high labour productivity are technologically linked.

41. An inference can, therefore, be drawn that industry-specific factor proportions and productivities do not vary consistently with size at least measured by the number of workers. This underscores the desirability of a closer probe into labour and capital markets if the presumption in favour of small enterprises is to be validated or refuted. It is observed that differences in labour-intensity between industries swamp the differences that are found to exist between enterprises within an industry. And in so far as increasing the demand for labour is concerned, more mileage can be drawn by altering the pattern of demand in favour of labour-

intensive industries than by concentrating on efforts to change the size structure of industries in favour of more labour-intensive part of the size range which any way varies from industry to industry and is indeed difficult to find. The package of economic policy measures that shift demand toward labour-intensive industries would comprise fiscal concessions, promotion of exports and of agriculture, licensing, income redistribution, etc.

42. In order to ensure that small enterprises sector serves the objective of industrial dispersal, an approach which emphasizes economies of infrastructure, agglomeration and inter-industry linkages would prove more effective than the present approach which often tends to over-emphasize the conflict between small and large or between rural and urban enterprises. Industrial estates do not constitute an effective instrument for industrialising rural areas or for promoting industrialisation regardless of the economic and entrepreneurial background against which these estates are located. [Dhar and Lydall (1982)]. These should be located in areas where industrialisation has already made some headway and a supply of entrepreneurial skills already exists so that costs of construction are brought down to the minimum. And these estates should be used not so much for creating large employment opportunities *per se* as for serving nursery beds in which efficient entrepreneurs can grow. Small enterprises do face constraints in the sphere of access to information, technology, materials, credit and markets. It would thus be apposite to assist such entrepreneurs in technical, financial and marketing areas as well as provide training to workers, supply raw material and power and tender advice for the starting of new enterprises. But this assistance should not take the form of special privileges, preferences, quotas, reservations and the like. There should be a removal of their disabilities and the promotion of competition rather than an ideological fervour of small enterprises as such. The main concern should be the promotion of efficiency and growth rather than the creation of new small enterprises for their own sake. In such an ambience, they can make a further contribution to industrial development and employment. It is this approach to the matter which should form a durable basis of small enterprise policy. And this approach is justified in the present circumstances when the labour absorption capacity of agriculture is diluted and employment

elasticity of output has also declined. But given the relatively different resource endowments of small and large enterprises, it is necessary to ensure a balanced and integrated development of both sectors through a well articulated system of linkages between them. In certain cases, there has occurred a dilution of linkages between the small-scale and large-scale enterprises. Consequently, there has emerged a phenomenon of vertical integration within large-scale enterprises coupled with specialisation within the small enterprise sector with some firms manufacturing individual parts for other small-scale assemblers. In other words, there has not been a sufficient progress towards decentralisation and spatial distribution of small enterprises.

Concluding Remarks

43. The relative decline in the importance of 'intermediate goods' group implies that ancillarisation which has both forward and backward linkage effects has been slowed down. Promotion of ancillaries, instead of being a voluntary social obligation, would need to be developed as an economic necessity. There does appear to be sufficient scope for expansion of modern small enterprises including that for the development of ancillaries. There are several advantages of promoting larger industrial production through ancillaries because ancillarisation prevents over capitalisation, promotes entrepreneurship, achieves dispersal/dissemination of technology and provides assured market for the small unit. Besides, it enables large units to concentrate on higher technology areas leading to saving in inventory costs and rapid increase in production. Generation of adequate employment opportunities would be ensured if the focus of industrial policy is on an integrated development of both large-scale and small-scale enterprises with the former being persuaded to move into the newer (and backward) areas to lead the way so that small-scale enterprises would follow reaping economies of agglomeration and other benefits in the form of availability of raw materials, proximity of markets, etc. Ancillarisation with tight linkages should receive the necessary thrust because, apart from the employment potential it has, it will generate both forward and backward linkages that are necessary for a strong and well-diversified industrial structure. Ancillarisation should, therefore, become an important component in the design of

industrial policy that should ensure an integrated development of both small and large sectors so that higher growth rate can be achieved in simultaneity with larger employment opportunities and social justice. All that this implies is that the contribution of the intermediate goods group in the structure of industrial production would need to be improved.

REFERENCES

1. Ahluwalia, Ishar J. (1985) : *Industrial Growth in India : Stagnation since the Mid-Sixties*. (Oxford University Press, New Delhi).
2. Bardhan, Pranab K. (1984) : *The Political Economy of Development in India*. (Oxford : Basil Blackwall, 1984).
3. Chakravarty, Sukhamoy (1987) : *'Development Planning : The Indian Experience'* (Oxford : Clarendon Press).
4. Chakravarty, Sukhamoy, and Ajit Singh (1988) : *The Desirable Forms of Economic Openness in the South* (Helsinki : WIDER, 1988).
5. Dhar, P.N. and H.F. Lydall (1961) : *The Role of Small Enterprises in Indian Economic Development* (Institute of Economic Growth, University of Delhi, Delhi).
6. Chenery Hollis B. (1986) : Sherman Robinson, and Moshe Syrquin, *Industrialisation and Growth* (New York Oxford University Press).
7. Galbraith, John Kenneth (1962) : *Economic Development in Perspective* (Cambridge, MA : Harvard University Press).
8. Hirschman, Albert O. (1958) : *The Strategy of Economic Development* (New Haven, CT : Yale University Press).
9. Kelkar, Vijay L. and Kumar, Rajiv (1990) : "Industrial Growth in the Eighties Emerging Policy Issues", *Economic and Political Weekly*, January 27.
10. Krueger, Anne O. (1984) : 'Comparative advantage and development policy 20 years later' in Moshe Syrquin, Lance Taylor and Larry Westphal (Eds), *Economic Structure and Performance : Essays in Honour of Hollis B. Chenery* (New York : Academic Press).
11. Little, I.M.D., Dipak Mazumdar and John M. Page, Jr. (1987) : 'Small Manufacturing Enterprises : A Comparative Analysis of India and other Economies' (A World Bank Research Publication : Oxford University Press).
12. Pack, Howard (1988) : 'Industrialisation and Trade', in Hollis B. Chenery and T.N. Srinivasan (Eds.), *Handbook of Development Economics*, Vol. I (Amsterdam : North-Holland, 1988).
13. Planning Commission, GOI (1956, 1961) : *Second and Third Five Year Plans*.
14. Raj, K.N. (1976) : "Growth and Stagnation in India's Industrial Development", *Economic and Political Weekly*, Annual Number, February.

15. Rangarajan, C.(1982) : 'Some Reflections on Industrial Growth' in Ashok V.Bhuleshkar (Ed), Indian Economic Structure and Policy (Dhaval Prakashan, Ahmedabad).
16. Rangarajan, C (1990) : *Industrial Growth In the Eighties : Facts and Some Issues* (Indian Institute of Management, Lucknow, April).
17. Rosen, George, (1988) : 'Industrial Change in India : 1970-2000', (Allied Publishers Private Ltd.).
18. Shapiro, Helen and Lance Taylor (1990) : 'The State and Industrial Strategy' in World Development, Vol. 18 No.6, June: PP.861-878 (Pergamon Press, New York).
19. Shetty, S.L.(1978) : *Structural Retrogression in the Indian Economy since The Mid-Sixties* (Economic and Political Weekly, February).
20. Srinivasan, T.N. (1985) : 'Neoclassical Political Economy : The state and economic development' (New Haven, CT: Economic Growth Centre, Yale University).
21. Taylor, Lance. (1989) : 'Gap Disequilibria : Inflation, Investment, Saving and Foreign Exchange' (Cambridge, MA : Department of Economics, Massachusetts Institute of Technology).

Statement I : Group-wise Growth Rate of Index of Industrial Production (Financial Year)

(Per cent)

(Base : 1970 = 100)

Code No.	Industry/Year	Weight	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
20.	Food Manufacturing	7.74	+6.9	-1.3	+5.4	+5.0	+6.1	+5.6	-5.1	+1.3	-19.8	+13.0
21.	Beverages*	0.69	+7.8	+1.2	+0.1	+17.7	+16.6	+3.2	-5.0	+10.2	-0.2	+3.3@
22.	Tobacco*	2.21	--	--	--	--	--	--	--	--	--	--
23.	Textiles	17.43	+3.2	+2.1	+5.4	+4.0	-4.4	-2.0	+2.0@	-8.1@	+8.3@	-2.2
24.	Footwear	0.34	+17.6	+12.0	+10.7	+3.8	+14.4	+8.1	-4.7	+5.7	-12.6	-4.4
25.	Wood & Cork	0.49	-4.4	+15.7	+2.1	+35.0	+45.8	-10.9	+9.4	+6.5	-0.8	-14.4
27.	Paper	2.24	+3.8	+7.2	+18.1	+2.6	+11.2	+3.4	+10.5	+7.7	+8.9	+5.6
29.	Leather	0.32	-7.5	+21.6	+11.2	-4.3	-0.1	+3.8	-8.0	-19.9	-8.0	-26.1
30.	Rubber	2.22	+9.0	+7.7	+11.5	+6.9	+7.2	+5.2	+3.1	+24.8	-0.5	-2.8
31.	Chemical and Chemical Products	10.90	+11.5	+8.9	+11.4	+7.1	+3.2	+12.3	+1.6	+16.4	+10.1	+6.2
32.	Products of Petroleum and Coal	1.62	+7.1	+1.6	+15.6	+6.2	+34.9	+3.7	+16.1	+11.9	+7.1	+3.0
33.	Non-metallic mineral products	3.33	+6.1	+11.2	+10.2	+7.4	-4.1	+10.0	+5.0	-0.1	+14.1	+7.7
34.	Basic Metals	8.84	+15.8	+24.4	+14.2	+2.0	+2.1	+5.2	-5.5	+11.7	+4.2	-1.4
35.	Metal Products	2.77	+10.9	+5.8	+10.7	+22.7	+24.9	+2.6	-11.4	+0.4	+11.9	+7.0
36.	Non-electrical Machinery	5.55	+16.8	+23.4	+23.6	+18.9	+7.8	+19.7	+2.6	+11.5	+4.9	+11.3
37.	Electrical Machinery	5.30	+10.5	+19.0	+14.9	+18.3	+9.8	+16.2	+4.9	+15.9	+14.9	+13.9
38.	Transport equipment	7.39	+18.3	+18.7	+11.5	+18.6	-3.4	-19.9	-10.7	+3.9	-4.6	-2.1
39.	Misc. Mfg. Industries	1.70	+4.2	+8.4	-0.3	+26.8	-11.2	-10.2	-24.3	-14.4	+16.9	+10.1
DIV.												
2/3	Manufacturing	81.08	+8.3	+9.1	+9.4	+9.1	+2.9	+1.2	-0.6	+6.2	+6.4	+4.2

Source : C.S.O.

* The growth rates of beverages and tobacco have been shown combined at Code No. 21 by considering their combined weights, as the group was combined at the old base (1960 = 100).

@ Estimated.

Note : The data have been calculated on the basis of index to index variations after some adjustments for converting the data as base 1970 = 100.

Statement II : Group-wise Growth Rates of Index of Industrial Production (Financial Year)
(Base 1970 = 100)

Code No.	Industry/Year	Weight	(Per cent)									
			1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
20.	Food Manufacturing	7.74	-5.1	+3.3	-4.1	+6.7	+4.3	+4.8	+11.9	+12.9	-13.2	+8.5
21.	Beverages	0.69	+23.6*	+37.7	+16.5	-24.1	+14.2	+65.0	+25.5	-18.3	-9.3	+23.7
22.	Tobacco	2.21	+6.8*	-9.8	+7.8	-8.3	+1.0	+11.6	+0.7	+9.1	+3.3	+4.1
23.	Textiles	17.43	-3.8	+2.4	-3.4	+2.6	+1.4	-1.0	+2.4	+6.8	-2.1	+3.8
24.	Footwear	0.34	+3.3	-9.0	+11.2	-15.8	+6.9	-1.1	-20.8	+5.0	-2.9	-2.3*
25.	Wood and cork	0.49	+11.6	-12.8	-40.0	+81.5	-4.3	+12.9	+12.3	+1.5	+6.1	-29.6
27.	Paper	2.24	+7.6	-0.6	+5.2	+0.3	-3.1	+3.8	+7.1	+3.0	-0.3	+8.7
29.	Leather	0.32	-4.3	+10.4	+4.5	+4.2	+1.4	-9.5	-32.1	+7.3	+12.8	+18.2
30.	Rubber	2.22	+11.7	-1.8	+4.5	+4.1	-1.8	+5.8	+3.2	+11.0	-2.6	+7.8*
31.	Chemical & Chemical Products	10.90	+15.3	+8.7	-0.4	-1.7	-11.2	+16.8	+7.8	+8.5	-2.2	+2.2
32.	Products of petroleum & coal	1.62	+9.1	-4.2	+9.6	+0.6	+6.9	+2.7	+7.6	+4.1	+6.8	-6.6
33.	Non-metallic mineral products	3.33	+8.9	+4.3	+0.4	+2.1	+3.5	+6.6	+4.0	+2.3	+2.4	+3.1
34.	Basic Metals	8.84	+5.1	+4.5	-9.8	+7.9	+12.6	+19.6	-2.4	+1.8	-4.2	-0.1
35.	Metal products	2.77	+6.1	-8.8	-2.5	+10.7	+2.3	+5.9	+5.8	+12.0	+2.2	-8.4
36.	Non-electrical Machinery	5.55	+12.5	+7.3	+19.6	+3.1	+3.1	+7.3	+7.4	+13.7	-1.5	+7.7
37.	Electrical Machinery	5.30	+3.1	+24.9	-15.8	+4.4	+7.5	+8.0	+3.7	+15.3	-1.8	+10.0
38.	Transport Equipment	7.39	-0.5	+0.8	+11.8	-4.3	+6.6	+8.5	-0.6	+3.6	-1.2	+3.2
39.	Misc. Manufacturing Industries	1.70	-3.8	-10.3	-1.4	-8.6	-6.8	+24.4	+8.6	+16.6	+7.3	-10.2
Div. 2/3	Manufacturing	81.08	+5.4	+3.8	+0.8	+1.8	+5.0	+9.8	+4.6	+7.6	-2.5	+3.7

Source : C. S. O.
(From Hand Book of Industrial Statistics 1987, Page No. 108, Table 74).
* Estimated.

Statement III : Group-wise Growth Rates of Index of Industrial Production
(Financial Year)
(Base : 1980-81 = 100)

(Per cent)

Indus- try Code	Industry/Year	Weight	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Fifth Plan 74/75- 78/79	Sixth Plan 80/81- 84/85	Seventh Plan 85/86- 89/90
20/21	Mfg. of Food Products	5.33	+13.5	+14.1	-6.5	-0.9	+4.7	+6.0	+4.4	+6.8	+1.6	+8.1	+5.7	+4.7
22	Mfg. of Beverages, tobacco & Tobacco products	1.57	+4.3	+3.4	-3.1	+6.9	+0.4	-12.1	-13.8	+8.5	+11.8	+5.1	+4.1	-1.0
23	Mfg. of cotton textiles	12.31	-0.3	-10.3	+12.1	+1.9	+8.0	+1.9	-1.2	-3.5	+3.3	+2.4	-0.8	+1.7
25	Mfg. of Jute, hamps & mesta products	2.00	-4.3	-2.9	-15.8	+27.1	-2.2	+4.0	-10.0	+12.3	-5.2	0.4 ^a	+1.0 ^a	-0.2
26	Mfg. of Textile Products (incl. Weaving apparel)	0.82	-3.3	-0.4	-4.4	+3.8	+18.0	-22.8	+5.3	+46.3	+12.0	Neg. ^a	-1.1 ^a	+11.8
27	Mfg. of wood & wood products	0.45	+53.2	-0.1	+9.5	+29.2	+3.1	+10.3	-34.3	+6.2	+2.0	+20.8	+12.4	-2.5
28	Mfg. of paper & paper products	3.23	+8.2	-2.5	+3.6	+20.6	+12.6	+9.9	+1.9	+3.0	+5.8	+2.2	+7.7	+6.6
29	Mfg. of leather & leather products	0.49	+28.1	-21.8	+16.2	+20.1	+21.1	+5.0	+4.4	-4.4	+8.1	-5.5	+10.0	+6.4
30	Mfg. of Rubber, plastic & petroleum products	4.00	+19.1	-0.1	+14.4	+8.2	+3.9	-2.2	+3.7	+8.5	+3.1	+4.4	+8.7	+3.4
31	Mfg. of chemical & chemical products	12.51	+16.9	+3.7	+8.1	+9.0	+8.1	+13.7	+14.5	+16.1	+6.0	+4.0	+8.0	+11.7
32	Mfg. of non-metallic mineral products	3.00	+6.7	-2.8	+18.1	+13.0	+13.7	+1.9	-1.4	+16.8	+2.3	+3.7	+7.6	+6.7
33	Basic Metal alloy products	9.80	-	+4.2	-8.7	+12.8	+9.0	+8.4	+6.9	+6.9	-0.8	+7.9	+1.6	+6.1
34	Mfg. of Metal products except machinery	2.29	-5.4	-5.0	-2.0	+19.2	+9.2	+8.5	+4.2	+3.0	+6.7	+7.3	-0.3	+6.3
35	Mfg. of Machinery, machine tools	6.24	+11.1	+0.8	+6.8	+6.7	+2.0	+8.9	-1.8	+15.2	+6.0	+6.9	+6.6	+6.1
36	Mfg. of electric machinery	5.78	+3.9	+11.5	+23.5	+4.0	+34.8	+27.0	+31.6	+4.6	+30.8	+7.8	+10.6	+25.8
37	Mfg. of transport equipment	6.39	+8.1	+3.0	+10.9	+6.6	+3.2	+6.7	+4.8	+13.1	+5.1	+2.8	+6.4	+6.6
38	Other mfg. industries	0.90	+49.2	+3.9	-32.5	+17.4	+24.3	+54.2	+15.6	+11.1	+7.9	+6.8	+5.6	+22.6
	TOTAL MANUFACTURING	77.11	+7.9	+1.4	+5.7	+8.0	+9.7	+9.3	+7.9	+8.9	+8.3	+5.8	+5.3	+8.8

@ Estimated.

* Average of four years.

Source : Central Statistical Organisation (C.S.O.).

India's Balance of Payments During the Four Decades of Planning

K. R. Holla*

INTRODUCTION

INDIA'S balance of payments is presently passing through a critical phase. Developments during the past decade, particularly since the beginning of the Seventh Five Year Plan in 1985-86, have thrown into sharp focus the role of the external sector in the overall process of planned development. The breaking loose of the economy from the shackles of the Hindu rate of growth has been accompanied by a growing reliance on external resources, given the plateauing of gross domestic savings. The costs of financing this higher growth path attained during the 'eighties are reflected in large and growing current account deficits, and in their mirror image, the unrelenting rising trend in the country's external indebtedness. Debt servicing requirements which have a contractual, and therefore, compulsory character have been pre-empting an increasing proportion of resources over the years, which would otherwise have met developmental needs. Today, while the country stands at crossroads of internal and external imbalances, the issue of a sustainable balance of payments has come to occupy the centre-stage in the formulation of medium-term strategies and policy action to ease the pressures building thereupon is constrained by the sacrifices involved in terms of economic growth.

2. No doubt, India's development plans have since 1951-52 emphasized the importance of self-reliance and the need for financing development largely from the resources mobilised domestically.

* Shri. K. R. Holla is Adviser in the Department of Economic Analysis & Policy.

Inflow of resources from abroad have averaged only around 8 per cent of the country's total investment during the 1980's. Notwithstanding this and the fact that external sector is small in India's case, the domestic compulsions as well as the contemporary dynamic world setting have made the external sector one of critical significance in the current phase of planned development.

3. This Paper is an attempt to situate the external sector in its proper macro-economic perspective so as to secure an appreciation of its role in the development process. The Paper is organised into five sections. Section I establishes the role of the external sector in a developmental setting, while Section II represents an attempt to critically review commercial policies undertaken during the planning era. In Section III, the historical course of the balance of payments (BOP) is traced from since the advent of Planning; the Section presents actual outturn in BOP during various Plan periods with a view to assessing them against estimates/projections made at the outset of each Plan, and the aberrations in developments brought on by external or internal shocks. Finally, Section V briefly sums up the current BOP picture and raises a few issues.

I. The Role of the External Sector in India's Development Process

4. It is now clearly recognised that the external sector has a crucial role to play in India's developmental strategy. For a country of continental dimensions, it is natural that external transactions should be the handmaiden of development. The scope and need for largely internalising the backward and forward linkages of developmental programmes through the goals of self-reliance are indeed overwhelming. In such an economy, the external sector supplements and reinforces the indigenous impulses for growth. It is also true that for a country where the domestic sector is preponderant, the external sector is more growth-led than growth-leading. The balance of payments is thus crucially dependent on the performance of the domestic economy. Nevertheless, the process of structural transformation occurring in the economy over the last decade has ushered in its train a refreshing and vigorous stance, which is today considered synonymous with outward orientation. The

bearishness characterising the approach to the external sector during the early decades of Planning has given way to new imperatives whereunder import substitution and export promotion are considered equal planks in commercial policy. In fact, the possibilities of the former seen to have reached a plateau, whereas the latter has moved into the forefront of policy as the country progresses towards cautious liberalisation.

5. For a capital deficient economy, the current account gap is expected to be divergent than convergent in the early and intermediate stages of development. Imports of raw materials, intermediates, capital goods and technology, as also foodgrains in times of shortages, are all integrally linked to the growth and stability of the economy and cannot be economised on without impeding the pace of development. The inflow of foreign resources to finance these imports add to the domestic mobilisation of resources and thus help to secure desired levels of investment and sustain growth momentum. The country's interface with the rest of the world also determines its export performance, for the behaviour of India's exports closely follows the peaks and troughs of world trade behaviour. In recent years, it has been recognised that the BOP health hinges on export performance. The borrowing of foreign exchange cannot be, in the long run, a substitute for the earning of foreign exchange. Thus, the performance of the economy and thereby, that of exports holds the key to a viable BOP. However, as the evolution of trade policy depicted in the next section suggests, the promotion of exports is not based on a narrow concept of export competitiveness; it has rather a wider thrust in terms as much of efficient and dynamic import substitution as of strong and sustained exports of both goods and services; it is as much based on long-term goals of technological upgradation as on immediate fiscal and financial benefits conferred on exporting enterprises.

II. Review of Trade Policy

6. In the post-war economic literature, there has been considerable discussion on the relative merits of outward-oriented and inward-oriented trade strategies for maximising economic growth. In the fifties and the early 'sixties, India shared the belief with many developing countries that exports of primary products and

traditional manufactured goods based on them faced a secular decline in terms of trade and consequently the export earnings from these products would remain depressed. At the same time, offering competition to the developed economies in the exports of manufactured goods was beyond the less developed countries. This led to some degree of pessimism on the export front. The emphasis was, therefore, on import substitution which would not only contain the pressure on balance of payments, but also promote rapid industrialisation. The existence of a large domestic market for a country of India's size also gave support to an inward-looking approach.

7. While the inward-oriented strategy did help in achieving high rates of industrial growth during the Second and Third Plan periods, it also revealed some weaknesses. The inefficiencies in economic structure surfaced in several areas. Less attention was given to technological upgradation. Exports remained stagnant with an annual volume growth of around 2.5 per cent between 1955 and 1965, and the step-up in investment in capital goods industries resulted in a substantial increase in imported inputs causing a strain on BOP.

8. In the early sixties, there began a rethinking on the trade strategy. It was realised that self-reliance required that India exported enough goods to finance import needs. It was felt that the neglect of the export sector and overemphasis on import savings did not produce the desired result. Bhagwati and Srinivasan (1975, P-245) observed that India's foreign trade regime in conjunction with domestic licensing policies in the industrial sector was "detrimental, on balance, to the growth of the economy by adversely influencing export performance, by wasteful inter-industrial and inter-firm allocation of resources by permitting and encouraging expansion of excess capacity and by blunting competition and hence the incentives for cost-consciousness and quality improvement".

9. The Third Five Year Plan, while continuing the strategy of import substitution, showed a distinct shift in the perception on the role of exports. The Third Plan document stated thus: "One of the main drawbacks in the past has been that the programme for

exports has not been regarded as an integral part of the development effort. . . ." (Planning commission, 1961, P.137). Emphasising the need for action along several directions to achieve a substantial step-up in export earnings, it even argued rather repeatedly that "Restraints on the growth of internal consumption are an essential condition of a successful export drive" (Ibid., P.139). This was followed by a Plan holiday of three years after the historically severe droughts of 1965 and 1966, high inflation rates, and a substantial devaluation of the Indian rupee. The increase in the rupee cost of investment and cut-back in public investment resulted in recessionary conditions in Indian industry, paving the way for larger surpluses for exports. In the Fourth Plan, exports acquired a distinct priority and export promotion became an economic goal. Exports came to be viewed as a means of financing imports and progressively eliminating the dependence on foreign aid. The Cash Compensatory Support (CCS) Scheme, the Duty Drawback and the Import Entitlement Scheme were introduced by Government in this period and were looked upon as pre-requisites for export expansion. Far from being a marginal issue, export growth came to acquire a certain importance in planning (See Abid Hussain, 1988).

10. The new export optimism was evident in the Cabinet Committee Export Policy Resolution of 1970 which emphasised the possibility of achieving export growth through better efficiency and cost effectiveness. Three official committees were appointed in quick succession: Alexander Committee (1978), Dagli Committee (1979) and Tandon Committee (1980). The Alexander Committee recommended *inter alia* that efficiency in the system be achieved through (a) a rationalisation in the structure of subsidies, and (b) by increasing export of services (GOI, 1978). The Dagli Committee went further to say that "the term export subsidy is a misnomer. . . . It consists in many cases of bare compensation to offset the indirect taxes and taxes and subsidies cancel out" (GOI, 1979). The Tandon Committee advocated "the case for reallocating future investment of resources from import substitution to export promotion in a manner consistent with dynamic comparative advantages" (GOI, 1980). It recommended blanket approval of the prevailing preferential treatment of exports in licensing facilities, duty exemptions, technology imports, dilution of equity of foreign

companies and concessive facilities for the availability and pricing of inputs.

11. Until the end of the 1970s, however exports remained perceived as a source of foreign exchange rather than an efficient means of allocating resources. There was no doubt, a significant change in the export basket, benefiting from the diversification in the structure of the economy following the vastly expanded industrial base, from the depressed domestic investment, the policy stress on export promotion and expansion in economic activity in industrial countries. The share of manufactured exports went up from a little over 45 per cent in 1970-71 to nearly 63 per cent in 1980-81. Between 1970-71 and 1980-81, export volume increased by an annual (compound) rate of 6 per cent.

12. Foreign trade policy strategy became a subject of considerable discussion at the time of formulation of the Sixth and Seventh Five-Year Plans. A High-Powered Committee on Trade Policies (Abid Hussain Committee) was appointed by the Government of India, which submitted its Report in December 1984, recommending a growth-led export strategy for India. It stated that this, however, "does not mean that exports are a residual. Production for export form an integral part of the overall production in the domestic economy" (GOI, 1984). Around the same time, the Narasimham Committee on "Principles of a possible shift from fiscal to financial controls" questioned the manner in which the strategy of import substitution was being implemented. The Committee found several instances where domestic manufacturing, based on imports of components, etc., did not save much foreign exchange; at the same time, the domestic resource costs of saving foreign exchange were several times the official foreign exchange rate. The Committee recommended that "Import substitution activities, where net foreign exchange savings are small but domestic resource costs are high, should not be encouraged. such high cost import substitution is neither in the interest of industrial end-users nor of the economy in general" (GOI, 1985, Page 6). While a full open-door policy for imports is not possible for developing countries like India in view of the BOP constraints, "The view was gaining ground that a more liberal policy of imports of capital goods and technology will enable India to reap the benefits of international division of labour. Rapid growth in exports was thought of

as a means to avoid the high cost of indiscriminate import substitution. Export promotion and import substitution represent two sides of the same coin only if the choice between import substitution and exports is determined by the relative cost of saving or earning additional foreign exchange" (Rangarajan, 1990, P. 2). The need for an active export promotion not only to contain the BOP pressure but also as an instrument of economic growth has been recognised since the mid-eighties. This has also been accompanied by a widely - perceived view that liberal imports of capital goods and technology are a *sine qua non* of development.

13. Each successive Import-Export Policy since 1980-81 has strengthened the export promotion strategy. Apart from direct incentives such as CCS, duty drawback, budgetary concessions and provision of imported inputs through a liberal import licensing policy, many indirect concessions became available to the export sector such as, broadbanded industrial licensing on priority basis, MRTP concessions, flexible import licensing and concessive institutional credit since 1985. The BOP pressures led to a further strengthening of the export promotion strategy. In terms of the recommendations of the Abid Hussain Committee, one-year Import-Export Policies were replaced by three-year Import-Export Policies in order to provide a measure of stability in export policy announcements. Three year policies have been announced since 1985, viz., 1985-88, 1988-91 (terminated a year earlier) and 1990-93.

14. In the Seventh Plan period, the existing incentives have been significantly strengthened and widened. Both the CCS and the Duty Drawback Scheme have been thoroughly revamped, extended and made easily accessible. A number of policy initiatives, namely, fiscal reliefs, including complete exemption of export profits from income or corporation tax, interest rate concessions on pre-shipment and post-shipment credits, measures to facilitate capacity expansion for export production, and a supportive exchange rate policy to make exports more competitive, have been adopted. Apart from supporting the export effort in general with a multi-pronged strategy, 15 thrust sectors have been identified for intensive export drive.

15. An important feature of the recent export promotion strategy has been the provision to exporters of larger access to imported inputs for export production. Import licences issued for Registered Exporters (Export Promotion Scheme) have shown a three-fold increase from Rs. 2,849 crore in 1985-86 to Rs. 8,468 crore in 1988-89.

16. The Import-Export Policy for 1988-91 was terminated a year earlier than its tenure and a new policy was announced for 1990-93 essentially with a view to strengthening the momentum of liberalisation and export-orientation. Procedural simplifications have been effected to permit better access to imports. A Blanket Advance Licence Scheme has been introduced under the Duty Exemption Scheme which permits greater import capacity as well as procedural simplifications. A new scheme has been introduced for import of capital goods at concessive rates of duty subject to export obligation to be completed within three years of import. Licences for spares, instruments and consumables have also been made flexible. The OGL list has been substantially expanded. A new category of star trading houses has been identified to permit the reaping of economies of scale. At the same time, the new policy stresses the earning of net foreign exchange and limits fiscal concessions to the bringing in of foreign exchange earnings within a stipulated period.

17. While the trade policy has since the mid-eighties been geared to the objective of intensive export promotion, the import policy has also been made liberal not only for providing inputs for export production but also to help modernisation of industries and upgradation of technology. The number of items placed on the OGL have been substantially increased to 944 in 1988 and to over 1,200 in 1990. The number of items subject to quantitative restrictions has been progressively reduced.

18. The question that is often asked is whether the trade strategy followed by India has been appropriate. In the early stages of development, the exportables were mainly agricultural products and agriculture-based manufactures. Hence until industrial capacity was built, the policy of import substitution was the

appropriate route to contain the pressure on BOP. While the broad thrust of the strategy was suitable to Indian conditions, the emphasis on import-saving did not produce commensurate results, particularly between the mid-fifties and mid-sixties. The restrictive import policies that have had to be pursued from time to time in the wake of foreign exchange constraints exposed the economy to certain weaknesses, resulting in a high cost structure and inefficiency in several sectors due to protection of inefficient units. Once the economic structure got diversified, it was but proper that export growth was accorded an important place in the development strategy. The country has thus traversed a long way over the four decades of planning and the present policy of an active export promotion and an efficient import saving is well suited to meet the country's economic growth objectives. As the balance of payments position improves, it should be possible for the country to pursue an even more open-door policy for imports, using the tariff mechanism to regulate imports, replacing the present system of quotas-cum-tariffs.

19. While the trade policy has an important role to play in the growth of foreign trade, exports are no longer dependent on indigenous factors alone. It is equally important that the industrial world adopts such policies that would enable the developing countries improve their exchange earnings from exports. Although a trend towards more liberal trade policies is evident in a number of developing countries, protectionist measures in the industrial countries remain high and in some cases "trade restricting" measures are increasing (IMF, 1990). The trade liberalisation by the industrial countries would considerably help the adjustment process in the developing countries and their prospects for economic growth, thereby contributing to a better economic order for the world community as a whole. In this respect, uncertainties do cloud the medium and long-term outlook for the developing countries, particularly in the context of the tardy progress made in the Uruguay Round of multilateral trade negotiations because the most complex issues have surfaced going beyond the traditional GATT framework.

III. India's Balance of Payments During Four Decades of Planning

20. At the core of the expansive canvass of developments in India's BOP presented here is an examination of the successive Plan estimates, embodying the attitude of policy towards the external sector and, actual outturns in each Plan period describing, at every stage, the interaction of various exogenous and endogenous developments. For this purpose, the BOP data are to be converted into constant prices assumed in the various Plan documents. Conversions of actuals which are compiled at current prices to constant prices used for the Plan projections are not easy. Further, since 1971-72, following the abandonment of the par value system, adjustments for exchange rate variations will also have to be done. There are limitations on the use of DGCI&S indices of export and import unit values for the purpose. Further, as the base year data used for projections are themselves estimated, the actuals for that year may differ, in some cases considerably, and then the Plan projections based on such estimates may themselves be different. Despite these limitations, an attempt is made to compare the actuals with the Plan targets using the best available price deflators. As Plan documents have throughout excluded official grants from current account, a similar procedure has been adopted while comparing actuals with Plan estimates. For converting actuals into constant prices, DGCI&S indices of unit values have been used for exports, imports and invisible transactions¹. As for capital account transactions, since they represent financing of the current account deficit, the import unit value indices have been used for converting into constant prices. The unit value indices include an element of exchange rate variation. The adjustment for exchange rate variations has been made only in the data for the Seventh Plan.

21. The four decades of planned development can be broadly divided into five sub-periods. The first covers the 15 years of Planning from 1951-52 to 1965-66 up to the devaluation.

1. It is not appropriate to use DGCI&S unit value indices to convert invisible receipts and payments into constant prices. In the absence of any other data, this method has been used as a rough approximation.

of the rupee which was effected on June 6, 1966. The second covers the post-devaluation period up to the end of the Fourth Plan (1969-70 to 1973-74), when the economy experienced the first oil shock. The third sub-period covers the Fifth Plan and Annual Plans 1978-79 and 1979-80 which represents India's adjustment experience to the first oil shock. The fourth sub-period covers the Sixth Plan (1980-81 to 1984-85), which manifests how India responded to the second oil shock and global recession of the early 1980s. The fifth and final phase covers the Seventh Plan period, which experienced considerable strains on BOP emanating mainly from a liberal import policy pursued since the mid-eighties.

22. The BOP data are regularly compiled and published by the Reserve Bank of India (RBI). The data used in this paper are based on those compiled by the RBI and have been presented in a standardised form to facilitate an analytical review and therefore differ from the usual presentation of the BOP statistics².

The Early Years : 1951-52 to 1965-66

23. In the early post-war years, India's BOP came under pressure due to large import needs arising from pent-up demand inherited from war-time controls and restrictions and from shortages of food and raw materials inherited as a legacy of Partition. Between 1948-49 and 1950-51, India had already lost Rs. 583 crore of foreign exchange reserves.

The First Plan

24. As regards the external sector, the First Five Year Plan (1951-52 to 1955-56) was not truly a Plan in the sense of a conscious direction of resources towards pre-determined goals that characterised the succeeding Plans; it was more appropriately an assortment of efforts to contend with the pressure of pent-up import demand. The First Five Year Plan document had made a broad estimate of a deficit on BOP of Rs. 180-200 crore per annum. This works out to Rs. 900-1,000 crore for the Plan period as a whole, of which Rs. 290 crore were to be met by drawing down

2. For definitions and concepts, see Balance of Payments Compilation Manual RBI, 1987.

on sterling balances. As it turned out, a 48 per cent (Rs. 314 crore) increase in imports, of which Rs. 150 crore were in food imports, brought pressures to bear on the external sector in the very first year of the Plan. However, the BOP improved from 1952-53 onwards. Increased domestic production of foodgrains and lower demand for capital goods imports due to the sluggishness in investment activity resulted in import saving, and it was not until the last two years of the Plan that imports began to rise again. While exports did benefit in 1951-52 from the Korean war boom, this soon tapered off. The U.S. recession of 1953 which followed in its wake led to a subdued pace of export growth. Except in the first year, India's current account was in surplus in all other years of the Plan. The U.S.A. made available an emergency assistance by way of a wheat loan amounting to Rs. 90 crore (\$ 190 million) which was partly utilised in 1951-52 (and partly in 1952-53); this mitigated to some extent the pressure on foreign exchange reserves. During the Plan period, the current account deficit (excluding official grants/transfers) at current prices turned out to be much smaller at Rs. 151 crore, whereas at constant 1950-51 prices, the current account balance showed a large surplus of Rs. 834 crore. The variation in the current account balance as between current and constant prices was due to the loss in terms of trade in every year of the plan period, except in the terminal year. The use of reserves during the Plan period was limited to Rs. 127 crore (Rs. 89 crore at constant prices, that is, less than one-half of the Plan estimate of Rs. 290 crore).

The Second Plan

25. While the First Plan laid the foundation for a stable economy, it was the Second Plan which gave a new thrust to the process of planned development with emphasis on capital-intensive investment. Under what is now known as the Mahalanobis model of development, the public sector investment in infrastructure and basic industries like steel, power and heavy electrical machinery, was considerably stepped up. During the Second Plan, the current account deficit at 1955-56 prices was estimated at Rs. 1,120 crore, the inflow of external assistance and other capital flows at Rs. 920 crore and the balance of Rs. 200 crore was to be met by drawing down the reserves. The massive increase in the volume of

import-intensive investment led to a much greater demand for imports of capital goods than anticipated. Imports went up sharply in the first two years of the Plan, forming a little under 10 per cent of GDP. The large volume of import licences issued during the last two years of the First Plan also contributed to the import growth. Between 1955-56 and 1957-58, imports of capital goods shot up by 138 per cent and accounted for 50 per cent of the total increase in imports during this period. As exports in these two years were stagnant, the trade deficit shot up from an average of Rs 108 crore during the First Plan period to Rs. 467 crore in 1956-57 and Rs. 565 crore in 1957-58, i.e., 4.5 per cent of GDP. As invisibles could not offset the large increase in trade deficit, the current account deficit net of official transfers during these two years amounted to Rs. 744 crore as against a total deficit of only Rs. 42 crore during the First Plan period. Two thirds of this deficit were met by drawing down the reserves (by Rs. 481 crore or \$ 1,010 million). An amount of Rs. 95 crore was also borrowed from the IMF during this period.

26. By mid-1957 an awareness of balance of payments problem appeared on the horizon. To cope with the situation, a restrictive import policy was pursued. It was only in the early part of 1960 that the import curbs were relaxed to allow for increase in "maintenance" imports and imports of raw materials which had been held down after the onset of the BOP crisis. Further, PL 480 imports also increased in 1960-61. Thus, imports, which had declined by 24 per cent during 1958-59 and 1959-60, rose by 19 per cent to Rs. 1,106 crore in 1960-61, regaining the level it was in 1956-57 (Rs. 1,102 crore). Exports remained stagnant throughout the Plan period and the role of exports in BOP adjustment during the period was, by and large, residual. As a result, the trade deficit quadrupled from an average of Rs. 108 crore during the First Plan period to an average of Rs. 452 crore during the Second Plan. As invisibles (other than official transfers) could finance less than a fifth of the trade deficit, on an average the current account deficit at Rs. 2,649 crore (at constant prices) turned out to be more than double of what was envisaged (Rs. 1120 crore). At the same time, greater external support to sustain the tempo of development became available. The Aid-India Consortium came into being in 1958 under the auspices of the world Bank,

which made aid commitments to support India's financing needs. Under Title I of the U.S. Trade and Development Assistance Act of 1954 (PL. 480), the U.S.A made available from October 1956 onwards, large quantities of foodgrains and other agricultural commodities against rupee deposits in the U.S. Title Account in India. This helped to alleviate food shortages in the country and also reduce pressure on balance of payments. Net inflow of capital by way of external assistance was higher; even so, the use of reserves was more than thrice that projected in the Plan document (Table 1).

Table 1 : Balance of Payments, Second Plan

(Rs. Crore)

	Plan estimate at 1955-56 prices	Actuals at 1955-56 prices	Actuals at current prices
Exports	2,965	3,011	3,070
Imports	4,340	5,991	5,403
Trade balance	-1,375	-2,980	-2,333
Invisibles, net (excluding official transfers)	+255	+331	+421
Current Account balance	-1,120	-2,649	-1,912
Financing			
External assistance and other capital			
inflow (net)	+920	+1,524 @	+1,382 @
Use of reserves	+200	+680	+599
Errors and omissions	--	+445 *	-68

@ Net of IMF borrowings.

* Derived.

The Third Plan

27. At the start of the Third Plan, the foreign exchange reserves, as stated earlier, had already reached a low level.

Therefore, a careful husbanding of foreign exchange resources became imperative. The Third Plan document had anticipated a current account deficit of Rs. 2,050 crore. No provision was made for the use of reserves during this period (Table 2). However, the Indo-China military conflict of 1962, followed by the Indo-Pakistan War in 1965 and the acute drought conditions that prevailed in 1965-66 added to the BOP difficulties during the Plan period. Import growth was uneven, rising and falling in alternate years. For the Plan period as a whole the annual average growth in imports worked out to 4.8 per cent, about one-half of the growth rate of 9.4 per cent during the Second Plan period. Export performance was distinctly better than in the preceding Plan period, though it was mainly contributed by the large 18 per cent increase in one year, 1963-64. The annual average growth in exports was 4.7 per cent as against a nil growth during the Second Plan period. As a result, during the Third Plan period as a whole, the trade deficit widened by only 6 per cent. The current account deficit widened from Rs. 1,649 crore during the Second Plan to Rs. 1,989 crore during the Third Plan. The current account deficit as a percentage of GDP for the Third Plan period averaged around 1.8 per cent, i.e., lower than that of 2.4 per cent for the Second Plan period. At constant prices, the current account deficit* at Rs. 2,058 crore was almost as estimated in the Plan document.

28 Even though the current account deficit was ruling high, unlike in the Second Plan period, there was no significant loss of reserves during the Third Plan, as bulk of the financing was provided by external-assistance, including commodity assistance from the U.S. under its PL 480. The reserve loss during the Third Plan period was limited to Rs. 6 crore (Table 3).

29. To summarise the developments in the early phase, the balance of payments position was comfortable during the First Plan period, except in the first year. During the first two years of the Second Plan, the balance of payments came under strain but was manageable thereafter, following better import planning and larger availability of external assistance. Some use of IMF facilities was also resorted to. Exports played a minor role in the balance of payments adjustment; it was treated as residual. During the Second

* Excluding official transfers.

Table 2 : Balance of Payments, Third Plan

(Rs. Crore)

	Plan Estimate at 1960-61 prices	Actuals at 1960-61 prices	Actuals at current prices
Exports	3,700	3,851	3,736
Imports	5,750	5,949	6,136
Trade balance	-2,050	-2,098	-2,400
Invisibles (net)	-	+40	-29
Current Account Balance	-2,050	-2,058	-2,429
Financed by			
External assistance (net)	+2,600	+2,366*	+2,445*
Other capital transactions (net)	-550	+73	+80
Draft on reserves	-	+8	+6
Errors and Omissions	-	-389@	-102

* Net of IMF borrowings

@ Derived.

Table 3 : Financing of Current Account Deficits : 1951-66

(Rs. Crore)

	First Plan	Second Plan	Third Plan
I. Current Account Deficit including Errors and Omissions	140.4	1,717.3	2,090.6
II. Financed by			
1. External Assistance	55.1 (39.2)	675.3 (39.3)	1,927.5 (92.3)
2. IMF Credit	-41.5 (-29.5)	54.7 (3.2)	76.3 (3.6)
3. Other Capital	--	388.6 (22.6)	81.1 (3.8)
4. Reserves	126.8 (90.3)	598.7 (34.9)	5.7 (0.3)
Total Financing	140.4	1,717.3	2,090.6

Note : Figures in brackets represent percentages to financing need (Item I).

and Third Plan periods, exports rose at an annual compound rate of around 2 per cent, while imports grew by around 6.5 per cent per annum. In volume terms, exports went up during this period at an annual compound rate of 2.5 per cent, but imports went up by 6.5 per cent per annum. The substantial use of reserves amounting to Rs. 732 crore (\$ 1,537 million) over the first 15 years of Planning underpinned the need for a better planning of the foreign sector in the successive Plans.

30. During this period, there also occurred three important developments which had far-reaching consequences. First, in the wake of an acute BOP problem faced by the second year of the Second Plan, the Aid-India Consortium was organised in 1958 under the auspices of the World Bank. The Aid-India Consortium represented a concept in coordinated international initiative to assist developing countries. While the Aid-India Consortium has been making annual aid commitments in support of India's development programmes, in the process, the country's economic policies and programmes came under the close surveillance of the World Bank and other consortium members. Secondly, the U.S.A., under PL 480 Title I, made available large quantities of foodgrains and other agricultural commodities, against rupee deposits into U.S. Account in India. In terms of Indo-U.S. agreements on the disposition of funds, a large part was given to the Government of India by way of loans and grants and partly as loans, under the Cooley Amendment, to U.S. firms or their affiliates for investment in India. A small portion of the rupee deposits was retained by the U.S. Government for their own diplomatic expenditure in India or for third-country assistance. Total imports under the programme (which came to an end in 1972) amounted to Rs. 2,243 crore. The PL 480 programme helped to alleviate domestic shortage of foodgrains and also saved scarce foreign exchange resources which otherwise would have had to be spent for essential imports³. A third major development was that in the context of foreign exchange constraints, a greater boost was given to bilateral trade on rupee payment terms with the East European countries.

3. We ignore the controversy regarding the possible disincentive effects of large PL 480 imports on the domestic productions. See Sukhaman Chakravarty (1987, p. 22).

31. What are the lessons for BOP management from the experience of the first one-and-a-half decades of planning? While there have been different views on the highly capital intensive model of development adopted in the Second Plan, it was clear that the Planners underestimated the import content of such a path of development⁴. While some of these developments could not be anticipated, even so, if some of the infrastructure investments would have been taken up earlier in the First Plan period and some of capital-intensive investments were phased out after a more realistic estimate of the import content of the projects, the pressure on external sector would have probably been less. Secondly, exports were not accorded priority in planning due to the then prevailing belief in "export pessimism". The relatively comfortable position of BOP after 1957-58 was more due to import compression than due to export growth. The larger availability of external assistance (including PL 480 assistance from the U.S.A) also helped to moderate the pressure on BOP.

The Period of Transition : 1966-67 to 1973-74 Annual Plans : 1966-67 to 1968-69

32. Characterised, as it were, by severe domestic constraints brought on by successive droughts in 1965-66 and 1966-67 and the lagged effects of the Indo-Pakistan conflict of 1965, these were years of adjustment of taking stock of the experiences of the earlier years with a view to formulating better responses to external pressures in the years to come. A subtle reordering of priorities in the overall strategy became apparent. A certain disenchantment with the policy of import substitution pursued hitherto began to set in, as capital efficiency of the import intensive path of growth fell and excess capacity created in various sectors began to have a dampening effect on the pace of investment. To facilitate adjustment efforts, the over-valuation of the rupee was corrected by 36.5 per cent devaluation against the U.S. dollar and side by side, several promotional measures such as Cash Compensatory Support (CCS), duty drawback and import replenishment, were put into place and commercial policy began to rely

4. "Amongst the failures, one has to admit the underestimation of the import intensity of the import substitutions process" (Sukhamoy Chakravarty, 1987, p. 18.).

increasingly on export promotion to adjust to external pressures.

33. The immediate impact of the devaluation was a sharp widening of the current account deficit from 2.0 per cent of GDP in 1965-66 to a high of 2.9 per cent of GDP in 1966-67 (second only to the highest of 3.4 per cent in 1957-58), following the combined effects of a fall in imports in dollar terms offset by an even larger fall in exports. However, from 1967-68, exports began to show a rising trend. Imports began to decline from 1968-69 and as a result, by that year, the current account deficit slumped to 1.1 per cent of GDP. To facilitate adjustment efforts, an amount of Rs. 157 crore was purchased from the IMF during 1966-67 and 1967-68, but Rs. 145 crore were repurchased during 1966-67 to 1968-69. Foreign exchange reserves declined by Rs. 37 crore in 1966-67; this was more than made good by an accretion of Rs. 109 crore in the following two years.

34. During 1966-67 to 1968-69, the current account deficit (including errors and omissions) amounted to Rs. 2,251 crore. The inflow of capital from abroad (Rs. 2,311 crore) and net use of IMF credit (Rs. 12 crore) exceeded the financing need (Table 4). As a result, the reserves increased by Rs. 72 crore during the period.

Table 4 : Financing of Current Account Deficits

(Rs. Crore)

	1966-67 to 1968-69	1969-70 to 1973-74
I. Current Account deficit including Errors and Omissions	-2,251.1	-2,513.2
II. Financed by		
1. External assistance	2,238.5	2,568.1
	(99.5)	(102.2)
2. Other Capital	72.9	212.9
	(3.2)	(8.5)
3. IMF Credit	12.1	-217.4
	(0.5)	(-8.7)
4. SDR Allocation	—	244.6
		(9.7)
5. Reserves	-72.4	-295.0
	(-3.2)	(-11.7)
Total financing	2,251.1	2,513.2
	(100.0)	(100.0)

Note : Figures in brackets represent percentages to financing need (item I).

The Fourth Plan (1969-70 to 1973-74)

35. By and large exports grew strongly during the Fourth Plan period supported by the shift in policy emphasis, and recorded an annual average volume growth of 5.0 per cent. Significantly, both farm products and manufactures contributed to this growth; exports of manufactures went up by an average of 14 per cent, reflecting improved capabilities of the manufacturing sector. However, the pressure of import growth remained throughout, rising to a peak in 1973-74, the last year of the Plan, due to a sharp rise in oil prices; imports shot up by 33 per cent in that year. It was the escalation in import prices that led to the higher import bill, since volume growth was kept to an annual average of 4.5 per cent. With the outgo on the invisibles account being significantly higher than anticipated, the current account deficit turned out to be nearly Rs. 1,000 crore above the Plan estimates, though as a proportion to GDP at 0.3 per cent, it was lower than during the Third Plan or the Annual Plan periods. At constant prices, the current account was nearly thrice the Plan estimate (Table 5). The actual deficit for 1968-69, the base year on which Plan projections were made, turned out to be much higher than anticipated.

Table 5 : Balance of Payments, Fourth Plan

(Rs. Crore)

	Plan estimate at 1968-69 prices	Actuals at 1968-69 prices	Actuals at current prices
Exports	8,300	7,336	8,754
Imports	9,730	10,677	10,486
Trade balance	-1,430	-3,341	-1,732
Invisibles (net)	-140	-1,084	-687
Current Account (net)	-1,570	-4,425	-2,419
Financed by			
External assistance*	+1,570	+2,777	+2,727
Other Capital	--	+197	+213
SDR Allocation	--	+270	+245
Use of reserves	--	-300	-295
Errors and omissions	--	+1,481 [@]	-470

* Net of transactions with IMF.

[@] Derived.

36. The capital inflows from abroad, particularly by way of external assistance, exceeded the financing need. During 1969-70 and 1970-71, repurchases (repayments) of Rs.279 crore were made from the IMF. However, in 1973-74, India borrowed Rs.62 crore from the Fund under its Compensatory Financing Facility. India also received an SDR allocation of Rs.245 crore during 1969-70 to 1971-72 and reserves increased by Rs.295 crore. The reserves level at the end of Fourth Plan stood at Rs.993 crore (\$ 1,325 million) and constituted 4.1 months of 1973-74 imports.

Balance of Payments from 1974-75 to 1979-80 : Crisis and Adjustment

37. This period covers the Fifth Five Year Plan from 1974-75 to 1977-78 and the Annual Plans, 1978-79 and 1979-80. The country was exposed during this period to the impact of the first external shock from a sharp rise in crude oil prices in 1973-74. The Second oil shock came in 1979, the impact of which was experienced during the Sixth Plan period. Domestically, the economy faced the drought conditions in 1974-75, closely following the drought of 1970-71 and 1972-73. Towards the end of this period, the country faced another drought in 1979-80. This Section discusses India's balance of payments adjustment experience to the first oil shock.

The First Oil Shock

38. Between September 1973 and April 1974, international crude oil prices shot up four-fold posting the world into the first oil shock, which raised the POL (petroleum, oil and lubricants) import bill for India from Rs.204 crore (\$265 million) in 1972-73 to Rs.1,157 crore (\$1,457 million) in 1974-75. With the second round impact on non-oil commodity prices (Table 6), the import bill went up by 56 per cent (by 53 per cent in U.S. dollar terms) to Rs.4,482 crore in 1974-75, despite import volume actually declining by 12 per cent.

39. Although the economy was reeling under inflationary pressures and the impact of severe drought conditions resulting in

Table 6 : Prices of Petroleum and Primary Commodities

Unit Value Index for Im- ports of Petroleum Crude (1978-79 = 100)*		Petroleum Prices** (US \$ per barrel)		Price Index of Non-Fuel Primary Commodities (Base : 1980 = 100)®
1970-71	11	1970	1.30	37
1971-72	14	1971	1.65	36
1972-73	15	1972	1.90	39
1973-74	37	1973	2.70	63
1974-75	82	1974	9.76	76
1975-76	87	1975	10.72	64
1976-77	97	1976	11.51	69
1977-78	100.2	1977	12.40	77
1978-79	100	1978	12.70	78
1979-80	159	1979	17.26	95
1980-81	242	1980	28.67	100
1981-82	286	1981	32.50	90
1982-83	279	1982	33.47	81
1983-84	260	1983	29.31	86
1984-85	295	1984	28.47	87
1985-86	301	1985	27.59	76
1986-87	160	1986	13.66	73

* Indices for 1970-71 to 1979-80 are converted to base 1978-79 = 100 with the help of linking factors. Source : DGCIS.

** Prices relate to Saudi Arabian Light Crude (Ras Tanura) as reported in the International Financial Statistics.

® Source : International Financial Statistics, various issues.

agricultural output falling by 8.1 per cent and GDP declining by 0.3 per cent, it was able to adjust to the first oil shock in a remarkably short period. From a peak of Rs.956 crore in 1974-75, the highest ever recorded in the previous 23 years, the current account deficit contracted sharply to Rs.178 crore in 1975-76. It turned into a surplus of Rs.900 crore in 1976-77 and of

Rs. 1,173 crore in 1977-78. The current account thus converted within a period of three years from a deficit of 1.3 per cent of GDP in 1974-75 to surpluses of 1.1/1.2 per cent each in those two years. The current account recorded a small deficit of 0.4 per cent of GDP in 1979-80 when the economy was hit by the second oil shock. The improvement in balance of payments was reflected in reserve accumulation of Rs. 830 crore (\$956 million) in 1975-76 which was accelerated in the next two years. Thus, between 1974-75 and 1979-80, foreign exchange reserves went up more than five times from Rs. 1,022 crore to Rs. 5,934 crore. In U.S. dollar terms also, they went up by nearly five times from \$1,325 million to Rs. 7,361 million. The level of reserves at the end of 1979-80 constituted 7.3 months of imports in that year. What is more, by the end of 1979-80, the entire outstanding indebtedness to the IMF was fully repaid.

40. The swift adjustment to the first oil shock was due to a combination of three favourable developments. First, there was a strong adjustment in the trade account resulting from a sharp increase in exports and slowing down in import growth. Secondly, there was an impressive growth in private transfers. Thirdly, the larger inflow of capital from abroad also helped the adjustment process. The contribution of these factors in the adjustment process is discussed below.

(i) Trade Adjustment

41. Export growth played an important role in the balance of payments adjustment. Even before the oil shock, exports had been doing well. In 1974-75, export growth accelerated further to 36 per cent (33 per cent in dollar terms), partly due to a sharp increase in exports to the oil-rich Middle East which contributed nearly 40 per cent of the increase in total exports in that year. During the post first oil shock period as a whole (1974-75 to 1979-80), exports grew by an average of 17 per cent per annum in dollar terms, with volume rising by 8 per cent per annum (Table 7). The international trade environment was also supportive as the value of world trade rose by over 7 per cent in SDR terms during 1975-77. The volume of world trade declined by 4 per cent in 1975, but rebounded next year with a growth of 11 per cent.

Table : 7 : Imports and Exports : Growth Rates (1973-74 to 1979-80)

	Annual Average									
	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1974-80	1974-77	1978-80
1. Import growth %										
Value (Rs. crores)	+32.7	+56.3	+19.6	+1.6	+10.8	+29.3	+24.9	+23.8	+22.1	+27.1
(\$ Million)	+30.8	+53.4	+9.4	-1.7	+15.8	+34.9	+26.9	+23.1	+19.2	+30.9
Volume	+13.7	-11.5	-1.6	+0.1	+31.4	-	+16.4	+5.8	+4.6	+8.2
Unit values	+43.0	+72.8	+17.3	-2.8	-8.6	+13.6	+14.1	+17.7	+19.7	+13.9
2. Export growth %										
Value (Rs. crore)	+18.2	+35.6	+30.8	+23.0	+5.8	+2.8	+12.9	+18.5	+23.8	+7.9
(\$ Million)	+16.5	+33.0	+19.7	+18.9	+10.6	+7.3	+14.7	+17.4	+20.6	+11.0
Volume	+4.5	+6.0	+10.9	+18.5	-3.7	+7.3	+6.2	+7.5	+7.9	+6.8
Unit values	+21.5	+25.4	+7.6	+6.6	+12.2	-0.3	+5.4	+9.5	+13.0	+2.6
3. Terms of trade growth %	-15.0	-27.4	-8.2	+9.7	+22.7	-12.3	-7.6	-3.9	-0.8	-10.0
4. Trade deficit										
Rs. Crores	-510.4	-1286.9	-1182.6	-309.9	-597.4	-2212.1	-3439.9	-1504.8	-844.2	-2826.1
\$ million	-655	-1621	-1362	-345	-696	-2688	-4247	-1827	-1006	-3468
5. Appreciation/depreciation of Re/\$ (nominal)	-1.4	-1.9	-8.5	-3.3	+4.5	+4.4	+1.6	-0.6	-2.3	+3.0
6. As per centage of GDP (%)										
Imports	4.6	6.1	6.8	6.4	6.3	7.5	8.5	6.9	6.4	8.0
Exports	3.8	4.4	5.3	6.0	5.7	5.4	5.5	5.4	5.4	5.4
Trade deficit	-0.8	-1.7	-1.5	-0.4	-0.6	-2.1	-3.0	-1.5	-1.0	-2.6
7. Export-Import ratio (%)	82.2	71.3	77.9	94.3	90.1	71.7	64.7	78.3	83.4	68.2

Notes: 1. Data on import and export values, trade deficit and its percentages to GDP and export in part ratios are based on balance of payments data.
 2. Data on volume, unit values and terms of trade are based on index numbers of imports and exports compiled by DGCIS.

Thereafter, the growth in world trade was in the range of 5 to 6.5 per cent per year. India's export performance was aided by the fact that after galloping in 1973-74 and 1974-75, the domestic inflation rates were modest in the following four years. The average rate of increase in wholesale prices during 1975-76 to 1978-79 was only 2.1 per cent per annum. The growth in India's exports during this period was considerably higher than the growth in world trade.

42. The strong growth in exports during 1975-76 to 1979-80 was mainly due to a growth in exports of manufactured goods. Between 1974-75 and 1979-80, manufactured goods increased by 114 per cent and contributed 71 per cent of the increase in exports during this period (Table 8).

43. In the year of the oil shock and in the three years that followed it up to 1976-77, the exchange rate movements also were supportive of the export effort, although their contribution to export growth may not be considered that very significant. Following the breakdown of the fixed par values system, the rupee first floated with the U.S. dollar. In June 1972, the rupee was delinked from the U.S. dollar and pegged to the pound sterling and along with it depreciated against major currencies. In September 1975, the rupee was linked to a multi-currency basket with pound sterling as the intervention currency. During 1975-76 and 1976-77, the rupee depreciated (by 6 per cent against SDR, by 12 per cent each against dollar and DM), but appreciated thereafter. Cumulatively, between 1973-74 and 1976-77, the years that witnessed rapid growth in exports, the rupee depreciated against the dollar (the dominant currency in which trade is invoiced) by only 4.5 per cent. Between 1973 and 1976, the real effective exchange rate of the rupee too depreciated by 19 per cent (Joshi, 1984). It is important to note that the growth in exports during 1977-78 to 1979-80 (which averaged around 11 per cent in dollar terms) was achieved despite an appreciation of the rupee in nominal terms by about 14 per cent against the U.S. dollar (ibid., P.74). It is reasonable to infer that the strong growth in the post oil shock period was mainly due to domestic policies which led to domestic price stability (after 1975-76) and a diversification of exports supported by a favourable global trading environment.

Table 8 : Decomposition of Export Growth

(Rs. Crore)

Sub-Group	1974-75	1979-80	Contribution to export growth Absolute %	
I. Primary goods	1394	2283	889	28.8
1. Farm products	1093	1596	503	16.3
2. Marine products and meat and meat preparations	71	294	223	7.2
3. Ores & minerals	230	393	163	5.3
II. Manufactured goods (1+2)	1913	4100	2187	70.8
1. Consumption goods	1535	3328	1793	58.0
i) Gems & Jewellery	103	543	440 ^x	14.2
ii) Leather & leather manufactures	165	519	354	11.5
iii) Ready-made garments	135	483	348	11.3
iv) Cotton yarns and fabrics	159	287	128	4.1
v) Chemicals & allied products	93	198	105	3.4
vi) Others	880	1298	418	13.5
2. Investment goods*	378	772	394	12.8
III. Petroleum products	14	19	5	0.1
IV. Others	8	16	8	0.3
Total	3329	6418	3089	100.0

* Relates to engineering goods.

Source : DGCIS.

44. While exports grew rapidly, imports after an initial rise, remained more or less subdued up to 1967-77, partly because of improved domestic oil production and only a modest rise in petroleum consumption. In volume terms, imports declined in 1975-76 and remained at that level in the following year. Thus, due to a growth in exports and a moderation in import growth, the trade deficit narrowed down substantially from Rs.1,287 crore (\$1,621 million) in 1974-75 to Rs.310 crore (\$345 million) by 1976-77, i.e., from 1.7 per cent to 0.4 per cent of GDP. Thus, the trade account adjusted remarkably well to the oil shock within a period of three years, as shown in Table 7. This is evident from the improvement in export-import ratio (from 71 to 94 per cent) and a sharp reduction by more than threefourths in trade deficit between 1974-75 and 1976-77.

45. Domestic macro-economic policy was restrictive, adopted mainly to contain inflationary pressures. The Government took a number of measures towards the middle of 1974 to reduce private disposable income, such as wage freeze and introduction of a compulsory deposit scheme. M_3 growth came down significantly and the inflation rate ruled negative or remained very moderate. The demand restraint and price stability helped to curb imports and provided a stimulus to exports. In the process, this helped trade account adjustment.

46. It was only from 1977-78 onwards that imports started rising under the combined effect of a slightly liberal import policy pursued since 1976-77 and the pick-up in investment activity which led to an increase in imports of capital goods. By the time India experienced the second oil shock in 1979-80, imports had already started rising and notwithstanding an improvement in exports, the trade deficit had touched 3.0 per cent of GDP. Even so the current account remained comfortable because of substantial inflow of inward remittances from Indians working abroad.

(ii) Private Transfers and Services

47. A second major contributory factor for the balance of payments adjustment since 1974-75 was thus the growth in invisibles, particularly private transfers. The large inward

remittances from Indian workers abroad consequent on the migration of Indian labour to oil-rich countries of West Asia boosted receipts by way of private transfers. There was a phenomenal increase in these receipts from Rs. 235 crore (\$296 million) in 1974-75 to Rs. 1,762 crore (\$2,175 million) in 1979-80. These receipts amounted to Rs. 5,196 crore during the post first oil shock period 1975-76 to 1979-80 and were equivalent of two thirds of trade deficit during this period (Table 9). At the same time, net earnings from factor and non-factor services which were negative up to 1974-75 turned into surpluses, due to growth in earnings from travel and factor income. Travel receipts (net) went up more than five-fold from Rs. 88 crore in 1974-75 to Rs. 497 crore by 1979-80. Factor income, representing mainly earnings on foreign investments of the Reserve Bank, went up substantially due to a build-up of reserves. As a result, net invisibles account which was

Table 9 : Trade Deficit and Invisibles

Year	Trade deficit (Rs. crore)	Invisibles (net)* (Rs. crore)	Private transfers (gross) (Rs. crore)	In- visibles/trade deficit ratio (2 - 3) (Per cent)	Private trans- fers/ trade deficit ratio (2 - 4)
1.	2.	3.	4.	5.	6.
1973-74	-510.4	-104.4	158.2	-20.5	31.0
1974-75	-1286.9	+193.4	235.4	15.0	18.3
1975-76	-1182.6	+527.0	453.8	44.6	38.4
1976-77	-309.9	+827.1	762.1	266.9	245.9
1977-78	-597.4	+1388.3	1108.4	232.4	185.5
1978-79	-2212.1	+1508.0	1109.5	68.2	50.2
1979-80	-3439.9	+2485.9	1761.9	72.2	51.1
Total: 1975-76 to 1979-80	-7741.9	+6736.3	5195.7	87.0	67.1

* Excluding official transfers.

in deficit up to 1973-74, turned into a surplus of Rs. 193 crore in 1974-75, rising substantially to Rs. 2,486 crore by 1979-80. The invisibles which financed only 15 per cent of trade deficit in 1974-75, more than offset the trade deficit in 1976-77 and 1977-78, thereby contributing to surpluses on current account during these years. Even when the trade deficit had galloped by 1979-80, the invisibles could finance as much as 72 per cent of the trade deficit and thus contain the impact of the second oil shock on current account. The sharp increase in private transfer receipts, in particular, considerably helped the current account adjustment and to build up the reserves.

(iii) External Financing

48. The balance of payments adjustment was also facilitated by large financing flows from abroad. India drew from the various IMF facilities amounting to Rs. 485 crore (SDR 511 million) in 1974-75 and Rs. 207 crore (SDR 201 million) in 1975-76. These financed a little over 60 per cent of the total current account deficits in these two years. Over the next four years, 1976-77 to 1979-80, as balance of payments position improved, India repaid Rs. 882 crore.

49. Along with the recourse to the IMF, the flows of external assistance by way of loans and grants also increased. Loan receipts (net) and official transfers went up from \$890 million in 1973-74 to \$1,388 million in 1974-75, and further to \$2,198 million in 1975-76. Thereafter, there had been a decline in these flows, but by then the large growth in private transfer receipts was adequate to meet the financing need. The BOP improved to such an extent from 1976-77 onwards that the entire outstanding indebtedness to the IMF could be fully repaid by the end of 1979-80.

50. With a view to attracting deposits from non-resident Indians, two schemes were introduced in the mid-1970s, namely, Non-Resident (External) Rupee Accounts [NR(E)RA] and Foreign Currency Non-Resident Account [FCNRA] Schemes. Under these schemes, an amount of nearly Rs. 820 crore was received during the period 1975-76 to 1979-80. These flows also gave a

measure of support to balance of payments.

Fifth Plan

51. The Fifth Plan document anticipated a current account deficit of Rs. 5,431 crore at 1973-74 prices. The actuals swung into a surplus of nearly Rs. 4,570 crore due mainly to a two-fold increase in net invisible receipts resulting from a substantial increase in private transfer receipts. As against an estimated increase of Rs. 304 crore in reserves, the actual increase was Rs. 2,470 crore (Rs. 4,779 crore at current prices and exchange rates) (Table 10).

Table 10 : Balance of Payments, Fifth Plan

	Plan es- timate at 1973-74 prices	Actuals at 1973-74 prices	Actuals at current prices
Exports	21,722	16,076	23,549
Imports	28,524	15,179	29,138
Trade balance	-6,802	+897	-5,589
Invisibles (net)	1,371	3,672	4,444
Current account balance	-5,431	+4,569	-1,145

52. During the post first oil shock period 1974-75 to 1979-80 taken together, the current account recorded a net surplus of Rs. 308 crore. This together with a large capital inflow contributed to an accretion in the reserves of Rs. 5,148 crore (\$5,991 million) during this period (Table 11).

Balance of Payments During the Sixth-Plan : 1980-81 to 1984-85

53. During 1979, oil prices more than doubled. The index of petroleum prices went up by 59 per cent within a matter of one

Table 11 : Current Account and Capital Account Transactions, 1974-75 to 1979-80

	(Rs. Crore)		
	Fifth Plan 1974-75 to 1977-78	Annual Plans 1978-79 and 1979-80	Total 1974-75 to 1979-80
I. Current Account (net)	+939.9	-631.9	+308.0
II. Errors and Omissions	-641.2	+631.9	-9.3
II. Capital Inflow (net)	+3,380.1	+1,407.5	+4,787.6
1. Loans	+4,740.2	+1,281.5	+6,021.7
2. Other Capital	-1,360.1	+126.0	+1,234.1
III. IMF Credit	+100.2	-290.4	-191.2
IV. SDR Allocation	--	+251.9	+251.9
V. Reserve Accumulation (I+II+III+IV)	+3,779.0 (4,320.0)	+1,369.0 (1,671.0)	+5,148.0 (5,991.9)

Note : Figures in brackets represent equivalents in U. S. dollar million.

year, which raised oil import bill substantially and exerted considerable pressure on BOP. The adjustment to this second oil shock was slower than to the first oil shock, because of sluggish performance of exports and flattening off of private transfer receipts after 1980-81. The global economic environment in the early 1980s was also depressed as world trade grew by only 2.0 per cent in 1980, 0.5 per cent in 1981 and in fact declined by 1.6 per cent in 1982. In 1980-81, imports went up sharply by Rs. 3,124 crore (32.0 per cent), while exports increased by only Rs. 353 crore (5.6 per cent). In 1981-82, exports increased substantially by Rs. 1,100 crore (16.5 per cent) but even so it was not adequate to contain the trade deficit as imports went up by Rs. 1,383 crore. Imports continued to rise year after year during the Sixth Plan period. As a result, the trade deficit, which shot up by Rs. 2,771 crore to Rs. 6,211 crore in 1980-81, rose to Rs. 6,925 crore by 1983-84. The rising trend in net invisible receipts noticed in the second half of the 1970s continued in 1980-81 when these receipts increased sharply by 42 per cent. But these too declined somewhat in 1981-82 and 1982-83. Net invisible receipts other than official transfers, which financed as much as 72 per cent of the trade deficit in 1979-80, could cover

the gap much less in 1983-84 (46 per cent). As a result, the current account deficit rose nearly five-fold from Rs. 459 crore in 1979-80 to Rs. 2,080 crore in 1980-81, rising steadily to Rs. 3,316 crore by 1983-84. As a proportion of GDP, the current account deficit soared from 0.4 per cent in 1979-80 to 1.5 per cent in 1980-81 and further to 1.8 per cent in 1982-83, declining somewhat to 1.6 per cent in 1983-84.

54. To meet the difficult balance of payments position, India borrowed from the IMF Rs. 274 crore under the Compensatory Financing Facility (CFF) and Rs. 545 crore from the IMF's Trust Fund in 1980-81. Although at the end of 1980-81, reserves were comfortable by international standards (over 5 months of imports), to meet any future contingencies, India negotiated for an Extended Fund Facility (EFF) of SDR 5 billion with the IMF in November 1981. Despite the net use of IMF resources of Rs. 806 crore in 1980-81 and Rs. 602 crore in 1981-82, the reserves were drawn down by Rs. 516 crore and Rs. 1,618 crore respectively, in these two years. Foreign exchange reserves increased by Rs. 624 crore in 1982-83 and by Rs. 773 crore in 1983-84; but this was primarily due to a substantial drawing from the IMF of Rs. 1,893 crore and Rs. 1,411 crore respectively under the EFF.

55. It was only in 1984-85 that the BOP showed an improvement. The current account deficit declined from Rs. 3,316 crore in 1983-84 to Rs. 2,852 crore in 1984-85 and foreign exchange reserves increased by Rs. 926 crore. With the improvement in the overall BOP position, India did not fully utilise the EFF resources arranged with the Fund in November 1981; out of SDR 5 billion arranged with the IMF, SDR 3.9 billion was drawn thus surrendering the use of SDR 1.1 billion. Reserves at Rs. 7,243 crore (\$5,951 million) at the end of March 1985 was equivalent of 4.7 months of 1984-85 imports.

56. Imports grew in each year of the Plan. During the Plan period as a whole, imports grew at an annual average rate of 14.2 per cent in rupee terms, but by 6.4 per cent in dollar terms. Import volumes increased during the Plan period at an annual average rate of 7 per cent while the unit values increased at the rate of 8 per cent per annum.

Table 12 : Imports during the Sixth Plan Period

	(Rs. Crore)			(U. S. \$ Million)				
	Oil Im- ports (Net of Crude Oil exports)	Non-oil Imports	Total (Net of Crude oil exports)	Total (Gross)	Oil Im- ports (Net of crude oil exports)	Non-oil Imports	Total (Net of crude oil exports)	Total (Gross)
1979-80	3,267	5,755	9,022	9,022	4,033	7,105	11,138	11,138
1980-81	5,263 (+61.1)	7,286 (+26.6)	12,549 (+39.1)	12,549 (+39.1)	6,655 (+65.0)	9,213 (+29.7)	15,868 (+42.5)	15,868 (+42.5)
1981-82	4,993 (-5.1)	8,482 (+16.4)	13,475 (+7.4)	13,671 (+8.9)	5,567 (-16.3)	9,458 (+2.7)	15,025 (-5.3)	15,244 (-3.9)
1982-83	4,559 (-8.7)	8,671 (+2.2)	13,230 (-1.8)	14,293 (+4.5)	4,717 (-15.3)	8,971 (-5.1)	13,688 (-8.9)	14,787 (-3.0)
1983-84	3,601 (-2.1)	10,999 (+26.8)	14,600 (+10.4)	15,831 (+10.8)	3,483 (-26.2)	10,637 (+18.6)	14,120 (+3.2)	15,290 (+3.4)
1984-85	3,846 (+6.8)	11,725 (+6.6)	15,571 (+6.7)	17,134 (+8.2)	3,235 (-3.8)	9,862 (-7.3)	13,097 (-7.2)	14,412 (-5.7)

Source : D. G. C. I. & S.

Table 13 : Non-Oil Imports by Main-Sub Groups

	(Rs. Crore)					
	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
1. Bulk Consumption goods	557 (688)	901 (1,139)	1,074 (1,198)	809 (837)	1,629 (1,575)	1,389 (1,168)
2. Other Non-oil bulk imports	2,050 (2,531)	2,542 (3,214)	2,764 (3,082)	2,381 (2,463)	2,473 (2,392)	3,342 (2,811)
3. Non-bulk imports	3,148 (3,886)	3,843 (4,860)	4,644 (5,178)	5,441 (5,670)	6,897 (6,670)	6,997 (5,883)
4. a) Capital goods	1,430 (1,765)	1,910 (2,415)	2,097 (2,338)	2,717 (2,811)	3,323 (3,214)	3,168 (2,665)
b) Mainly Export-related items	725 (895)	865 (1,094)	997 (1,112)	1,297 (1,323)	1,916 (1,853)	2,041 (1,717)
c) Others	993 (1,226)	1,068 (1,351)	1,550 (1,728)	1,485 (1,536)	1,658 (1,604)	1,785 (1,501)
Total	5,755 (7,105)	7,286 (9,213)	8,482 (9,458)	8,671 (8,971)	10,999 (10,637)	11,725 (9,862)

Note : Figures in brackets represent equivalents in U. S. \$ Million.

Table 14 : Growth Rates in Non-Oil Imports

	In Rupees					Sixth Plan		In US dollar			
	1980-81	1981-82	1982-83	1983-84	1984-85	Annual Average	Plan	1981-82	1982-83	1983-84	1984-85 Annual Average
1. Bulk Consumption goods	+61.8	+19.2	-24.7	+101.4	-14.7	+28.6	+65.7	+5.1	-30.1	+88.2	-25.8 +20.6
2. Other Non-oil bulk imports	+24.0	+8.7	-13.9	+3.9	+35.1	+11.6	+27.0	-4.1	-20.1	-2.9	+17.5 +3.5
3. Non-bulk imports	+22.1	+20.8	+18.0	+25.8	+1.4	+13.2	+25.0	+6.6	+9.5	+17.6	-11.8 +9.4
a) Capital goods	+33.6	+9.8	+29.6	+22.3	-4.7	+18.1	+36.8	-3.2	+20.2	+14.3	-17.1 +7.6
b) Mainly export-related items	+19.3	+15.3	+28.3	+49.8	+6.5	+23.8	+22.2	+2.1	+20.2	+40.0	-7.4 +15.4
c) Others	+7.6	+45.1	-4.2	+11.6	+7.7	+13.6	+10.2	+28.0	-11.1	+4.4	-6.4 +5.0
Total	+26.6	+16.4	+2.2	+26.8	+6.6	+10.9	+29.7	+2.7	-5.2	+18.6	-7.3 +7.7

Source : DGI&S.

57. A conspicuous aspect of adjustment during the post second oil shock was the near trebling of domestic crude oil production from 10.5 million tonnes in 1980-81 to 29.0 million tonnes in 1984-85 which enabled the country to progressively reduce oil imports. Oil imports (net of oil exports) were nearly halved from 23.5 million tonnes in 1980-81 to 12.4 million tonnes in 1984-85. Oil imports (net of crude oil exports from Bombay High) according to DGCI&S data, which went up by nearly Rs.2,000 crore to Rs.5,263 crore in 1980-81, declined to Rs.3,601 crore by 1983-84, increasing somewhat to Rs.3,846 crore in 1984-85 (Table 12). As a result, the share of net oil imports in total import bill came down from 42 per cent in 1980-81 to 25 per cent in 1984-85.

58. The fall in oil imports facilitated the expansion in non-oil imports. Table 13 gives the composition of non-oil imports during 1979-80 to 1984-85 and Table 14 growth rates in non-oil imports. Nearly two-thirds of the increase in non-oil imports was accounted for by capital goods and export-related goods, whereas a little over one-fourth was accounted for by bulk imports (Table 15).

Table 15: Sources of Growth in Non-oil Imports
(U.S. \$ Million)

Sub-Group	1979-80	1983-84	1984-85	Contribution (%)	
				(3) over (2)	(4) over (2)
1.	2.	3.	4.	5.	6.
Bulk consumption goods	688	1,575	1,168	25.1	17.4
2. Other Non-oil bulk imports	2,531	2,392	2,811	-3.9	10.2
3. Non-bulk imports	3,886	6,670	5,883	78.8	72.4
Of which					
i) Capital goods	1,765	3,214	2,665	41.0	32.6
ii) Mainly export related items	895	1,853	1,717	27.1	29.8
iii) Others	1,226	1,604	1,501	10.7	10.0
Total	7,105	10,637	9,862	100.0	100.0

Source : DGCIS

The varying growth rates in imports under various categories is reflected in their shares given in Table 16. These data show that imports for development purposes picked up in the last three years of the Plan.

Table 16 : Structure of Imports by Main Sub-Groups

	(In per cent)					
	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
1. Oil (net of crude oil exports)	36.2	41.9	37.0	34.5	24.7	24.7
2. Bulk consumption goods	6.2	7.2	8.0	6.1	11.2	8.9
3. Other bulk imports	22.7	20.3	20.5	18.0	16.9	21.5
4. Non-bulk imports	34.9	30.6	34.5	41.4	47.2	44.9
a) Capital goods	15.9	15.2	15.6	20.5	22.8	20.3
b) Mainly export related items	8.0	6.9	7.4	9.7	13.1	13.1
c) Others	11.0	8.5	11.5	11.2	11.3	11.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source : DGCI&S

59. In the Sixth Plan period net invisibles steadily declined in dollar terms from \$4,476 million in 1980-81 to \$2,754 million in 1984-85 (Table 17). As a result, the invisibles/trade deficit ratio declined from 57 per cent in 1980-81 to 49 per cent by 1984-85. The main reason for the fall in net invisible receipts was the rise in interest payments and service charges on loans contracted both on concessive and commercial terms and on IMF borrowings which more than quadrupled from Rs.300 crore in 1980-81 to Rs.1,313 crore in 1984-85. Private transfers, after an increase of Rs.375 crore in 1980-81, rose rather slowly to Rs.2,982 crore. However, in dollar terms, these receipts declined between

Table 17 : Net Invisibles and Trade deficit

(Rs. crore)

	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
1. Trade Deficit	3439.9 (42.53)	6210.8 (7854)	6494.1 (7241)	6719.4 (6951)	6924.6 (6697)	6721.1 (5653)
2. Net Invisibles*	+2485.9 (+3069)	+3539.4 (+4476)	+3355.6 (+3742)	+3099.9 (+3207)	+3216.3 (+3111)	+3274.2 (+2754)
1 as percent of 2	72.3	57.0	51.7	46.1	46.4	48.7

Note : Figures in brackets indicates US \$ million.

* Excluding official Transfers.

1980-81 to 1984-85 by nearly \$ 200 million. Invisibles (net) as a proportion of GDP came down steadily from 3.0 per cent in 1980-81 to 1.7 per cent by 1984-85.

60. The external financing requirements were of a large order during the Sixth Plan period. About 35 per cent was financed by way of external assistance, 32 per cent by way of borrowings from the IMF, 23 per cent from commercial borrowings and 16 per cent by way of deposits by non-resident Indians (Table 18). There was an initial loss in reserves in the first two years, but this was made good in the subsequent three years of the Plan. However, in dollar terms, reserves declined by \$ 284 million during the Plan period as a whole.

61. The Sixth Plan document had anticipated a current account deficit of Rs.9,063 crore. The net capital inflow was estimated at Rs. 10,976 crore. Taking into account the possible loss in terms of trade of Rs.2,913 crore, the drawal on foreign exchange reserves was estimated at Rs. 1,000 crore. The current account deficit more than doubled to Rs.18,174 crore (or Rs. 16,565 crore at current prices) due both to an increase in imports and a fall in exports. The deterioration in trade account was partly offset by an improvement in the invisibles account. (Table 19).

Table 18 : Financing of Current Account Deficits

	(Rs. Crore)						
	1980-81	1981-82	1982-83	1983-84	1984-85	Total Plan Period	Total \$ million
Current Account Deficit, including Errors & Omissions	-2312.5	-3094.3	-3096.3	-3837.4	-2528.8	-14869.3	-15,415
Financed by							
1. External assistance	783.6*	745.5	1124.5	1183.4	1407.0	5244.0	5311 (34.4)
2. Commercial borrowings	-29.0	383.7	995.8	1022.9	1110.0	3483.4	3344 (21.7)
3. Non-residents deposits	178.0	205.9	383.3	709.4	879.0	2355.6	2277 (14.8)
4. I. M. F. Credit	811.4	602.3	1892.9	1338.5	64.4	4709.5	5005 (32.5)
5. SDR Allocation	120.5	-	-	-	-	120.5	152 (1.0)
6. Other Capital	-68.0	-461.4	-675.7	356.1	-5.7	-854.7	-958 (-6.2)
7. Reserve	516.0	1618.3	-624.5	-772.9	-925.9	-189.0	284 (1.8)
Total financing	2312.5	3094.3	3096.3	3837.4	2528.8	14869.3	15415 (100.0)

* Excluding IMF's Trust Fund Loan of Rs. 544.5 crores which are included under IMF Credit.

Note : Figures in brackets represent percentages to total.

Table 19 : Balance of Payments : Sixth Plan

(Rs. Crore.)

	Plan estimate at 1979-80 prices	Actuals at 1979-80 prices	Actuals at Current prices
Exports	41,078	34,888	45,696
Imports	58,851	65,131	78,766
Trade balance	-17,773	-30,243	-33,070
Invisibles	8,710	12,069	16,485
Current account (net)	-9,063	-18,174	-16,565
Financed by			
Net aid	5,889	6,279	7,630
Other borrowings (including commercial borrowings and other capital)	5,087	4,061	4,984
IMF credit	--	4,050	4,710
SDR Allocation	--	103	121
Use of reserves	1,000	-51	-189
Errors and omissions	-2,913	3,732 *	-691

* Derived, representing mainly terms of trade gain.

62. The actual inflow of capital by way of external assistance, NRI deposits, commercial borrowings and IMF credit amounted to nearly Rs. 14,500 crore. As against a loss in terms of trade anticipated in the Plan there appears to have been a gain during the Sixth Plan period. Because the net capital inflow from abroad including IMF borrowings exceeded the financing need, the reserves increased by Rs. 51 crore, as against a provision of loss of Rs. 1,000 crore in the Plan document.

Balance of Payments During The Seventh Plan Period

63. The success of macro-economic adjustment achieved during the first half of the eighties allowed for the formulation of BOP strategies for the Seventh Plan in a setting of cautious

optimism. But the BOP once again came under pressure in 1985-86, the very first year of the Seventh Plan. The Seventh Plan document had estimated current account deficit for the Plan period at Rs. 20,000 crore at 1984-85 prices. The net capital inflow was estimated at Rs. 20,900 crore which, after providing for Rs. 700 crore of terms of trade loss, was to have financed the current account deficit fully; a reserve accumulation of Rs. 200 crore was anticipated.

64. The BOP data, available for the first four years of the Plan period, have been compared with the Plan estimates for the four-year period in Table 20.

Table 20 : Balance of Payments : Seventh Plan

(Rs. crore)				
	Plan estimate at 1984-85 prices and exchange rates	Corresponding estimate for 1985-86 to 1988-89	Actuals for 1985-86 to 1988-89 at 1984-85 prices and exchange rates	Actuals for 1985-86 to 1988-89 at current prices and exchange rates
1.	2.	3.	4.	5.
Exports	60,700	48,600	52,400	61,800
Imports	95,400	76,300	106,000	104,000
Trade balance	-34,700	-27,700	-53,600	-42,200
Invisibles (net)	14,700	11,700	8,000	11,600
Current A/c (Net)	-20,000	-16,000	-45,600	-30,600
Financing				
Net aid and other borrowing	20,900	16,720	28,200	27,900
Reserves (Increase-)	-200	-160	3,900	3,800
Errors and Omissions	-700 *	-560	13,500	-1,100
Memorandum Items				
Debt Service Ratio (%)	17.6	--	21.6	21.6
Current Account Deficit/GDP ratio (%)	1.6	--	2.2	2.2

* Represents terms of trade loss.

These show that as against The Plan estimate of Rs. 16,000 crore of current account deficit during 1985-86 and 1988-89 at 1984-85 prices and exchange rates, the actuals work out to nearly thrice the Plan estimate, due mainly to a substantial increase in imports. Despite the terms of trade gain and larger net capital inflow from abroad, the reserves were utilised to the extent of Rs. 3,800 crore as against a provision of an increase of Rs. 160 crore during the reference period.

65. The current account deficit as a percentage of GDP averaged around 2.2 per cent during the Seventh Plan period⁵, much higher than the Planning Commission's estimate of 1.6 per cent. Foreign exchange reserves declined by \$ 1,989 million to \$ 3,962 million (in SDR terms, these declined by SDR 2,959 million to SDR 3,045 million) during the five year period. The use of reserves was limited because of substantial inflows of capital from abroad by way of external assistance, commercial borrowings and deposits by non-resident Indians for financing the large current account deficits.

66. What have been BOP the factors responsible for the continued and sustained pressure on BOP during the Seventh Plan? The large current account deficits were almost equally the result of large trade deficits and reductions in the surplus on invisibles account. Further, large repayments to the IMF (SDR 2,752 million under EFF, SDR 67 million under CFF and SDR 473 million under Trust Fund loans) also exerted pressure on the reserves, just as borrowings from the IMF (SDR 4,495 million, net of repayments) had given a measure of support in the Sixth Plan period.

67. During the first four years of the Seventh Plan period, the annual average of current account deficit was Rs. 7,120 crore or \$ 5.4 billion, higher by Rs. 2,836 crore or \$ 2.5 billion than the Sixth Plan annual average (Table 21). The BOP data for 1989-90, the last year of the Seventh Plan, are not yet available. The current account deficit in 1989-90 in rupees is estimated to be marginally lower than in 1988-89, with percentage to GDP

5. For the full five-year period, based on the estimate of 2.3 percent for 1989-90. See RBI, 1990, p. 118.

Table 21 : Balance of Payments on Current Account : Seventh Plan Period

	(Rs. Crore)					
	Annual Average					
	1984-85	1985-86	1986-87	1987-88	1988-89	1985-86 to 1988-89
1. Imports, c.i.f.	18 680 (15,712)	21 164 (17,298)	22 669 (17,740)	25 692 (19,815)	34 513 (23,832)	26 010 (19,671)
2. Exports, f.o.b.	11,959 (10,059)	11,578 (9,463)	13,315 (10,420)	16,396 (12,646)	20,510 (14,163)	15,450 (11,673)
3. Trade deficit	-6,721 (-5,653)	-9,586 (-7,835)	-9,9354 (-7,320)	-9,296 (-7,170)	-14,003 (-9,669)	-10,560 (-7,999)
4. official transfers (net)	440 (370)	307 (251)	525 (411)	532 (410)	666 (460)	508 (383)
5. Other invisibles (net)	3,409 (2,867)	3,323 (2,716)	2,999 (2,347)	2,471 (1,906)	2,908 (2,008)	2,925 (2,244)
6. Current Account (net)	-2,852* (-2,399)	-5,927* (-4,844)	-5,830 (-4,562)	-6,293 (-4,854)	-10,429 (-7,202)	-7,120* (-5,365)
Current Account Deficit as percentage of GDP	1.2	2.3	2.0	1.9	2.7	2.2
						1.6

* Net of non-monetary gold movements of Rs. +20 crores in 1984-85 and Rs. +28 crores in 1985-86.

Note : Figures in brackets represent equivalent in U. S. \$ Million.

falling to 2.3 per cent. Thus, the current account deficit during the seventh Plan period as a whole would be about Rs.38,500 crore or \$ 27.5 billion.

Dynamic Export Growth

68. Exports declined by 3.2 per cent in 1985-86, due to a virtual cessation of crude oil exports; in terms of volume, exports fell by 8.7 per cent. Since 1986-87, exports have shown a robust growth. Thus, during 1985-86 to 1988-89, the annual average growth in exports in dollar terms worked out to 9.4 per cent, nearly twice the annual average growth of 5.3 per cent during the Sixth Plan period. During 1989-90, according to DGC&S data, exports increased by 36.5 per cent in rupee terms and by 18.6 per cent in terms of U.S. dollar. In terms of volume, exports declined by 8.7 per cent in 1985-86, but was made good in 1986-87, when they went up by 9.0 per cent. During 1987-88 to 1989-90, they are estimated to have gone up by over 12 per cent per annum.

69. The four year 1986-87 to 1989-90 growth in export volume at 11 per cent per annum on an average is the highest growth rate achieved so far in any of the previous Plan periods. Improved capabilities in the domestic manufactured sector, growth in world trade, and, above all, a number of export incentives, have contributed to the buoyancy in exports in recent years. Export incentives include the adjustments in the effective exchange rate of the rupee. With the strategic role accorded to exports in BOP adjustment, the exchange rate policy has been endowed with a competitive bias. Exchange rate movements have been effected in a manner designed to ensure that Indian exports hold their own in international markets in terms of price competitiveness. A definite export-supportive stance is visible in the growing frequency of adjustments made in the exchange rate of the rupee against its intervention currency, the pound sterling (Table 22).

Such adjustments rose from 126 times in 1983-84 to 252 times in 1989-90. According to the available trade-weighted exchange rate indices (NIBM, 1989), the nominal exchange rate of the rupee depreciated by over 40 per cent between 1984 and

Table 22 : Number of changes in Rupee/Sterling £ Rate

April - March	No. of changes
1983-84	126
1984-85	151
1985-86	156
1986-87	148
1987-88	140
1988-89	200
1989-90	252
1990-91 (April 1 to October 25)	151

1989 and the real effective exchange by nearly 20 per cent between 1984 and 1988.

70. There has been a marked change in the composition of exports since 1970 and this process accelerated during the Seventh Plan. According to DGCI&S data, the share of manufactured goods in the export basket has gone up from 48 per cent in 1970-71 to 63 per cent in 1980-81 and to 73 per cent in 1989-90. Between 1985-86 and 1989-90, exports of manufactured goods went up by nearly 220 per cent in rupee terms (by about 135 per cent in dollar terms) accounting for over 95 per cent of the total increase in exports during this period. The growth in farm products tapered off during the period.

71. Amongst manufactured products, the growth in exports over the last four years has been concentrated in five non-traditional manufactured goods, namely, gems and jewellery, engineering goods, readymade garments, chemicals and allied products, leather and leather manufactures. These accounted for nearly 75 per cent of the total increase in exports between 1985-86 and 1989-90 (Table 23). Alternatively, the export growth in manufactured goods has been mainly under consumption goods

category, while investment goods (engineering goods) contributed only a little over 15 per cent to the export growth. Even as compared with the post first oil shock period when there was a strong

Table 23 : Exports by Main Sub-Groups

(U.S. \$ Million)

	1985-86	1989-90	Contribution to Growth Rates	
			In absolute amount	In %
1. Manufactured Goods	(5210 (58.5)	12,199 (72.1)	+6989 (95.8)	90.5
a) Gems and Jewellery	1228	3181	+1953	25.3
b) Engineering goods	780	1995	+1215	15.7
c) Chemicals	407	1296	+889	11.5
d) Readymade garments	872	1936	+1064	13.8
e) Leather & leather manufactures	629	1172	+543	7.0
f) Cotton yarns fabrics & made-ups	469	889	+420	5.4
g) Others	825	1730	+905	11.7
2. Primary Products	3108 (35.0)	3574 (21.5)	+466	6.0
a) Agro-based products	2072 (23.2)	2264 (12.9)	+192	2.5
b) Marine products	334	413	+79	1.0
c) Meat & meat preparations	60	68	+8	0.1
d) Ores & minerals	642	829	+187	2.4
3. Petroleum & petroleum products	527 (5.9)	419 (2.5)	-108	-1.4
a) Crude	110	—	-110	
b) Petroleum products	417	419	+2	
Total, incl. others	8905	16,626	7721	100.0

Note : Figures in brackets refers to percentages to total.

Source : D.C.G.I.S.

growth in exports, substantial increases were noticed in manufactured goods (Table 24).

Higher Import Intensity

72. While the growth in exports has been encouraging, the import intensity of exports has also been growing. Between 1984-85 and 1988-89, import licences issued to Registered Exporters more than trebled from Rs. 2,786 crore in 1984-85 to Rs. 8,464 crore in 1988-89. More than 70 per cent of this increase was accounted for by licences issued to exporters of gems and jewellery. If exports are netted against export-related imports, the growth in exports (excluding crude oil exports) in dollar terms would come down from 94 per cent to 83 per cent over the Plan period.

73. During the first four years of the Seventh Plan period, the annual average growth in imports was 17 per cent in rupee terms and 12 per cent in dollar terms. The ratio of imports to GDP during this period ranged around 8-9 per cent, while the ratio of exports to GDP average was around 4-5 per cent. As a result, notwithstanding a strong growth in exports since 1986-87, the export to import ratio came down from 64 per cent in 1984-85 to 59 per cent by 1988-89. Provisional data for 1989-90 have now been released by DGCI&S. On this basis, DGCIS data show an annual average growth rate of 16 per cent in imports in rupee terms and 8 per cent in dollar terms during the Seventh Plan period (Table 25).

74. As is widely known, there are differences between the RBI BOP data and DGCI&S Customs statistics which have always existed and are also not peculiar to India alone. For an analysis of the sources of growth in imports, DGCI&S data have been used as fuller commodity details are available therein up to 1989-90.

75. In volume terms, according to DGCI&S data, the import growth was substantial during 1986-87 and 1987-88 at 16-17 per cent. No official statistics are available thereafter. The average annual volume growth in imports during the Seventh Plan might be estimated at 9.5 per cent, higher than the Plan estimate of 5.8 per cent per annum, and much higher than the annual average growth of 7 per cent during the Sixth Plan.

Table 24 : Decomposition of Recent Export Growth
(Annual Averages)

Sub-Group	1975-76 to 1979-80		1980-81 to 1984-85		1985-86 to 1989-90		1988-87 to 1989-90		Increase (+) of (5) over (2) (5) over (3)		Contribution on to growth (%)	
	2.	3.	4.	5.	6.	7.	8.	9.	(5) over (2)	(5) over (3)	(5) over (2)	(5) over (3)
1.												
I. Manufactured goods	3,988	5,101	5,210	9,193	+5,205	4,092	+76.4	+90.1				
1. Consumption goods	2,958	5,879	4,023	6,918	+3,960	3,039	+58.1	+88.9				
Gems & jewellery	537	1,005	1,228	2,465	+1,928	+1,460	+28.3	+32.1				
Readymade garments	421	705	872	1,456	+1,035	+751	+15.2	+18.5				
Leather manufactures	394	483	629	972	+578	+489	+8.5	+10.8				
Cotton yarns & fabrics	274	376	469	765	+491	+387	+7.2	+8.5				
2. Investment goods 1/	1,332	1,308	825	1,280	-72	-48	-1.1	-1.1				
3. Intermediate goods 2/	874	876	780	1,418	+544	+542	+8.0	+11.9				
II. Primary Products	156	346	407	857	+701	+511	+10.3	+11.3				
1. Farm products	2,277	3,008	3,109	3,261	+984	+253	+14.4	+5.8				
2. Marine products	1,625	2,092	2,073	2,108	+483	+16	+7.1	+0.4				
3. Meat & meat preparations	227	325	334	419	+192	+84	+2.8	+2.1				
4. Ores & minerals	30	77	60	65	+35	-12	+0.5	-0.3				
III. Petroleum & petroleum products 3/	395	514	642	669	+274	+155	+4.0	+3.4				
IV. Others	20	377	417	398	+378	+21	+5.6	+0.5				
Total	25	92	59	268	+243	+176	+3.8	+3.8				
Gems & jewellery (net) 4/	6,310	8,578	8,795	13,120	+6,810	+4,542	+100.0	+100.0				
	201	274	329	604	403	330						

1. Relates to engineering goods. 2. Relates to chemicals & allied products.

3. Excluding crude oil exports from Bombay High. 4. Exports less imports of gems and jewellery.

Table 25 : Import Growth

Year	Balance of Payments Data		DGCI&S Data	
	Rupee terms	U.S. \$ terms	Rupee terms	U.S. \$ terms
1985-86	+13.3	+10.1	+14.7	+11.5
1986-87	+7.1	+2.6	+2.2	-2.1
1987-88	+13.3	+11.7	+10.7	+9.1
1988-89	+34.3	+23.8	+26.7	+13.5
1989-90	—	—	+25.6	+9.2
Annual Average	+17.0	+12.1	+13.6	+8.0
First 4 Years			+16.0	+8.2
Five Year Period				

76. Oil imports, net of oil exports, in dollar terms went up from \$3,021 million in 1984-85 to \$3,550 million in 1985-86. While the oil import bill was contained since 1986-87 onwards up to 1987-88, during 1989-90, there was a sharp increase of 25 per cent in it. As the consumption of POL has shown an annual increase of 6 to 7 per cent since 1986-87 and domestic production seems to be plateauing, the volume of imports has been rising. Net oil imports increased from 12.3 million tonnes in 1984-85 to around 16 million tonnes in 1985-86 and 1986-87, rising to 19 million tonnes in 1987-88 and to 22 million tonnes in 1988-89. Notwithstanding a growth in the volume of imports, the softening of oil prices helped to contain the oil import bill. Crude oil prices dipped from an average of \$28 a barrel in 1984-85 to \$25 a barrel in 1985-86 to \$14 a barrel in 1986-87. Prices moved up to \$17 a barrel in 1987-88, but declined to \$14 a barrel in 1988-89, rising once again to \$17 a barrel in 1989-90.

77. Non-oil imports rose by 149 per cent in rupee terms and by 77 per cent in dollar terms during the Seventh Plan period. Non-oil imports went up in all the years of the Plan period, though the growth rates were uneven ranging between 4 to 22 per cent in dollar terms. The annual average growth in non-oil imports during the Plan period was of the order of 12 per cent in dollar terms (Table 26).

78. Among the various categories of non-oil imports, non-oil bulk consumption goods comprising foodgrains, edible oils, pulses and sugar declined during the Plan period by 7 per cent per annum, while other bulk imports comprising mainly iron and steel, non-ferrous metals and fertilizers showed an annual average growth of 10 per cent, due mainly to large imports of iron and steel in 1985-86 (Tables 27 and 28).

79. The large order of growth in non-oil imports during the Plan period was mainly under non-bulk imports, which recorded an annual average growth of 17 per cent as compared with a growth of 9 per cent during the Sixth Plan period. Capital goods imports increased sharply by 31 per cent in 1985-86 and by 45 per cent in 1986-87, but flattened thereafter in the following two years, rising once again in 1989-90. The sharp increase in imports of capital goods during the first two years of the Seventh Plan reflects the pent-up demand for modernisation of industries helped by a liberal import policy.

80. While capital goods showed a significant increase in the first two years of the Plan period, it is the export-related imports which have shown a sustained increase during the Plan period. Export-related imports, have shown an annual average increase of 17 per cent as against an annual average growth of 15 per cent during the Sixth Plan period. Under this head, the main growth items were pearls, precious and semi-precious stones (inputs to gem and jewellery exports) which went up by 194 per cent and chemicals which went up by 78 per cent over the Plan period.

81. Another group of imports which has shown a steady increase during the Plan period is the 'Others' category comprising mainly a large variety of industrial materials and intermediate goods such as, professional scientific instruments and optical goods, artificial resins and plastic materials, synthetic and regenerated fibres, medicinal and pharmaceutical products, dyeing, tanning materials and essential oils. These have shown, between 1984-85 and 1989-90, an annual average growth of 18 per cent, substantially higher than the annual average growth of 5 per cent

Table 26 : Growth Rates in Imports - Oil and Non-oil Sectors

	Oil Imports (net of oil exports)		Non-oil Imports		Total Imports (net of oil exports)		Total Imports (Gross)	
	In Rs.	In \$	In Rs.	In \$	In Rs.	In \$	In Rs.	In \$
1985-86	+21.0	+17.5	+25.1	+21.6	+24.1	+20.6	+14.7	+11.5
1986-87	-44.8	-47.1	+17.8	+12.8	+3.5	-0.9	+2.2	-2.1
1987-88	+41.4	+39.4	+5.3	+3.8	+9.7	+8.1	+10.7	+9.1
1988-89	+14.0	+2.1	+30.9	+17.2	+28.2	+14.8	+26.7	+13.5
1989-90	+44.1	+25.4	+22.3	+6.4	+25.4	+9.0	+25.6	+9.2
Annual average Seventh Plan	+15.1	+7.5	+20.3	+12.4	+18.2	+10.3	+16.0	+8.2

Table 27 : Imports by Main Sub-Groups

	(U. S. \$ Million)									
	Annual Average									
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1985-86 to 1989-90	1980-81 to 1984-85		
1. Oil & POL	4549	4078	2200	3118	3020	3768	3237	5496		
2. Bulk Consumption Goods of which	1168	1198	923	1159	1202	549	1006	1183		
a) Cereals & Cereal preparations	204	90	68	51	436	227	174	377		
b) Edible oils	799	612	496	748	502	127	497	696		
c) sugar	81	342	175	149	-	58	181	52		
d) Pulses	85	154	183	212	264	137	190	58		
3. Other non-oil bulk goods of which	2811	3521	3156	2729	3494	4235	3427	2792		
Iron and Steel	791	1140	1218	1018	1337	1384	1219	-		
Fertilisers	1132	1174	721	392	641	1068	799	-		
4. Non-Bulk Imports of Which	5883	7270	9448	10150	11752	12717	10267	5652		
a) Capital Goods	2665	3503	5077	5064	4792	5304	4748	2689		
b) Mainly Export-related items	1717	1934	2235	2584	3772	4086	2922	1420		
i) Pearls, precious & semi-precious stones	868	899	1165	1538	2192	2548	1668	731		
ii) Chemicals, organic & inorganic	721	890	896	811	1340	1282	1044	558		
iii) Textile yarn, fabrics, etc.	95	125	118	144	198	210	159	114		
iv) Cashewnuts, raw	33	20	56	49	42	46	43	17		
c) Others	1501	1833	2136	2501	3188	3327	2597	1544		
Total (1 to 4) of Which	14412	16067	15727	17156	19469	21269	17938	15124		
oil & POL	4549	4078	2200	3118	3020	3768	3237	5496		
Non-oil	9863	11989	13527	14038	16449	17501	14701	9628		

Source : DGC&S.

Table 28 : Imports-Growth Rates

	(Percentage growth in U. S. dollars)					
	Annual Averages					
	1985- 86	1986- 87	1987- 88	1988- 89	1989- 90	1985- 86 to 1989- 90
I. Non-oil Bulk Imports	+18.6	-13.6	-4.7	+20.8	+1.9	+4.6
of which :						
1. Bulk consumption goods	+2.6	-23.0	+25.6	+3.7	-44.3	-7.1
2. Other bulk imports	+25.3	-10.4	-13.5	+28.0	+21.2	+10.1
II. Non-bulk imports	+23.6	+29.9	+7.4	+15.8	+8.2	+17.0
1. Capital goods	+31.4	+44.9	-0.3	-5.4	+10.7	+16.3
2. Mainly export related items	+12.6	+15.6	+15.6	+46.0	+8.3	+16.5
3. Others	+22.1	+16.5	+17.1	+27.5	+4.4	+17.6
III. Total	+21.6	+12.8	+3.8	+17.2	+6.4	+12.4
1. Growth in industry related imports* (%)	+26.0	+26.8	+4.7	+17.2	+7.7	+16.5
2. Contribution of non-bulk imports to growth in non-oil imports (%)	65.4	141.6	+49.1	66.4	91.7	

* Relates to non-bulk imports and iron and steel.

during the Sixth Plan period.

82. All the sub-groups under non-bulk imports have improved their shares over the Plan period (Table 29). Figures in rupee terms or even in dollar terms (Table 30) would not indicate the real growth in imports, as these include price and exchange rate variations. Hence, an attempt has been made to work out imports data at 1984-85 constant prices and exchange rates. These calculations given in Table 31. It is evident that the substantial growth in imports that took place in the Seventh Plan period reflected larger use of imported inputs by the industrial sector, both for production of goods for domestic consumption and export markets. A number of studies have corroborated this. According to the RBI study on Large public Limited Companies (RBI Bulletin, April 1989), among the various industries, companies in Engineering and chemicals categories emerged as the most import-intensive, accounting for 39.6 per cent and 28.3 per cent, respectively, of total imports by all categories of companies in 1987-88. The ratio of imports to value of production has shown a steady increase from 7.7 per cent in 1985-86 to 10.5 per cent in 1987-88 in the case of engineering companies. As regards companies in the chemicals group this ratio rose from 9.7 per cent in 1985-86 to 10.5 per cent in 1986-87 but declined to 9.5 per cent in 1987-88. For both the categories of companies, the bulk of imports comprised or raw materials; the latter accounted for 80 per cent of total imports in respect of engineering companies and 85.5 per cent of total imports for chemical companies in 1987-88. The dependence on imported raw materials has shown a rising trend for both the types of companies. The imported components of total raw material consumed by engineering companies rose from 17.8 per cent in 1985-86 to 20.8 per cent in 1987-88, though there was a marginal decline in raw material import dependence in 1987-88 when compared with the preceding year. In the case of chemical companies, there has been a consistent rise in the share of imported raw materials in total raw materials consumed from 22.5 per cent in 1985-86 to 26.6 per cent in 1987-88. For both the categories of companies, there has, however, been no perceptible improvement in their contribution to exports. For chemical companies, the ratio of exports to net value added rose fractionally from 4.1 per cent in 1985-86 to 4.3 per cent in 1987-88, whereas for

Table 29 : Structure of Imports (In Rupee Terms)

Commodity Groups	(Percentage)						
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Annual Average 1985-86 to 1989-90
1. Bulk Imports							
of which							
a) Oil & POL	59.2	54.8	39.9	40.8	39.6	40.2	42.8
b) Non-oil bulk consumption goods	31.6	25.4	14.0	18.2	15.5	17.7	18.0
c) Other bulk imports	8.1	7.5	5.9	6.7	6.2	2.6	5.6
2. Non-bulk Imports of Which							
a) Capital goods	19.5	21.9	20.1	15.9	17.9	19.9	19.1
b) Mainly export related items	40.8	45.2	60.1	59.2	60.4	59.8	57.2
c) Others	18.5	21.8	32.3	29.5	24.6	24.9	26.5
Total	11.9	12.0	14.2	15.1	19.4	19.2	16.3
of which	10.4	11.4	13.6	14.6	16.4	15.6	14.5
Non-oil imports	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Industry-related imports*	68.4	74.6	86.0	81.8	84.5	82.3	82.0
	46.3	52.3	67.8	65.1	67.2	66.3	64.0
							45.0

* Includes non-bulk imports and iron and steel.

Source : DGC&S.

engineering companies this ratio declined from 3.5 per cent in 1985-86 to 3.2 per cent in 1987-88.

Table 30 : Sources of Import Growth

(Imports in \$ million)				
Sub-group	1980-81 to 1984-85	1985-86 to 1989-90	Increase of (3) over (2)	Contribution to growth (per cent)
1.	2.	3.	4.	5.
I. Bulk Imports	9472	7671	-1801	-64.0
1. POL	5496	3237	-2259	-80.3
2. Bulk Consumption goods	1183	1006	-176	-6.3
3. Other non-oil bulk imports	2792	3427	+635	+22.6
of which				
Iron & Steel	1082	1219	+137	+4.9
Fertilizers	747	799	+52	+1.8
II. Non-bulk imports	5662	10267	+4615	+164.0
i) Capital goods	2689	4748	+2059	+73.2
of which				
Machinery & equipment	1595	3020	+1425	+50.6
Electrical goods	469	965	+496	+17.6
Transport equipment	468	617	+149	+5.3
ii) Mainly export related goods	1420	2922	+1502	+53.4
iii) Others	1544	2597	+1053	+37.4
Total	15124	17938	+2814	100.0

Source : DGCI&S data converted into US dollars.

Table 31 : Imports at 1984-85 constant prices & Exchange Rates

	(Rs. crore)						
	Annual Averages						
	1984-85	1985-86	1986-87	1987-88	1988-89	1985-86 to 1988-89	1985-86 to 1988-89 (%)
1. Oil & POL	5409	5050 (-6.6)	3257 (-35.5)	4321 (+32.7)	3911 (-9.5)	4135	-4.7
2. Bulk Consumption goods	1389	1484 (+6.8)	1366 (-8.0)	1579 (+15.6)	1557 (-1.4)	1497	+3.3
3. Other non-bulk imports	3342	4360 (+30.5)	4672 (+7.2)	3781 (-19.1)	4524 (+19.7)	4334	+9.6
4. Non bulk imports	6994	9003 (+28.7)	13988 (+55.4)	14091 (+0.7)	15222 (+8.0)	13076	+23.2
a) Capital goods	3168	4339 (+37.0)	7517 (+73.2)	7016 (-6.7)	6206 (-11.5)	6270	+23.0
b) Export-related imports	2041	2395 (+17.3)	3309 (+38.2)	3581 (+8.2)	4887 (+36.5)	3543	+25.1
c) Others	1785	2271 (+27.2)	3162 (+39.2)	3493 (+10.5)	4130 (+18.2)	3265	+23.8
Total	17,134	19,898 (+16.1)	23,284 (+17.0)	23,772 (+2.1)	25,214 (+6.1)	23,042	+10.3
of Which							
i) Non-Oil	11,725	14,848 (+26.6)	20,027 (+34.9)	19,451 (-2.9)	21,303 (+9.5)	18,907	+17.0
ii) Industry-related imports	7935	10,414 (+31.2)	15,791 (+51.6)	15,451 (-2.2)	16,955 (+9.7)	14653	+22.6

* Note : Compiled from DGC&S. data.

Net Invisible Receipts

83. Net receipts from invisibles (excluding official transfers) showed a steady deterioration during the Plan period from Rs. 3274 crore (\$ 2,754 million) in 1984-85 to Rs. 2,908 crore (\$ 2,008 million) by 1988-89. These receipts, which financed as much as 92 per cent of the trade deficit in 1978-79, could finance a little over one-half by 1984-85 and 21 per cent by 1988-89. The deterioration in invisible account was mainly due to a sharp rise in interest payments which went up from Rs. 1,313 crore in 1984-85 to Rs. 2,375 crore in 1987-88 (Table 32). While net investment income outgo (reflecting mainly interest payments) went up from Rs. 996 crore in 1984-85 to Rs. 1,734 crore by 1987-88, payments for non-factor services declined during the same period by Rs. 59 crore, despite a sharp growth in travel receipts (net) by Rs. 880 crore, due mainly to larger payments on account of technicians, technical know-how and professional services associated with the technology transfers under the foreign collaboration agreements as well as due to a fall in miscellaneous receipts. Official transfers (net), representing mainly foreign official grants went up from Rs. 427 crore in 1985-86 to Rs. 666 crore in 1988-89.

84. A major component of the invisibles account is private transfers. The growth in private transfer receipts is nowhere in the range that prevailed after the first oil shock. In dollar terms, the annual average of private transfer receipts at \$ 2,411 million during 1985-86 to 1987-88 was lower by 4 per cent than the Sixth Plan annual average.

External Financing Pattern

85. The external financing requirements during the Seventh Plan were very large. During the first four years of the Seventh Plan period, the current account deficit including errors and omissions and repurchases from the IMF amounted to about Rs. 33,230 crore or \$ 25.3 billion. About 12 per cent of the financing need was met by drawing on the reserves and the balance of 88 per cent was financed by way of capital inflows from abroad. A little over three-fourths of the financing need was met through external assistance, commercial borrowings and non-resident deposits.

Table 32 : Invisibles, excluding official transfers (net)

	Rs crore				\$ Million			
	Annual Average				Annual Average			
	1984-85	1987-88	1980-81 to 1984-85	1985-86 to 1987-88	1984-85	1987-88	1980-81 to 1984-85	1985-86 to 1987-88
1. Investment Income	-996.1	-1733.6	-218.6	-1311.0	-838	-1337	-157	-1030
i) Interest payments and service charges	-1312.5	-2375.0	-692.2	-2054.0	-1104	-1832	-672	-1618
on foreign loans & credits								
ii) Others (net)	+316.4	+641.4	+473.6	+743.0	+266	+495	+515	+588
2. Non-factor services	+1303.6	+706.3	+1073.2	+1143.9	+1117	+545	+1108	+850
3. Private transfers	+2966.7	+3498.4	+2442.5	+3058.3	+2495	+2698	+2507	+2411
Total	+3274.2	+2471.1	+3297.1	+2891.2	+2754	+1906	+3458	+2291

Table 33 : Financing need and Sources of Financing

	Rs. Crore				Total	Millions of US Dollars	Millions of SDRs
	1985- 86	1986- 87	1987- 88	1988- 89			
1. Current account deficit including errors and omissions	5347	5959	7240	11094	29560	22539	18340
2. Repayments to IMF	-253	-672	-1209	-1547	-3681	-2807	-2284
3. Financing need (1+2)	-5600	-6631	8449	-12551	-33231	-25338	-20617
Financed by							
4. External assistance	1676	1808	2785	3178	9447	7203	5861
	(29.9)	(27.3)	(33.0)	(25.3)	(28.4)	(28.4)	(28.4)
5. Commercial borrowings	1167	2512	1426	3198	8303	6331	5151
	(20.8)	(37.9)	(16.9)	(25.5)	(25.0)	(25.0)	(25.0)
6. Non-resident deposits	1767	1650	1840	2475	7732	5896	4797
	(31.6)	(24.9)	(21.8)	(19.7)	(23.3)	(23.3)	(23.3)
7. Other capital	284	-71	1442	2251	3906	2978	2424
	(5.1)	(-1.1)	(10.0)	(17.9)	(11.8)	(11.8)	(11.8)
8. Use of reserves	706	732	956	1449	3843	2930	2384
	(12.6)	(11.0)	(11.3)	(11.6)	(11.5)	(11.5)	(11.5)

Note : Figures in brackets indicate percentage to the financing need.

During the four-year period, external assistance provided 28 per cent, commercial borrowings 25 per cent and NRI deposits 23 per cent of the financing need (Table 33). Thus, these three sources provided the bulk of the financing need. In the Sixth Plan period, loans under external assistance provided a higher share (35 per cent) in the financing, while commercial borrowings provided 23 per cent NRI deposits provided a much smaller share (16 per cent). However, 32 per cent of the financing requirements were met out of IMF borrowings during the Sixth Plan, while there were no such borrowing during the Seventh Plan period.

86. The balance of payments data on current account for the period 1985-86 to 1988-89 are worked out in Table 34 at 1984-85 prices and exchange rates. This shows that if the prices had remained constant at 1984-85 level and also the exchange rates, the current account deficit would have widened to over Rs. 6,000 crore in 1985-86 and to Rs. 11,000 - Rs. 12,000 crore in 1986-88 and to a little over Rs. 15,000 crore in 1988-89. Thus during the first four years of the Plan, the current account deficit would work out to Rs. 45,600 crore as against the Plan estimate of Rs. 20,000 crore for the entire Seventh Plan period.

Table 34 : Balance of Payments on Current Account at 1984-85 constant prices and exchange rates

	(Rupee Crore)					
	1984-85	1985-86	1986-87	1987-88	1988-89	Total 1985-86 to 1988- 89
Imports	18,680	21,422	26,264	27,457	30,864	106,007
Exports	11,959	11,504	12,577	13,882	14,416	52,379
Trade balance	-6,721	-9,918	-13,687	-13,575	-16,448	-53,628
Invisibles (net)	+3,849	+3,528	+2,311	+1,149	+1,017	+8,005
Current Account	-2,852.4*	+6,362*	-11,376	-12,426	-15,431	-45,595

* Net of non monetary gold movement of Rs. 20 crores in 1984-85 and Rs. 28 crores in 1988-89.

V. Conclusions and Issues

87. The foregoing review shows that the country had not faced many occasions when the external sector was under severe pressure up to the 1980s. True, in the first two years of the Second Plan and during 1973-75 (under the impact of the first oil shock), balance of payments came under strain. On both the occasions, adjustment could be achieved fairly quickly. The pressures experienced during the early years of the Second Plan could be contained with better import planning and larger availability of external assistance. The adjustment to the oil shock in 1973-74 was fairly rapid due mainly to a sustained growth in exports and a substantial increase in remittances from non-resident Indians.

88. It was in the 1980s that the external sector experienced considerable stresses and strains for a prolonged period, which are still continuing. It is significant that in relation to GDP, it is only merchandise imports during the 1980s that have outstripped what were obtaining in the early phase of planning. In other words, despite considerable dynamism introduced into the exports sector, exports as percentage of GDP are still lower at about 5.0 per cent as compared with 6.0 to 7.0 per cent obtaining in the First Plan, as also the pre-Plan period (Table 35). Looking at it differently although exports have done well in the last four years of the Seventh Plan, the pressures on BOP have persisted due to a high level of imports following import liberalisation and a fall in net invisible receipts, as also due to rising repayments of loans including those due to the IMF. The large and sustained current account deficits which averaged around 2.2 per cent of GDP during the Seventh Plan period, substantially higher than the Plan estimate of 1.6 per cent, has been a major issue of policy concern. At the same time, India had to make large repayments to the IMF under EFF, CFF and Trust Fund loans aggregating to SDR 3.3 billion. As a result, foreign exchange reserves declined during the Plan period by \$2.0 billion. The large current account deficits had to be financed by way of substantial inflows of capital through loans from multilateral and bilateral donors and commercial banks and inflow of funds from non-resident Indians under special deposit schemes. Consequently, during the Seventh Plan period, the medium and long-term debt in U.S. dollar terms went up by 56 per cent to \$ 47 billion and

Table 35 : Current Account Transactions as Percentage of GDP at Current Market Prices

	1950-51	First Plan (Average)	Second Plan (Average)	Third Plan (Average)	Annual Plans 1966-67 to 1968-69 (Average)	Fourth Plan (Average)	Fifth Plan (Average)	Annual Plans 1978-79 and 1979-80 (Average)	Sixth Plan	Seventh Plan 1985-86 to 1988-89 (Average)
1. Exports f.o.b.	6.9	6.1	4.5	3.5	3.7	3.6	5.4	5.4	5.0	4.8
2. Imports c.i.f.	6.9	7.2	7.8	5.7	5.9	4.3	6.4	8.0	8.7	8.1
3. Trade Balance	-0.04	1.2	3.3	2.2	2.2	0.7	1.1	2.6	3.7	3.3
4. Invisibles :										
a) Receipts :	1.5	2.0	1.9	1.5	1.4	1.6	2.3	3.5	3.6	2.9
b) Payments	1.0	1.0	1.0	1.1	1.3	1.2	1.0	1.3	1.5	1.8
c) Net	0.5	1.0	0.9	0.4	0.1	1.0	1.2	2.3	2.2	1.1
5. Current Account (Net)	+0.4	-0.08	-2.4	-1.8	-2.1	-0.3	-0.9	-0.3	-1.6	-2.2

NRI deposit liabilities more than trebled to \$10.3 billion. Thus, total external liabilities inclusive of NRI deposits aggregated about Rs. 100,000 crore (\$57 billion) as at end-March 1990 as against a little over Rs. 14,000 crore (\$17 billion) a decade earlier. As percentage of GDP, these liabilities constituted about 22.5 per cent against 13 per cent a decade ago. The debt-export ratio, i.e., debt as percentage of current receipts (exports plus invisibles) reached a two-fold rise from 132 per cent in 1980 to 263 per cent in 1988-89, thus exceeding even the similar ratio of 127.5 per cent obtained for the developing countries as a group in 1989. Also, the share of high-cost debt in total debt has risen, with commercial borrowings constituting 31 per cent of the total debt at end-March 1990 against only 9.3 per cent at end-March 1980; the share of FCNRA deposits in NRI deposits shot up from 18 per cent to 64 per cent during the same period. Commercial borrowings and FCNRA deposits together accounted for 30 per cent of total external liabilities by end-March 1990 as against only 10 per cent a decade earlier, thus indicating a progressive diminution in the share of external debt on concessive terms. Reflecting the growth in external debt, the debt service ratio, i.e., principal repayments and interest payments (excluding interest on NRI deposits) as percentage of current receipts (exports of goods plus invisible receipts) grew sharply from 13.6 per cent in 1984-85 to 24 per cent in 1987-88, though it came down to about 22 per cent by 1989-90. If interest on NRI deposits are also added, the debt service ratio might go up by another 3 to 4 percentage points.

89. As against the growing foreign debt, the inflow of foreign investment into India has been rather small. Between 1970-71 and 1973-74, it ranged around Rs. 33 crore - Rs. 49 crore, increasing to Rs. 70 crore in 1974-75. During 1975-76 to 1977-78, there was an outflow because of the dilution of foreign equity stipulated under FERA, 1973. There was a turnaround in net inflow to Rs. 24 crore in 1978-79 from an outflow of Rs. 18 crore in 1977-78. The net inflow increased to Rs. 69 crore in 1979-80; of this an estimated Rs. 63 crore were in the form of retained earnings of foreign-controlled rupee companies operating in India. In 1986-87, for which the latest data are available, the net inflow of foreign direct investment amounted to Rs. 181 crore.

90. India's external trade and payments situation has thus reached a delicate stage. Though the current account deficit in relation to GDP is small as compared with some other developing countries, considering the small size of the external sector, the persistent current account deficit, the growing foreign debt, and the rising debt service burden are indeed worrisome. There are no indications of any perspective change in the scenario either. During the first four months of 1990-91 so far, export growth has decelerated while import growth has accelerated, thus tending to widen the trade deficit. The loss in foreign exchange reserves has continued to be sizeable. Adding to this already disquieting situation has been the current (October 1990) Gulf crisis which would considerably increase the POL import bill as also the cost of fertilizer imports. It may also have a chain reaction on the import prices of other commodities. The freight rates have already gone up, which will add to transportation costs. Due to uncertainty prevailing in the Gulf region, exports to that region may be adversely affected. Although initially there might be an increase in the remittances by way of current transfers and deposits into NRER/FCNR Accounts by non-resident Indians intending returning to India, over time, the inflow of such remittances may be reduced (see Holla, 1990). The world trade growth and the general trading environment are also not encouraging. Thus, overall the situation looks more or less similar to that in 1980-81 when the country experienced the impact of the second oil shock.

REFERENCES

1. Ahluwalia, Montek Singh (1986): "Balance of Payment Adjustment in India, 1970-71 to 1983-84, *World Development*, August
2. Bhagwati, Jagdish, N. and Desai, Padma (1970): *India Planning for Industrialisation and Trade Policies since 1951*, Oxford University Press, London.
3. Bhagwati, Jagdish, N. and Srinivasan, T. N. (1975): *Foreign Trade Regimes and Economic Development: India* NBER, Columbia University from, New York
4. Government of India (GOI, 1978): *Report of the committee on Import Export Policies and Procedures* (Chairman: P. C. Alexander), January
5. Government of India (GOI, 1979): *Report of the Committee on Controls and Subsidies* (Chairman: Vadilal Dagli), May.
6. Government of India (GOI, 1980): *Report of the Committee on Export Strategy* (Chairman: P. L. Tandon)

538 RESERVE BANK OF INDIA OCCASIONAL PAPERS

7. Government of India (GOI, 1984): *Report of the Committee on Trade Policies* (Chairman: Abid Hussain), Ministry of Commerce, December.
8. Government of India (GOI, 1985): *Report of the Committee to Examine Principles of a possible shift from Physical to Financial controls* (Chairman : M.Narasimham), January.
9. Holla, K.R.(1990): "A Third Oil Shock for India: Its Implications for Balance of Payments", *Economic and Political Weekly*, October 20/27.
10. Hussain, Abid (1988): "Foreign Trade Policy in Indian Planning", Eximbank Commencement Day Annual Lecture.
11. IMF (1988): "Issues and Developments in International Trade Policy": *Occasional Paper No. 63*, December
12. Joshi, Vijay (1984): "The Nominal and Real Effective Exchange Rate of the Indian Rupee : 1971-'83", *Reserve Bank of India Occasional Papers*, Vol.5 No.1, June.
13. National Institute of Bank Management (NIBM, 1989): "Tables on Trade-Weighted Exchted Exchange Rate Indices", *Journal of Foreign Exchange and International Finance*, October-December.
14. Nayyar, Deepak (1982): "India's Balance of Payments", *Economic and Political Weekly*, Annual Number, April.
15. Planning Commission, Government of India (GOI, 1961): *Third Five Year Plan*.
16. Rangarajan, C.(1990): *The Balance of Payments Scenario* Seventh G.L. Memorial Lecture under the auspices of the Industrial Credit and Investment Corporation of India Ltd., February.
17. Reserve Bank of India (RBI, 1989 & 1990): *Annual Reports: 1988-89 & 1989-90* respectively
18. Sen, Sunanda (1982): "From Import Substitution to Export Promotion: Policy Planning in India's Foreign Trade Sector", *Economic and Political Weekly*. Annual Number April.
19. World Bank (1987): *World Development Report*, Washington.

Price Trends During Five-Year Plan Periods

Mohua Roy*

INTRODUCTION

IN the early phase of planning in India, a broader perspective was brought to bear on the potency of inflation : some degree of price rise as stimulator of economic activity; some degree as inevitable part of development; and a substantive role for relative prices to determine inter-sectoral priorities in resource allocation and production structure, particularly in the context of a mixed economy. Thus, the First Five Year Plan "stressed that the structure of prices should be such that the resultant allocation of resources was consistent with the targets defined in the Plans. The aim of economic policy should accordingly be to bring about such a price structure. During a period of increasing pace of development it was inevitable that the structure of prices undergoes a change and the overall price level moves up. However, if the level of incomes rise and so long as there are no adverse distributional effects, some degree of price rise during the development process could be tolerated. The First Five Year Plan postulated that financial as well as physical controls were necessary as part of price policy, since price policy was 'partly a problem of allocation of resources and partly a question of ensuring reasonable equality of sacrifice among the different sections of the people' (RBI, 1985, p. 5).

* Mrs. Mohua Roy is Research Officer in the Department of Economic Analysis and Policy. The author would like to express her gratitude to Miss Nirmala R. Acharekar and Mr. Pradeep R. Menon for their help in computations.

2. While the above aspects generally received relatively greater attention even in the Second Five Year Plan, the persistent and high levels of inflation at the commencement of the Third Plan and thereafter with regular frequency, brought to the fore an awareness of the pitfalls of a rising and uncertain inflation rate and its disruptive effects on growth and distributive justice in the economy. It has been recognised that a high level of inflation creates distortions in the saving, investment, output and trade patterns, with consequent impairment of growth and allocative efficiency. Conventional arguments in favour of inflationary financing, therefore, came to be questioned (GOI, 1973, p. 16). Faced with persistent inflationary forces, each Five-Year Plan document sought to "ensure that there is no accentuation of inflationary pressures in the course of the Plan and that the levels of living of the more vulnerable classes in society are safeguarded" (GOI, 1961, p. 119).

3. However, even as overall price stability has been an avowed objective of Indian planning, the goal has eluded us almost persistently. Against such a background, it is interesting that the estimates of financial resources and their sectoral deployment have been undertaken at base level prices, thus always assuming zero inflation. This "led to a projected Plan size which proved to be too ambitious and ended mostly in a sizeable shortfall when the realized inflation came to be positive In all the cases the erosion centred around 20 per cent Conventional attempts to cover the shortfall by added Government deficits have led to more inflation and a further cut in the plan size" (Gupta, S.P., 1989, pp. 78 and 114). Effects of inflation have been obviously different for different sectors and classes; two of these differential impacts stand out: (a) the prices of commodities entering into fixed investment have risen at a faster rate than the GDP deflator, particularly since the mid-1960s (Raj, 1982, pp. 28 & 30); and (b) the prices of commodities and services relevant for consumer price indices have risen at a faster rate than those relevant for wholesale price indices (RBI, 1989, pp. 64 - 66). There may have been many other effects and even distortions which, by and large, remain to be measured.

4. The causes of inflation in India have also generated a fair

degree of controversy in the Indian economic literature. Starting from the extreme monetary explanation (Gupta, Suraj B., 1979), inflation in India has been attributed to a hybrid of monetary and structural factors [Ahluwalia (1979), Rao (1983) and Lahiri, et al (1985)] and also to pure structural causes (Prabhat Patnaik, 1984). Inflation has even been treated "as a social phenomenon; and its nemesis has to be sought at a fundamental level, that is, in changes reflected in the socio-economic structure" (Krishnaswamy, 1976, p.138). It is thus necessary to understand the complex interplay of structural and socio-political forces motivating the changes in the economy that get manifested in continual imbalances in the aggregate supply and demand schedules and the consequent spiralling of prices, though differently in different sectors and commodities and in different time periods.

5. The objective of this brief paper is rather limited; it is not to deal with the broader issues of causes and effects of inflation in macro-economic terms. It is essentially to present the extent and nature of inflation over different Five-Year Plan periods in terms of bare statistics and to pinpoint identifiable micro-causes which have contributed to the given behaviour of price trends in various Plan periods, in various inflationary phases and even in individual landmark years. A fairly comprehensive Paper on these lines was undertaken in the Reserve Bank of India some years ago, covering "Price Trends During the (First) Three Plan Periods" (Velayudham, 1967). The present Paper seeks to cover the subsequent two and a half decades of planning (1966-67 to 1989-90).

6. The analysis of price trends presented here is essentially based on the wholesale price indices (WPI) published by the Office of the Economic Adviser, Ministry of Industry, Government of India. However, a brief reference to the behaviour of consumer price indices (CPI) over the period under study has also been made. At the outset, the limitations of the data used may be noted. First, our study period covers 24 years and the WPI has been revised during the period several times over, with the necessary changes in the weighting diagrams and classificatory systems (Table 1). Also, the coverage and scope of different series have been enlarged with each revision, keeping in view the progress made by

Table 1. Weighting Diagrams of Different Series of Index Numbers of Wholesale Prices in India

Major Group	1981-82 Series	1970-71 Series	1961-62 Series	1952-53 Series	1939 Series
All commodities	100.0	100.0	100.0	100.0	100.0
Primary articles	32.295	41.667	42.54	57.77	43.89
Fuel, power, light and lubricants	10.663	8.459	6.01	2.84	3.29
Manufactured products	57.042	49.874	51.45	39.39	52.82

Sources : (i) Chandhok, H.L. (1978).

(ii) Office of the Economic Adviser, Government of India.

the economy. In view of the differences in methodology adopted in compiling the weighting diagram, classificatory system and other aspects, it is not possible to establish a one-to-one correspondence between the new and the old series at sub-group, group and even major group levels. Secondly, the price indices suffer from certain other deficiencies like non-reporting, unsystematic revisions and substitution of varieties for purposes of calculating price relatives (Velayudham, 1967). Thirdly, the administered prices of commodities only show variations when they are officially revised and affect the general index according to their weight and the extent of revision. However, they are not variables necessarily reflecting the free interplay of demand and supply forces in the economy. Fourthly, other problems arise due to (i) technical difficulties of sampling; (ii) the regional variations; (iii) limitations to the representativeness of price data used for compilation; (iv) inclusion of only marketed surplus and not total production for weighting diagram; (v) non-inclusion of traders' margins or unofficial market prices (Das, Debendra K., 1987). Finally, the aim of WPI is to measure changes in prices at primary (non-retail) level of transactions of commodities and commodity groups.

7. WPI carries a number of structural dissimilarities *vis-a-vis* the consumer price indices which measure the final price paid at the consumer level. First, WPI covers only physical commodities, whereas CPI includes 'services', to the extent direct services are rendered to the households, and obviously excludes capital

goods. Other dissimilarities relate to the issues germane to the construction of index numbers : weighting diagram, coverage of commodities, geographical coverage, and base period. For WPI, weights are based on the value of marketable or marketed surplus in the primary sector and value added by manufactures in the secondary sector in the country as a whole, whereas for CPI they are based on the working class consumption expenditures as revealed by family budget surveys in selected industrial centres (RBI, 1989). While WPI is constructed only at the all-India level, CPI for industrial workers is available for a large number of centres (as many as 70 now). The structural differences are also reflected particularly in the weights assigned to different commodity groups. For instance, the 'food' group carries a weight of 27.5 per cent in WPI (1981-82 series) as against 57.0 per cent in CPI for industrial workers (1982 series); and within the 'food' group, cereals have a weight of only 12.10 per cent in WPI (1961-62 series) as compared with 28.6 per cent in CPI (1960 series). Apart from these, CPI price quotations at the retail level include the cumulative effects of transport and handling costs and trade margins at all layers of trade and commerce. Because of the very heterogeneous nature of consumption pattern amongst different consumer groups, there are as many as three consumer price indices constructed in India; they relate to industrial workers, urban non-manual employees and agricultural labourers (Table 2). There are significant differences in their trends.

8. The weighting diagrams presented in Tables 1 and 3 bring out the extent of compositional changes taking place in the commodity baskets in WPI and CPI, reflecting some aspects of the structural changes in the economy. A steady decline in the weights assigned to 'primary articles' concurrently with increases in the weights of 'fuel' group and 'manufactured products' in WPI or a fall in the weights of 'food' items followed by increases in the weights of other consumption items, speaks for the changes taking place in the production structure or the consumption pattern in the Indian economy. These changes in weights also have a statistical implication in that the weighted contribution to price changes now will be underplayed or magnified when compared to the past price behaviour depending upon whether the recent weights of the relevant commodity groups are lower or higher, than in the past.

Table 2 : Weighting Structure of Consumer Price and Wholesale Price Indices

Commodity Group	CPI for Industrial Workers (Base : 1960 = 100)	CPI for Urban Non-Manual Employees (Base : 1960 = 100)	CPI for Agricultural Labourers (Base : July 1960 - June 1961 = 100)	Wholesale Price Index (Base : 1970-71 = 100)
Major Groups				
1. Food	60.92	47.15	76.12	43.22*
2. Pan, supari, tobacco, and intoxicants	4.79	-	-	-
3. Fuel & light	5.77	4.73	7.96	-
4. Housing	6.26	10.79	-	-
5. Clothing, bedding and footwear	8.54	9.66	6.11	-
6. Miscellaneous	13.72	26.08	7.81	-
Total	100.00	100.00	(+2.00)£ 100.00	100.00
Food Group				
Sub-groups				
1. Cereals	28.62 (46.98)	13.13 (27.85)		10.74 (24.67)
2. Pulses	3.67 (5.02)	2.14 (4.54)		2.18 (5.05)
3. Meat, fish and eggs	4.09 (6.71)	2.47 (5.24)		1.90 (4.41)
4. Milk and milk products	5.61 (9.21)	9.84 (20.87)		6.15 (14.27)
5. Condiments and spices	3.27 (5.27)	1.44 (3.05)		1.09 (2.53)
6. Vegetables and fruits	4.59 (7.53)	5.84 (11.54)		6.13 (14.22)
7. Oils and fats	3.20 (5.25)	2.98 (6.32)		3.71 (8.60)
8. Sugar, gur and khandasari	2.65 (4.35)	2.57 (5.45)		7.24 (16.79)
9. Others	5.28 (8.66)	6.74 (14.29)		4.08 (9.46)
Total	60.92 (100.00)	47.15 (100.00)		43.22 (100.00)

- Not available/ not relevant. £ Classification not known.
 * Consists of 'food articles' under 'primary articles' and 'food products', under 'manufactured products'.
 Notes : Figures in brackets indicate percentage share of the sub-group in the food group of the index.
 Source : Deshpande, R. S. (1985).

Table 3 : Comparative Weighting Diagram at the Group Level of CPI Series for the All-India Index for Industrial Workers

Group	1960 Series	1982 Series
(i) Food	60.92	57.00
(ii) Pan, supari, tobacco and intoxicants	4.79	3.15
(iii) Fuel and light	5.77	6.28
(iv) Housing	6.26	8.67
(v) Clothing, bedding and footwear	8.54	8.54
(vi) Miscellaneous	13.72	16.36
Total	100.00	100.00

Overall Trends

9. Our study period comprises twenty-four years (1966-67 to 1989-90) covering the three Annual Plans, following the Third Plan, and the Fourth, Fifth, Sixth and Seventh Plans. An overall increase of 541 per cent in the general index of WPI during the twenty-four year period, or an annual compound rate of 8 per cent, is indeed significant (Tables 4 and 5). The maximum price increase during this period has been noticed in the case of the major group 'fuel, power, light and lubricants'. However, its contribution to the general price rise has been low due to its small weight. The 'manufactured products' have contributed the most to the general price rise, followed by the 'primary articles'.

10. From the rate of 7.9 per cent during the Annual Plans, the annual compound rate of price rise accelerated to 8.9 per cent during the Fourth Plan. The Fifth plan witnessed a deceleration to 7.7 per cent followed by a spurt to 9.2 per cent in the Sixth Plan-- the maximum rate of all the Plans -- partly due to large petroleum price increase. It has been moderate during the Seventh Plan at 6.6 per cent. Interestingly, the average increases in individual Plan periods show a degree of steadiness, that is, lying

Table 4 : Percentage Variation and Weighted Contribution of Major Groups in WPI During Plan Periods*

	(In Percentages)											
	Three Annual Plans		IV Plan		V Plan**		VI Plan		VII Plan		Study Period (24 years)@	
	A	B	A	B	A	B	A	B	A	B	A	B
All commodities	25.7	100.0	53.0	100.0	55.8	100.0	55.5	100.0	37.9	100.0	540.7	100.0
Primary articles	27.5	49.2	58.1	45.0	45.6	34.6	57.1	40.7	30.4	27.0	514.5	38.6
Fuel, power, light and lubricants	19.4	4.3	41.6	6.9	116.8	16.6	83.1	16.5	33.6	9.1	767.7	12.8
Manufactured products	24.8	46.6	50.3	48.1	54.7	48.8	48.1	42.8	43.5	63.9	513.2	48.6

(A) Percentage variation (B) Weighted contribution

* WPI for the three Annual Plans at base : 1961-62 = 100, for IV, V and VI Plan at base : 1970-71 = 100, for VII Plan at base : 1981-82 = 100, and for study period at base : 1970-71 = 100.

** Fifth Plan period is taken to cover 1974-75 to 1979-80, for the purpose of this article.

@ The figures in these two columns are a crude measure of the variations and weighted contributions during the study period. We arrive at them by converting the financial year averages of WPI for 1989-90 to base : 1970-71 = 100 by multiplying it by 2.813 (= financial year average WPI for 1981-82 = 100, at base : 1970-71 = 100) and comparing these to the corresponding indices of 1965-66 given at the base : 1970-71 = 100 in Chandhok (1978).

Table 5 : Annual Compound Rate of Increase in Prices During Plan Periods*
(In Percentages)

Major Groups	3 Annual Plans (1966-67 to 1968-69)	IV Plan (1969-70 to 1973-74)	V Plan** (1974-75 to 1979-80)	VI Plan (1980-81 to 1984-85)	VII Plan (1985-86 to 1989-90)	Study Period (24 years) (1966-67 to 1989-90)
All commodities	7.9	8.9	7.7	9.2	6.6	8.0
Primary articles	8.4	9.6	6.5	9.5	5.4	7.9
Fuel, power, light and lubricants	6.1	7.2	13.8	12.9	6.0	9.4
Manufactured products	7.7	8.5	7.5	8.2	7.5	7.8

* WPI for the three Annual Plans at base : 1961-62=100, for IV, V and VI Plan at base : 1970-71=100 and for VII Plan at base: 1981-82=100 and for study period at base : 1970-71=100.

** Fifth Plan period is taken to cover 1974-75 to 1979-80 for the purpose of this article.

within a narrow range of approximately 7 to 9 per cent, which, however, hides significant inter-year differences in inflation rates and even wide variations in the price increases of individual commodities or commodity groups (Table 5).

11. Of the major groups, during the Annual Plans and the Fourth Plan, the 'primary articles' showed the highest annual rate of increase, mainly due to a number of poor crop years during the period. The 'fuel' group witnessed relatively low levels of price increases during these periods reflecting the relative underpricing of the concerned products through administrative controls, judged against their scarce supply. However, this had to be perforce corrected during the Fifth and Sixth Plans when the 'fuel' group showed the highest rate of increase due to the effect of the two

petroleum price shocks of 1973-74 and 1979-80. The rate of rise in 'manufactured products' was the highest during the Seventh Plan, but this group made the highest weighted contribution to the general price rise during the past four Plans, viz., Fourth, Fifth, Sixth and Seventh due, in part, to its rising weights in the successive index number series. The contribution of 'primary articles' to the general increase in prices has declined over the period reflecting, to an extent, also, the gradual decline in its weights in the general index.

12. The evidence of an explicit inflationary gap in the economy over the Plan periods under study, which could only be reflected in pressures on the general price level, can be obtained if we study the trends in aggregate demand and aggregate supply (Table 6). It can be seen from Table 6 that throughout the period the growth in real output (GDP at constant prices) has been much less than the growth in money expenditure on that output. Thus, the price increases during the Plan periods varied with the size of the inflationary gap, though not in a proportionate manner. This is indeed a crude measure of the imbalance between aggregate demand and aggregate supply and it is the end result of a multiplicity of factors (both real and monetary) operating in the economy. Alternatively, the differences in the growth rates of real

Table 6 : A Crude Measure of Inflationary Gap : Average for Plan Periods
(In Percentages)

	Annual Plans	IV Plan	V* Plan	VI Plan	VII Plan
Growth in expenditure on gross domestic product at current market prices	+12.0	+11.2	+10.8	+15.1	+13.9
Growth in gross domestic product (GDP) at constant prices	+3.9	+3.4	+3.8	+5.6	+5.6
Changes in WPI**	+8.1	+9.0	+8.1	+8.8	+6.6

* Fifth Plan Period is taken to cover 1974-75 to 1979-80 for the purpose of this article.

** WPI for the three Annual Plans at base : 1961-62 = 100, for IV, V and VI Plan at base : 1970-71 = 100 and for VII Plan at base : 1981-82 = 100.

GDP and aggregate monetary resources (M3) also exhibit such a crude measure of inflationary gap (Table 7). Broadly, the trends in the output in agricultural and industrial sectors and impact of external factors on the supply side and growth in population, money supply, Government expenditure and deficit financing on the demand side, have been the most crucial factors affecting prices during the period under review.

Table 7 : Average Annual Variations* in Macro-economic Indicators
(In Percentages)

Indicators	Three Annual Plans	IV Plan	V Plan [@]	VI Plan	VII Plan
Real GDP	3.9	3.4	3.8	5.6	5.6
M ₃ **	10.6	15.5	17.8	16.9	17.7
WPI	8.1	9.0	8.1	8.8	6.6
CPI	8.0	7.7	6.7	10.1	8.0

* Plan-wise variations are averages of annual variations for all indicators.

@ Fifth Plan is taken to cover 1974-75 to 1979-80 for the purpose of this article.

** Variations on the basis of last Friday of March.

Group-wise Trends During Plan Periods

13. During the Annual Plans the overall increase in price rise was 25.7 per cent which worked out to 7.9 per cent per annum (compound). Prices of all the major groups rose but the 'primary articles' showed the highest price rise (8.4 per cent) and contributed most (49.2 per cent) to the general increase in WPI. At a more disaggregated level, all the agro-based commodity groups, viz., food articles, non-food articles, minerals, food products, beverages, tobacco and tobacco products, and rubber and rubber products, experienced increases ranging from 21.6 per cent to 48.7 per cent (Table 8).

14. The Fourth Plan witnessed an overall rise of 53.0 per cent or 8.9 per cent per annum. Rise in the price of 'primary articles' was the highest at 9.6 per cent per annum. Large increases were recorded by food and non-food articles, minerals, food

Table 8 : Percentage Variation of Groups to the Rise in General Index of Wholesale Prices*

Groups	Three Annual Plans	IV Plan	V Plan	VI Plan	VII Plan
1. Food articles	30.1	47.7	36.6	59.4	36.0
2. Non-food articles	21.6	76.6	32.7	64.2	33.1
3. Minerals	25.1	128.8	246.0	30.2	-2.8
4. Food products	48.7	62.0	25.5	50.7	45.1
5. Beverages, tobacco and tobacco products	41.3	40.1	53.0	36.1	87.1
6. Textiles	12.8	58.6	50.7	37.8	31.8
7. Wood and wood products	19.3	21.1	90.8	68.5	26.2
8. Paper & paper products	5.6	41.4	83.7	53.1	58.8
9. Leather & leather products	7.4	69.1	102.6	19.9	61.0
10. Rubber & rubber products	21.6	9.0	104.1	56.0	38.0
11. Chemicals & chemical products	19.1	32.4	70.7	47.0	25.0
12. Non-metallic mineral products	8.6	38.3	102.7	72.6	21.1
13. Basic metals, alloys & metal products	17.4	63.1	81.2	66.7	67.0
14. Machinery & machine tools	12.2	38.9	73.0	40.4	48.2
15. Transport equipments	13.9	29.7	85.4	40.8	48.5
16. Miscellaneous products	10.2	22.6	76.0	28.6	15.5

* WPI for the three Annual Plans at base : 1961-62=100, for IV, V and VI Plans at base : 1970-71=100 and for VII Plan at base : 1981-82=100.

** Fifth Plan is taken to cover 1974-75 to 1979-80 for the purpose of this article.

products, textiles, leather and leather products, basic metals, alloys and metal products. Minerals alone rose by 129 per cent during the Fourth Plan period.

15. The Fifth Plan period (1974-75 to 1979-80 by our coverage) witnessed 55.8 per cent increase in WPI or an inflation rate of 7.7 per cent per annum. The 'fuel' group rose by 116.8 per cent, the highest of the three major groups; but the largest contribution to the general price rise came from 'manufactured products'. Minerals recorded the highest increase of 246.0 per cent over the period of six years.

16. Better management of supply and demand in the Sixth Plan period kept annual inflation at the single-digit level in almost all the years despite a poor monsoon in 1982-83. Double-digit inflation occurred only in 1980-81 which was mainly a spill-over of the inflation which began in 1979-80 due to the oil price hike. The price rise per annum was 9.2 per cent. The highest increase was in the 'fuel' group and the highest contribution to price rise was by 'manufactured products' at 42.8 per cent.

17. The 6.6 per cent per annum increase during the Seventh Plan has been the lowest amongst all the Plans. 'Manufactured products' witnessed the highest increase (7.5 per cent) and contributed most (63.9 per cent) to the increase in the general price level.

Phase-Wise Landmarks in Price Behaviour

18. Inflation rates in India have not necessarily followed the sequence of the Five-Year Plans. Based on macro-economic and micro-market factors, price variations have cut across the Plan periods and shown considerable volatility. In all, seven phases of price movements can be discerned during the 24-year period. High rates of inflation were witnessed during the years 1966-67 (13.9 per cent) and 1967-68 (11.6 per cent) followed by four years of declining or gently rising price levels upto 1971-72. A sudden spurt was noticed in 1972-73 (10.0 per cent) which accelerated in 1973-74 (20.2 per cent) and 1974-75 (25.2 per cent). This was followed by a distinct phase of four years

(1975-76 to 1978-79) experiencing relative price stability. In 1979-80, again, prices shot up by 17.1 per cent and then by 18.2 per cent in 1980-81. The rate of increase, though still high, decelerated to 9.3 per cent in 1981-82. Thereafter, for five years, from 1982-83 to 1986-87, price increases were moderate, and for the following three years (1987-88 to 1989-90), they have accelerated and been quite sizeable.

19. During the first phase, price rise was phenomenal in the first two Annual Plan years, 1966-67 and 1967-68, due to the severe droughts of 1965 and 1966 and the consequent decline in agricultural and industrial production, the latter mainly due to the non-availability of agricultural raw materials. In addition, foreign exchange reserves were reduced to low levels because of the suspension of aid during the military conflicts of 1962 and 1965 and also the large trade deficit. Hence, India had to devalue her currency by 57.5 per cent on June 6, 1966. This led to an increase in import costs at a time when food imports had become imperative. Hence during the first phase, the large import bill combined with industrial stagnation, decline in public investment and slow-down in private investment, led to a recession which was accompanied by high inflation fuelled by wage and cost increases due to rise in the prices of food articles and industrial raw materials (see Tables 9, 10, and 11).

Table 9 : Averages of Annual Variations in the Indices of Agricultural and Industrial Production During Plan Periods

Based on Index Numbers	(In Percentages)				
	3 Annual Plans	IV Plan	V Plan*	VI Plan	VII Plan
1. Agricultural production	+7.0	+3.1	+1.3	+6.0	+4.1
a) Foodgrains	+9.4	+2.8	+1.6	+6.6	+4.8**
b) Non-foodgrains	+2.4	+4.0	+0.9	+5.1	+4.5**
2. Industrial production	+2.8	+4.4	+4.9	+5.9	+8.4

* Fifth Plan period is taken to cover 1974-75 to 1979-80 for the purpose of this article.

** Data available only for first four years of the Plan.

Table 10 : Annual Variations in Price Indices* of Foodgrains, Cereals and Pulses

	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
(In Percentages)									
I. Foodgrains	18.5	24.9	-12.0	3.6	-0.7	3.4	15.6	18.7	38.0
A) Cereals	18.8	18.8	-5.0	2.7	-0.9	1.9	13.6	16.4	42.3
1. Rice	23.3	18.9	-2.0	0.1	2.4	3.0	12.6	20.9	30.7
2. Wheat	19.1	20.3	-4.4	5.1	-2.9	-0.5	7.0	1.6	69.2
B) Pulses	17.6	45.9	-32.0	7.4	0.4	10.7	24.6	28.3	21.9
1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
I. Foodgrains	-11.1	-12.3	11.6	1.3	16.9	9.6	9.1	9.4	-1.9
A) Cereals	-10.0	-10.7	4.7	-2.3	12.4	11.2	11.5	8.4	-5.0
1. Rice	-2.4	-12.2	3.3	5.4	11.9	10.0	15.0	12.4	-6.1
2. Wheat	-12.8	-4.8	3.0	-1.7	9.6	8.7	11.2	2.2	-2.5
B) Pulses	-15.8	-19.8	47.7	14.8	32.4	4.8	-5.8	16.8	18.9
1985-86	1986-87	1987-88	1988-89	1989-90					
Foodgrains	6.3	3.9	9.2	14.5					
A) Cereals	6.5	5.9	7.6	11.7					
1. Rice	4.5	5.8	8.6	10.6					
2. Wheat	7.4	6.7	5.9	14.6					
B) Pulses	5.5	-7.0	19.6	30.2					

* WPI from 1966-67 to 1968-69 at base: 1961-62 = 100; from 1969-70 to 1981-82 at base: 1970-71 = 100 and from 1982-83 to 1989-90 at base: 1981-82 = 100.

Table 11: Weighted Contribution of Composite Indices[⊙] of Selected Commodity Groups to the Rise in General Index

(In Percentages)

Commodity group/ commodity	Three Annual Plans	IV Plan	V Plan*	VI Plan	VII Plan
A. Consumer articles ⁺	71.4 (9.5)	55.3 (8.6)	37.8 (5.4)	45.7 (8.6)	40.7 (6.7)
a) Food articles	38.2 (9.2)	27.2 (8.1)	19.1 (5.3)	27.3 (9.8)	18.1 (6.3)
b) Food products	26.0 (14.1)	18.0 (10.1)	7.5 (3.9)	12.0 (6.8)	11.5 (7.7)
c) Cotton textiles	4.2 (4.2)	8.4 (9.7)	6.5 (6.5)	4.0 (5.5)	6.3 (7.2)
B. Industrial raw materials ⁺⁺	8.8 (5.8)	17.2 (12.9)	15.4 (8.7)	13.4 (8.9)	8.9 (4.2)
C. Administered commodities ⁺⁺⁺	9.3 (5.9)	15.9 (9.1)	33.5 (14.0)	27.8 (11.2)	13.9 (5.1)

⊙ WPI for the three Annual Plans at base: 1961-62 = 100, for IV, V and VI Plans at base: 1970-71 = 100 and for VII Plan at base: 1981-82 = 100.

Figures in the brackets are compound rates of price rise.

* Fifth Plan is taken to cover 1974-75 to 1979-80, for the purpose of this article.

+ Consumer articles consist of food articles, food products, cotton textiles, kerosene, beverages, tobacco and tobacco products (excluding industrial alcohol), footwear, drugs and medicines, cosmetics, soaps, safety matches, tooth brush and salt.

++ Includes fibres, oilseeds and minerals.

+++ Includes coal, iron and steel, non-ferrous metals (excluding aluminium for 1989-90), petroleum crude and natural gas, mineral oils, electricity, fertilizers and cement (excluded for 1989-90).

20. The last Annual Plan year (1968-69) and the first three years (1969-70 to 1971-72) of the Fourth Plan witnessed only modest price rise due to good agricultural production following, apart from the generally excellent rainfall, the advent of the green revolution. However, the recovery of industry from the recession of the drought years was hampered due to fall in aid from foreign countries and cut in Government expenditure following the policy of reducing government deficits to curb drought-induced inflation. This led to a fall in public expenditure in transport, communications, electricity, gas and water supply, which resulted in persistent

shortages in these key sectors.

21. However, in the first year, 1972-73, of the third inflationary phase (1972-73 to 1974-75), harvest was very poor and there was an 8.1 per cent fall in agricultural output -- both foodgrains and non-foodgrains - and a slight fall in GDP. However, the rise in food prices in the world markets in mid-1972 due to decline in production and low world food stocks and the discontinuance of the U.S. Government's Public Law 480 Program of subsidised food exports, made the situation even more grave. India was able to import much less wheat than it required, leading to a fall in the availability of foodgrains in 1973. Even the limited quantity of wheat was imported at very high prices and coupled with rapid growth in monetary liquidity in 1971-72 and 1972-73, food prices spurted during 1972-73, 1973-74 and 1974-75. The inflation rate in 1972-73 rose to 10.0 per cent. In addition, OPEC raised the oil prices in October-November 1973 by almost four times. The WPI of minerals rose by 81.2 per cent in 1973-74 and 87.9 per cent in 1974-75. The balance of payments came under severe strain as the bill for food, fertilisers and petroleum products doubled in 1973-74 compared to what it was in 1972-73. Strong measures had been taken to check the expansion in money supply since May 1973 to stem inflation. However, despite a deceleration in monetary growth, a substantial improvement in agricultural production and a modest increase in GDP, the terminal year, 1973-74, of the Fourth Plan witnessed a price rise of 20.2 per cent (18.7 per cent increase in prices of foodgrains) due to distributional bottlenecks, the ripple effect of the oil price hike, the emergence of inflationary psychology which stimulated hoarding and speculation and the cumulative impact of excessive money-creation in the previous few years. The first year of the Fifth Plan, 1974-75, recorded the sharpest rate of increase in prices in post-World War II years due to the carry-over of inflation-generating factors from the preceding years. Indicators of this in the first part of the year prompted the Government to take strong measures to control inflation by curbing expenditures and curtailing disposable incomes. These measures which reduced aggregate demand also had a notable impact on expectations. It led to a decline in WPI in the second half of 1974-75 despite a poor performance on the output front. Even so, the annual price rise was a staggering 25.2 per cent.

22. The first year (1975-76) of the fourth phase (1975-76 to 1978-79) saw a reversal of galloping inflation in response to strong governmental measures aided by a good *rabi* crop in 1973-74, increased imports of grains in 1974, uptrend in industrial production at 6.7 per cent in 1975-76, a substantial rise in GDP at 9.0 per cent and, above all, an exceptional harvest in 1975-76 (15.2 per cent growth in agricultural production and 22.0 per cent in foodgrains) which helped build up a large stock of cereals with public agencies, thus eliminating the need for further food imports by 1976-77. In the meantime, the balance of payments position had improved considerably due to increase in aid, low-tranche drawings on the IMF, increase in remittances of non-resident Indians from abroad, rise in exports due to additional export incentives and appropriate effective exchange rate policy. In the following year, 1976-77, the prices rose once again, though moderately, due to decline in agricultural production because of inadequate monsoon and erratic industrial output, especially in the agro-based industries due to shortage of raw materials. Non-food articles contributed 81.4 per cent to the rise in general WPI in 1976-77. Also there was a sharp increase in reserve money in 1976-77 due to expansion in net foreign exchange assets of the RBI as a result of the large inflow of remittances from abroad, increase in RBI credit to government and refinance to banks. These factors led to a 5.2 per cent rise in WPI in 1977-78 as well. In 1978-79, WPI did not register any significant increase due to comfortable output and stock position in the economy. Those seeking traditional monetarist explanation for inflation during this phase were puzzled by what has been described as 'the case of missing inflation' (Ghose, et al, 1985).

23. This relatively stable price situation was upset during the following years, 1979-80 to 1981-82, after the introduction of the budget for 1979-80 in February 1979. Besides a heavy dose of indirect taxation which normally has a strong inflationary bias, the budget provided for a large overall deficit which also exerted pressure on the price level. These inflationary precursors were followed by the second oil shock in July 1979. Like the first shock, this coincided with a very poor harvest in 1979-80. Foodgrains prices rose by 7.4 per cent in 1979-80 and 16.9 per cent in 1980-81. The pressure on prices would have been even

but for the release of 14 million tonnes of cereals from public sector stocks. In 1980-81, the first year of the Sixth Plan, the pace of price increase accelerated to 18.2 per cent, coming on top of a 17.1 per cent increase in 1979-80, due to the lagged effects of the drought year (1979-80) and the consequent adverse effect on industrial production together with the doubling of petroleum prices in 1980. However, both agricultural and industrial output expanded during the year with GDP rising by as much as 7.0 per cent. The output of foodgrains, which had been seriously affected by the drought of 1979-80, reached a new record level (19.8 per cent) during 1980-81 aided by overall normal weather and various steps taken by the Central and State governments to improve agricultural production. Industrial production improved due to easing of infrastructural constraints and better labour relations. However, balance of payments deteriorated and M3 growth was higher (18.3 per cent coming on top of an increase of 17.3 per cent in 1979-80). This improvement in industrial production and agricultural production was carried over into 1981-82 when the WPI rise decelerated but remained high at 9.3 per cent; the deceleration was aided by the 5.6 per cent growth in agriculture, leading to higher procurement, and 8.6 per cent growth in industry. M3 growth had also decelerated to 12.8 per cent. GDP growth at 6.0 per cent was also high.

24. The sixth phase (1982-83 to 1986-87) was characterised by moderate inflation. Agriculture suffered in 1982-83 (decline of 3.8 per cent) due to drought, floods and cyclones and industrial growth also decelerated (4.2 per cent) due to demand constraints leading to a lower growth in GDP of 3.0 per cent. Foodgrains production declined by 3.4 per cent. However, due to the preparedness of the public distribution system (PDS) and fairly large stock of foodgrains with it, inflation could be kept under check at 4.9 per cent. During 1983-84, the foodgrains production was very high at 151.54 million tonnes and industrial growth accelerated to 6.1 per cent. However, the lagged effect of excess monetary growth in the previous years and the surfacing of inflationary expectations due to the low levels of government food stocks pushed up inflation to 7.6 per cent. As a result, strict money supply control measures were undertaken by virtue of which price rise decelerated to 6.4 per cent in 1984-85. The

maintenance of foodgrains production, active and successful operation of PDS and timely imports to augment supplies of sugar and edible oils kept inflationary pressures under check. The first year of the Seventh Plan, 1985-86, witnessed the lowest annual price rise (4.5 per cent) during the Plan mainly due to effective supply management policies and a tight control on M3 growth. Agricultural and industrial growth was modest. Some agricultural product prices (jute, cotton, tea and coconut) fell due to glut, while wheat and sugar prices rose. Prices of 'manufactured products' were by and large stable. The rate of inflation accelerated slightly in 1986-87 but was still within a reasonable level at 5.8 per cent. Prices of food articles were stable but those of commercial crops rose due to cut in output consequent to the glut in 1985-86. The price rise of non-food articles and food products contributed over 35 per cent to the general price rise in 1986-87. The growth rate of industrial sector at 9.1 per cent aided the moderation of price level despite a 3.7 per cent decline in agricultural production due to unsatisfactory monsoon for the third year in succession.

25. The seventh phase experienced a rising inflation rate again due to a severe drought in the year 1987-88 which came at the end of a run of four poor rainfall years. It had a severe impact on the *kharif* crop and as a result, agricultural output fell mainly due to fall in foodgrains production. Industrial production also decelerated (7.3 per cent against 9.1 per cent). However, GDP rose in 1987-88 by 4.1 per cent. The rise in prices at 8.2 per cent was also moderate compared to earlier drought years due to better supply management made possible by availability of large stocks of foodgrains and timely imports of essential commodities in short supply like edible oils and pulses. The index of the 'primary articles' rose mostly due to price rise in cereals and pulses and it contributed 47.0 per cent to the price rise. Despite a bumper *kharif* harvest in 1988-89, prices declined only moderately to 7.4 per cent. While this may be attributable to the increase in prices of administered commodities, railway freight and excise levies imposed in the 1989-90 central budget, rise in prices of some articles of mass consumption like foodgrains, sugar, *khandsari* and *gur* and cotton textiles, contributed significantly to the general price rise.

26. In 1989-90, the price rise was the same as in 1988-89, viz., 7.4 per cent. This absence of deceleration of price rise despite good agricultural and industrial production and the absence of any apparent external shocks, is quite revealing. Items of mass consumption witnessed large price increases. This inflationary situation was the cumulative result of a number of factors like supply-demand imbalances, constraints in easing shortages through imports due to tight foreign exchange reserves, increases in administered prices of agricultural and industrial commodities, rise in import costs and higher growth of liquidity arising from the persistently large fiscal deficits in the past few years (RBI, 1990, p.70).

Concluding Remarks

27. The foregoing review brings out an interesting aspect of the vicissitudes of inflation in India which is that the periods of high inflation are soon followed by periods of relative price stability. This seems to be the logical consequence of India's economic structure and fairly sensitive policy responses by the authorities to specific exigencies which give rise to macro-economic and sectoral imbalances.

28. Of the ten phases of price movements since the advent of planning in India [including those identified in Velayudham (1967) during the first three Plan periods], five have been phases of high inflation including the current phase which began in 1987-88. Each of the first four rising phases have been followed by falling or relatively low rates of inflation. On an average, the inflation rate as measured by the official WPI for the 24-year period under study from 1966-67 through 1989-90 works out to 8 per cent per annum, i.e., within single digit.

29. Even the 8 per cent inflation rate, however, seems to have created many distortions in the economic system. One of them undoubtedly has been the relatively high rates of increase in the prices of articles of common consumption. As a result, during the later part of the period under review, the inflation rate as measured by CPI has generally remained higher than that measured by WPI. There have also been distinct signs of widening

disparities between the two sets of indices as a result of higher transport and handling costs and trade margins. To an extent, the occasional spurts in inflation rates have been contributed by somewhat inflexible methods of price fixation for administered commodities resulting in occasional bouts of price revisions for them.

30. The causes triggering off high inflation phases have differed from period to period. A common feature has been the dip in supplies of foodgrains and agriculture-based raw materials for industry following poor agricultural crops. In this respect, a secular pressure on the prices of commodities has no doubt originated in a steady increase in the country's population, which is reflected in inadequate per capita availabilities of many commodities of common consumption. A second feature that stands out is the role of two petroleum price shocks and occasional spurts in administered prices. To some extent, increases in the import costs of various commodities have been the third factor contributing to inflation in India. A final factor, which has operated almost as a secular feature in the forces inducing inflation, has been the rapid growth in aggregate monetary resources originating essentially in budgetary deficits. The role of this factor has become particularly conspicuous in years of supply shortages when imbalances between aggregate demand and aggregate supply got accentuated and pressures were brought to bear on commodity prices. The behaviour of commodity prices during the current phase of high inflation from 1987-88 through 1990-91 (so far), despite three successive years of good agricultural crop, is rather conspicuously explained by "the high levels of budget deficits incurred almost year after year with consequent expansionary impact on money supply" [RBI, 1990, p. 142].

REFERENCES

1. Ahluwalia, Isher J. (1979) : *Behaviour of Prices and Output in India : A Macroeconometric Approach* (Macmillan Company of India).
2. Bhatia, K.K. (1977) : "A Comparative Study of Wholesale and Consumer Price Index numbers," *Indian Labour Journal*, July (Labour Bureau, Shimla).
3. Chandhok, H.L. (1978) : *Wholesale Price Statistics - INDIA - 1947-1978* (Economic and Scientific Research Foundation, New Delhi).

4. Das, Debendra K. (1987) : *Inflation in Indian Economy Under Five Year Plans* (Deep and Deep Publications, New Delhi).
5. Deshpande, R. S. (1985) : *Price Indices and Their Policy Uses* (Centre for Policy Research) (Oxford & IBH Publishing Co., New Delhi).
6. Ghose, D., Madhur, S. and Roy, P. (1985) : "Has Monetarism Failed in India? The Case of Missing Inflation", *Economic Bulletin for Asia and the Pacific*, December (United Nations).
7. Government of India, Planning Commission (1951) : *First Five Year Plan* (New Delhi).
8. --do-- (1961) : *Third Five Year Plan* (New Delhi).
9. --do-- (1973) : *Draft Fifth Five Year Plan, 1974-79 (Part I)* (New Delhi).
10. Gupta, Suraj B. (1979) : *Monetary Planning for India* (Oxford University Press).
11. Gupta, S. P. (1989) : *Planning and Development in India - A Critique* (Allied Publishers, New Delhi).
12. Krishnaswamy, K. S. (1976) : "Thoughts on Inflation and Distribution", Presidential Address to the Fiftyninth Annual Conference of the Indian Economic Association, Mysore, December 28, 1976, *Indian Economic Journal*, October - December.
13. Lahiri, A. K., Madhur, S. and Wadhwa, W. (1985) : "Price Determination in a Macro-econometric Framework", *Economic Bulletin for Asia and the Pacific*, June, United Nations.
14. Patnaik, Prabhat (1984) : *Time, Inflation and Growth : Some Macro-economic Themes in an Indian Perspective* (R. C. Dutt Lectures on Political Economy, 1984, Centre for Studies in Social Sciences, Calcutta (Orient Longman, 1988).
15. Raj, K. N. (1982) : *Report of the Working Group on Savings* (Reserve Bank of India, February).
16. Rao, J. C. (1983) : "Money and Prices : An Empirical Study of the Indian experience" (*Reserve Bank of India Occasional Papers*, June).
17. Reserve Bank of India (1985) : *Report of the Committee to Review the Working of the Monetary System* (Bombay).
18. Reserve Bank of India (1989) : *Annual Report, 1988-89*.
19. Reserve Bank of India (1990) : *Annual Report, 1989-90*.
20. Velayudham, T. K. (1967) : "Price Trends During Three Plan Periods", *Reserve Bank of India Bulletin*, June.

REVIEW ARTICLES

Development Planning – à la Indien*

A. Vasudevan®

THE decade of the 'eighties has been marked by a shift away from planning as is commonly understood, to market orientation. In general there is a considerable loss of prestige for 'planning'. But Chakravarty's main defence for publishing the book—which arose from his three Radhakrishnan Memorial Lectures at All Souls' College, Oxford, in 1985 – is to underscore his viewpoint that planning is not a mere command from above but an 'instrumental inference'. As he put it, "it is perfectly possible to allow the macro goals of a system and the principal action directives to derive from a properly formulated plan, while its micro analogues are left to be implemented through the market" (pp.4-5). Chakravarty agrees that market could be a good coordinating system or 'servo-mechanism'. Nonetheless, planning as a strategy, he argues, *à bonne raison*, cannot be "easily dismissed on the grounds of efficiency" (p.5). He thereby allows the possible existence of particular planning strategies that could be inefficient. Economic efficiency, however, is an important consideration for a "system" to function, and it could be, as Chakravarty recognizes, secured and even improved upon by market signals. Yet, in his view, there would still be a need for the 'visible hand' of planning, for, many of the "problems involving expansion and modification of the resource base itself required far-sighted action which is beyond the decision horizon of private actors" (p.6). He also poses the

* This article is a review of *Development Planning – The Indian Experience*, by Sukhamoy Chakravarty, 1987, Oxford, Clarendon Press, pp. ix + 137, Rs. 90.

® Dr. A. Vasudevan is Director in the Department of Economic Analysis and Policy.

familiar question, namely, "Can a market system, especially an open trading system, provide the needed set of signals?" (p. 43).

2. The superiority of 'planning (as 'instrumental inference') over 'market' (of the *laissez faire* vintage) is, in the view of the reviewer, the central message of the book. But this is not a matter where one could exercise a choice of one over the other. For, one need not be averse to market mechanism so long as it promotes "goal-adequate behaviour" sustaining the transitional paths from the initial (economic) states to desired states. But Chakravarty gives the impression that goal-adequate behaviour can be obtained only under planning wherein there could be, in his view, scope for both price and non-price adjustments. But this viewpoint raises some interesting questions. How do we *a priori* identify a behaviour as goal-adequate? How should one establish, under planning, "*behavioural patterns which will set the system on goal - adequate trajectories*"? (p. 42) And why such behavioural patterns cannot be secured under market-oriented systems?

3. One might be tempted to argue that unlike planning where there would be some direction from the 'visible hand', market mechanisms would allow for flexible adaptations to specific (or evolving) situations, thereby providing for self-correction. Market agents, one might point out, could well be rational in their **reactions to expectations** of economic outcomes, assuming, of course, that markets as they are understood, operate under business management principles in a framework of a modicum of direction 'from above'.

4. Chakravarty's delineation of the foundations and evolution of India's development strategy is most fascinating in many respects. One could smell the air of romanticism of the history of ideas on India's approach to economic development so succinctly captured by the author. The puritans (among the followers of economic history), however, might bemoan the inadequate referencing to the Gandhian Plan, the People's Plan and the later day version of Royist (M.N. Roy's) approach of the 'forties but these are not all that relevant for an analysis of the recent development experience of India.

5. Chakravarty has neatly brought out the weaknesses in the Mahalanobis-Nehru approach (But why add Nehru here except to emphasize that Nehru supported Mahalanobis in the latter's presentation of a development strategy from the Second Five Year Plan onwards. Nehru's own input to the approach is not as clear as is made out to be, even today. A number of objective observers believe that Nehru represented not one class of ideas but several). Mahalanobis' approach, it may be recalled, was built essentially on the premise that unemployment in India could not be eliminated unless capital goods sector was expanded. The 1954-55 conditions suggested to Mahalanobis that a firm agricultural base had already been provided and this therefore had warranted large investments to take place in the capital goods sector. But to meet the rise in demands arising from the increased incomes that flow from additional investments in the capital goods sector, Mahalanobis provided for encouragement of factory, village and small-scale industrial production of consumer goods, which would essentially be less capital intensive. But this approach did not take into account the fact that the initial conditions that provided the basis for large scale capital investments were fragile. Indeed, Chakravarty, in his description of the strategy in operation during 1950-'65 (which should have been more correctly 1956-'65) points this out when he showed that there were two exogenous shocks in the form of increased defence spending (in 1962) and two successive monsoon failures in the mid-'sixties. Moreover, the social valuation of consumption at different points of time was overlooked in the Mahalanobis approach. There were, besides, a host of other aspects that should have been given greater attention that they had actually received, viz., the phasing of investment, the policy frame for agriculture, the need to carry out land reforms and the financing of public investments. Furthermore, as critically shown by Chakravarty, the lack of adequate recognition of the distributional aspect in the first three plans (1951-'61) in the presence of the classic question of present-future choice- 'jam today versus jam tomorrow'- is a major blow to the very *raison d'être* of planning in a poor country.

6. Chakravarty gives the impression that while the case for the Mahalanobis strategy was overstated, the alternative one of

the 'textiles first' *à la* Japanese experience of growth reflected "a much too myopic view of the growth process" (p. 12), considering India's size, resource endowments and opportunities to trade.

7. Undoubtedly, the criticisms of the Mahalanobis approach appearing as they are in the mid-to later- 'eighties have a ring of validity, especially because the critics have benefited from hindsight. This, of course, is not to suggest that Chakravarty has suddenly realized the weaknesses of the Mahalanobis approach. To be fair to Chakravarty, he is one of those who examined the model from a technical angle in the 'fifties through an article entitled, "The Mahalanobis Model of Development Planning", published in *Arthaniti*, in the November issue of 1957. Besides the technical comments on the Mahalanobis model, it must be recognized that there were a number of comments on the policy implications/content of the Mahalanobis approach/Second Plan from several Indian economists during the mid- to later- 'fifties. Chakravarty alludes to the criticisms of Gadgil but in too brief a manner. Even Vakil-Brahmananda critique which, the reviewer suspects, is subsumed under the 'textiles first' argument, is referred to in a very limited manner, as one that advocated an increase in the elasticity of supply of wage goods, namely food and textiles, in the early stages of growth. And Shenoy's trenchant criticism of deficit financing, which, after all, is a comment on the inflationary financing of economic development did not even get a mention in the book.

8. Despite the heated debate on the development strategy-- the Indian debate being the second in chronological terms to the first in the Soviet Union which took place in the mid- ' twenties among the three schools of thought led by Bukharin, Preobrazhensky, and Shanin- Sokol'nikov -- it is not clear as to why the Mahalanobis strategy was supported by such a large number of Indian economists during the 'fifties, who must have been, even by then, aware of the limited use of the Soviet-type of strategy to the Indian situation. Could it be, one might ask, that the lessons of the Soviet experience were not adequately appreciated by the majority of the Indian economists at the time of the formulation of the Second Five Year Plan? Or, could it be that there was inadequate attention

paid to the design? One wishes that the political economy of the times were given more attention than it has so far received.

9. Chakravarty of course faults the design of the plans (p. 85), and holds his own view that a "judicious mix of capital as 'machines' and capital as 'wage good' (e.g., food) can lead to a faster rate of growth than an unbalanced mix" (p. 61). But there is no easy method by which it could be confidently stated that a capital-mix is more judicious than another, except by empirical testing.

10. Having faulted the plan designs, it is only *logical* that the author has considered that inadequacies in implementation are borne out of improper specification of plan models or faulty coordination of activities among the different economic actors. Information failure is also said to have impeded decision-making process that is aimed at goal-adequate behaviour. In such a framework, as the author sees, the administrative processes *per se* would not be responsible for implementation failures. In fact the Professor finds the processes to be sufficiently innovative at least at the Central levels. It is only at the regional levels, there is unevenness in development but even this is viewed as reflective of inadequate resource mobilization at the national level. Multi-level planning may not yield the desired results as 'market socialism'.

11. These views, logical as they seem, are at variance with the common perceptions on plan implementation and about the standards of public administration. Cutting down the size of bureaucracy that is advocated by the author, hardly touches the fringe of the problem. The delays in project execution again is a reflection of only one aspect of the problem. The whole work culture and ethics is viewed by many as at the root of the inefficiency of the public sector which has grown enormously over years.

12. Chakravarty's treatment of some of the current policy issues is very interesting. The rise in incremental capital-output ratio (ICOR) in recent years is said to be partly due to energy-intensive agriculture (as a consequence of Green Revolution) and infrastructure and partly due to the inability of the industrial sector to show signs of increasing returns to scale. The lack of dynamism

in industry is attributed to several factors, some of which however have clearly to do with the adopted development strategy. These are, as Chakravarty enumerates : the erratic pattern of growth in public investment, the slackening rate of growth in real public investment, the smallness of markets for industrial products in India, and the delays in the completion of projects. Very few can find fault with this analysis.

13. The industrial sector performance has to be improved; it is clear, if ICOR is to be kept at a lower level. Its improvement is vital also for the manufacturing goods sector to be internationally competitive and to earn export receipts to meet the growing import needs of the economy in general and the increasing import-dependence of agriculture. For this reason, technology upgradation (or elimination of 'technological lag') would be necessary, together with a supportive import policy that enables a substantial increase in production or productive capacity to take place. Chakravarty is emphatic in arguing that imports, in the current liberalised atmosphere, should not merely substitute for domestic production and that import substitution should be carried out in crucial sectors such as energy, edible oils and nitrogenous fertilizers. He is of the view that while liberalised imports may stimulate exports growth, it may not happen throughout the industrial sector. He considers that stimulus to industrial growth can be secured if public investment is effected for providing infrastructure and R&D support. To undertake such a large amount of public investments, resources have to be mobilised, according to Chakravarty, by taxing luxury consumption, agricultural incomes and incomes arising in the unorganized industrial sector.

14. Who can question these ideas, laudable as they are? They however follow from the logic of the belief in large investments, especially in the public sector. But the question remains, namely, whether the inefficiencies associated with public investment would not entail large social welfare costs. To Chakravarty, this obviously is not so important. He takes the position that market-led growth patterns, which have been efficient in some cases, have been generally at the cost of equity. His defence is that only the 'visible hand' of planning, with large public investments, would secure poverty alleviation and redistributive policies

in a growth context. Fortunately this belief is backed by his own contribution in this area, especially at the time of the Fifth Five Year Plan. He showed at that time that even with a maximum annual output growth rate of 5 to 6 per cent, it would be "impossible to bring about a significant reduction in poverty, howsoever defined, without attacking the problem directly". (p.36). The offshoot of this conclusion has been reflected in the subsequent introduction of several employment programmes under the aegis of planning. But then there are the questions whether high growth rate would mean higher employment and whether such "direct" employment schemes could be sustained for long without imposing a burden on the fisc and without impairing the cherishment of *gainful* employment as a value in itself.

15. Consideration of equity is the hallmark of Chakravarty's approach to planning as a strategy of development and growth. For this reason, he emphasises family planning and large public investment for both material and human capital formation.

16. The book bears the imprint of Sukhamoy Chakravarty's writings: it is precise, scholarly, yet easy to understand. It is also a useful reminder of the rich Indian contribution to the analytics of development planning especially during the 'fifties and 'sixties. One hardly needs to recommend the book as a compulsory reading material for all students of Indian planning and development, since, as they say, *à bon vin point d'enseigne*, that is, good wine needs no signboard.

India's Planning Strategies, Techniques and Performance : A Critical Review*

D.K. Bhatia and S.L. Shetty®

THE size and diversity of literature on the Indian five-year plan models and planning strategy and techniques have been phenomenal. Complex aspects of the plan models have been dissected and their strengths and weaknesses laid bare¹. However, in regard to five-year plan performances, there has not been any comprehensive study dealing with the evaluation of macro-economic as well as sectoral achievements and failures against the backdrop of the ex-ante plan models, strategies and techniques. No doubt, Sukhamoy Chakravarty's (1987) latest contribution in this respect has indeed made the literature richer but it has been of a different genre. Being a memorial lecture, it had to be brief and somewhat sweeping, thus leaving out many details. Also Sukhamoy was a visionary and very few could attain that intellectual stature and finesse to be able to probe into the insights of development theory and the very many issues in development planning that have been thrown up in the context of the Indian experience.

2. Be that as it may, in terms of providing details of plan models and strategies, as also in terms of undertaking a large volume of original empirical work to measure the growth performance of different facets of the Indian economy, the contribution by S.P. Gupta, based as it is on his experience with the Indian Planning Commission and the close association with the

* This article is a review of *Planning and Development in India : A Critique* by S.P. Gupta, 1989, Allied Publishers Pvt. Ltd. New Delhi, pp. xxiv + 535, Rs. 280.

® Dr. D.K. Bhatia and Dr. S.L. Shetty are Advisers in the Department of Economic Analysis and Policy

1. To cite a few studies which explore the evolution of India's five-year plan models. Rudra (1974, 1975 & 1985), Dahiya (1989), and Jain (1986).

preparation of the Sixth (1980-85) and the Seventh Five-Year Plans of India, fills a major gap in the literature on Indian planning.

3. It may be recalled that the Sixth Five Year Plan (1980-85) represented a turning point not only in the strategy of planning but also in the broad philosophy guiding the strategy. The Seventh Plan moved a step further in that direction. On the one hand, target group orientation as a strategy for poverty alleviation and on the other, "removal of direct and indirect bias against export and emphasizing its role in growth, self-reliance and a better exploitation of the country's comparative advantages" (p.23), have become, amongst others, the corner-stone of the new development strategy. Gupta argues that certain past strategies of the development plans are now being seriously questioned. They include, amongst others, the exclusive reliance on new investment for accelerating growth, and the excessive emphasis on the need for self-sufficiency, leading to an indiscriminate protection granted to domestic activities, almost in complete deference to efficiency and incentives. Even as there have existed shifts in strategies, the imperative adjustments in model specifications have been rather slow and unsatisfactory. "This is partly due to the inertia of the academics, technocrats and bureaucrats and partly due to their inflexibility often motivated by vested interests" (p.23). Gupta is not prepared to confer the benefit of doubt on these 'vested interests' for the healthy skepticism that they may nurse regarding the capability of the new strategy to shift the balance of benefits in favour of the poor and the unemployed. The entire theme of Gupta's XXIV + 535 pages contribution is an adverse commentary on the past strategy and a blue-print for "a more conscious choice for the country's pattern of life for the next century . . ." (p.23). Gupta argues that "The Planning strategy in India was based largely on a 'closed economy' assumption, mainly reflecting the Soviet planning. Now the strategy is moving towards an 'open economy' approach" (p.75). To befit this new approach, the planning organisation and processes are required to be redesigned. This new strategy of development is the theme of Gupta's work, but in between he provides a fare of voluminous details on plan models and strategies and plan performances which "not meant only for a narration of all plan successes or failures; its main purpose is to draw lessons from past experiences as a guide for future policies and

programmes" (p. vii). The strength of Gupta's contribution lies in these details.

4. Aside from the 'Introduction' which goes far beyond the task of explaining the book's contents or their rationale and which anticipates, rather in an incoherent manner, very many details of the subsequent results, the book is divided into two parts. Part I is christened as "The Plan", which grossly underestimates what it contains. In its five chapters with a large number of annexures, tabular data, and simulation results, this part presents enormous details about five-year plan models, strategies and techniques, about the organisation and planning process and about macro-level performance. The performance is further divided into (i) macro-economic targets, finance, fiscal and monetary policy issues; (ii) growth, poverty and equity; (iii) employment strategy and modelling; (iv) inter-regional balance; and (v) the role of aid. An original contribution in this part relates to the development of a simplified model to capture the 'interlinks' between the size and pattern of plan financing and the government's fiscal, monetary and financial policies. Part II deals with policies and performances relating to two major sectors, namely, agriculture and industry. Apart from presenting the details of growth at an aggregative level, instability as well as inter-crop and inter-regional differences in agricultural growth and a stylized future strategy has been given in the chapter on 'Agriculture'. The analysis made and conclusions drawn in this chapter are hardly new; they are generally based on secondary research results.

5. The chapter on 'Industry', on the other hand, is a very comprehensive one and with deeper significance. The chapter does not contain, unlike in the case of agriculture, any backdrop review of the evolution of industrialization strategy through various five-year plans. The industrialization experience has been otherwise addressed in the book in a way that it attracts special attention. As many as seven sections in this Chapter are all to be considered as the most original in this book in that they deal with different aspects of the perceived sources of the trouble that India has accumulated for herself in her industrialization process, with independent and fresh model formulations: import substitution, higher product prices both domestically and in international comparisons; deteriorating and

low capital and labour productivities and high remuneration per employee in the public sector; large under-utilization of capacity and consequential effects on unit costs; the negative technical progress and its contribution to higher product prices; the differing movements between technical progress, real wages and real rates of return on capital; and the heavy burden of excise duties and other domestic indirect taxes (particularly effective tax rates on industries). The chapter ends with a substantive section on policy reforms in all these areas. Using a model developed by Chenery and Syrquin (1985) and even modifying it to take cognizance of the existence of separate input-output matrices for domestic and imported inputs in the Indian case, an attempt has been made by the author in this chapter to decompose the effects of aggregate demand on industrial growth, by separating it into intermediate demand and different components of final demand. The results suggest that import substitution started mainly in the latter part of the Second Plan and the entire Third Plan, continued till the Fourth Plan and then became a negative import substitution in the Fifth and the early part of the Sixth Plans. But, in the latter period, the declining contribution from import substitution was compensated for by higher export demand, domestic demand and technological changes. For accelerating growth, more reliance has to be placed on export, technology and domestic demand "even at the cost of a negative contribution from import institution" (p. 359).

6. The section on 'industrial demand and the role of relative prices' attempts to find out (a) the price 'disadvantage' India is facing whereby the price of a commodity in India is higher than the price quoted by a lowest bidder (South Korea and Japan); and (b) the price and income-elasticities of major industrial items for the period 1960-61 to 1981-82. For working out the price 'disadvantage', the data on national currency/ US dollar price generated in the world Bank and UNO's ICP project on "International Comparison of Real Gross Product". The results suggest that there is substantial scope and need for reducing the basic unit costs of all manufactured exportable goods. Likewise, domestically, almost all industrial commodities have a comparatively high negative relative price elasticity and hence the same need for reducing the unit market price for accelerating domestic demand and industrial output.

7. Approaching the sources of industrial growth from the supply angle, the movement in capital intensity of output over time and their differences between different size units and between the public and the private sectors, has been studied in another section. This analysis clearly shows that the public sector has both a low capital productivity and a low labour productivity as compared with the private sector. At the same time, the remuneration per employee in the public sector matched well with that in the private sector and at times even higher. Nevertheless, considering the fact that the public sector industries have different terms of reference from those for private commercial industries, any normative deduction has to be carefully drawn. Besides, the bulk of the basic and a high percentage of intermediate industries, as also a quarter of the capital goods industries, are with the public sector, whereas most of the consumption goods industries are in the private sector. In the same vein, another section of the "Industry" chapter, estimates the extent of underutilization of installed capacity and the scope for reducing unit price and concludes that by improving the capacity utilization ratio, the units' average cost could be reduced by 30 to 40 per cent in the case of basic and capital goods industries, though hardly by 2 to 3 per cent in the case of consumer and intermediate goods industries.

8. The section on "technical progress and the effects on outputs and prices" measures the 'percentage changes' in technical progress between 1960-70 and between 1970-80 for 20 industrial categories and the distribution of gains and losses between real wages and real rates of return on capital. Admittedly, this is the most controversial aspect of the study as the estimation of the "disembodied technical progress" involves the standard assumptions of Hicks-neutral technological change, constant returns to scale and competitive equilibrium conditions. The results suggest that negative technical progress has roughly contributed to 3 to 5 per cent of the annual aggregate price rise over the two decades and that the negative contribution was higher in the 1970s compared to the 1960s. As for the apportionment of 'benefits', the increase in real wages was the highest in the basic and capital goods industries. While this was in conformity with a significant positive technical progress in capital goods industries, in the basic industries this happened despite a heavy negative technical

progress. There was also a significant decline of about 4 per cent per annum during the entire period 1960-80 in the basic goods industries. The inference is that the public sector which dominates the basic industries has a comparatively poor financial rates of return and that wage bargaining capacity of the public sector employees is high.

9. Finally, the sixth section explores the possible role of fiscal factors in contributing to higher prices and lower growth in Indian industries, though it is done in a static sense in that the impact of larger mobilisation of resources on social and economic infrastructural development and industrial growth has not been thought of. Taking the input-output tables and tax rates for 1973-74 and 1981-82, primary and total effective indirect tax burdens have been estimated (other than export and import duties). The results suggest that the difference between the primary and effective rates in almost all sectors is as high as 55 to 65 per cent and that the burden is the highest in petro-chemicals group, followed by metal and metal manufacturing complex, machineries, and the textiles group. The study concludes that "a sizeable part of the non-competitiveness of Indian industries in the external market can be explained thus by the indirect tax structure" (p.458). Even subsidies have not made much of a difference except probably in the basic industry category.

10. The perspectives provided in the seventh and concluding section on industrial policy make a sad commentary on the industrialisation policies pursued so far. Taking the past experience as the basis, the Seventh Plan target of 8 per cent industrial growth is considered "rather ambitious To reach a growth rate close to 8 per cent or higher, a significant acceleration in the domestic demand for manufacturing will be required by increasing the manufactured components of consumption and investments or a significant shift in income distribution towards the rich" (p.488). The Seventh Plan period has seen about 8.4 per cent per annum growth in industrial output, that is, more than 8 per cent practically in every year. Apart from accelerated export growth, all these other elements seem to have played a role in accelerated industrial growth during the period.

11. Analysing the potential growth-generating factors for initiating appropriate policy measures, a number of issues have been identified. Import substitution as a source of growth has run out of steam. Any significant increase in real public sector outlay has become almost impossible due to scarcity of resources. The contribution of agriculture has its upper limit, given the nature of India's factor endowment. The only alternative, therefore, is to increase domestic and export demand by a reduction in cost and prices. The policies hitherto pursued have all hindered this process. Foreign competition has almost been eliminated; domestic competition has also reduced by many regulatory measures including licensing, thus putting effective restrictions on entry. The Government of India does not have effective mechanism for technology transfer. The very low 'disembodied technical progress' in the 1960's and 1970's was largely the outcome of poor management and low quality of human capital. The strong collective bargaining has kept up the wage rates rather high. Labour legislation raised the unit cost of labour, and without a corresponding increase in productivity, it led to higher prices and lower profit margins.

12. The perspectives on policy for industrialization seek to achieve a radical departure from the past. On the one hand, the author reveals that the new set of policy instruments, with the basic spirit of competition as the corner-stone, has already been in vogue. This is so in industrial licensing. In regard to foreign investment and collaboration policies, it is now realised that the old policy overlooked the positive contribution of subsidiaries and branches of foreign companies to the economy through access to advanced technology. There is also a consensus that a significant technology obsolescence in Indian manufacturing is now getting reflected in low total factor productivity. In price policy, unless prices are used as a demand-supply balancing mechanism and as a tool for competition, better uses of resources will not be achieved. Where price controls persist, prices should be regularly reviewed and revised in small doses. In fiscal policy, significant tax reforms have already been effected. Though there is a realisation to that effect, substantive reforms are yet to take place in industrial adaptation (exit policy) and in retrenchment of labour. In financial and credit policy, banking authorities should be given more autonomy and mutual competition, with a clear and monitorable performance

criteria relating to portfolio quality, financial solvency and profitability. The policy of reservation for small-scale industries has given rise to the realisation that it has in many cases resulted in subsidisation of inefficient units; many of them have also become both labour and capital-intensive and also unproductive with high cost. The location policy for the development of backward areas has ignored the cost implications (i.e. subsidisation), as a result of which the overall effort in resources use have proved to be very heavy. Finally, the traditional trade policy has been replaced by a series of positive changes but the existing system of import control remains highly complex. In exports, a significant reduction in unit costs by increasing productivity and reducing all fiscal bias against exports will be needed (It is not clear if it is so even after the exemption of export profits from income and corporate taxation).

13. This theme of open, free and market-dependent economic system runs throughout Gupta's book. This is so even for agriculture. As an extreme instance, Gupta argues that "food-grains prices will have to be released from the shackles of compulsions of the public distribution system and the farmer will have to be given the freedom to sell his produce in the open market at competitive prices" (pp. 342-343). (This of course ignores the fact that in reality today, the farmer generally enjoys this freedom and what is more, the price support operations prevent the prices from falling below a support level). It is interesting that even after providing such a perspective on policy, Gupta should caution us that "the Korean economy is hardly a model of a free trade regime" or "Even in the field of technological adaptation, it will be wrong to presume that appropriate technology adoption is possible under total market condition when we know many countries, including South Korea and Japan and even the U.S., achieved their technological breakthrough in their early stages under strong public controls" (p. 505). It is also a refreshing thought to admit that external competition is not always a necessary condition for technology adaptation. A total reading of Gupta's book gives the impression that these caveats are a kind of lip sympathy for those who consider that in many areas, uncontrolled liberalisation may not necessarily lead to competition. "In fact in many instances, they have resulted in more market imperfections and underutilisation of capacities in the past" (p. 505).

14. A conspicuous aspect of the book is the series of model formulations – whether for macro-economic interlinkages or on industrialization question—with the objective of seeking answers to specific questions. Interestingly, all results provide answers that suit Gupta's view that *dirigisme* model of development has created allround distortions in the Indian economy. It is quite likely that the results are sensitive to specific model formulations or even to the periods and the data base chosen. But, to present any alternative model frame is beyond the scope of this review. We may at this stage make a limited observation that all so-called stylized facts and policy perspectives provided in the book under review do not necessarily follow from the empirical results presented in it. For instance, Gupta concludes that "the effects of this (deficit financing) are getting reflected in higher inflation, a continuous erosion in the real size of the plan, a higher internal debt burden, a 'crowding (out?) effect' felt in the private sector and finally leading, quite often, to infrastructure shortages and in a decline in the real growth of the economy" (pp. 112 - 113). That 'deficit financing' *per se* has a number of distorting effects is readily granted. But, inflation need not necessarily be a monetary phenomenon. The root cause of higher deficit and inflation could also be "structural" in character. There is no evidence of any "crowding out effect" felt by the private sector. Likewise, the quotation cited earlier from page 343 fails to appreciate the role the public procurement and distribution policy has played in making the 'green revolution' a success at least in wheat and rice crops. Such sharp observations on the existing policy as "the need to release foodgrains prices from the shackles of compulsions of the public distribution system" or 'the crowding out effect' felt by the private sector, have no empirical basis, at least not in Gupta's book.

15. Abstracting from the independent model formulations and the new policy perspectives, Gupta's book should disappoint many a student of Indian planning in a few other respects, too. *First*, the book does not contain any Plan-by-Plan account of the performance of the Indian economy against the background of the individual plan models, strategies and techniques. An *ex post* evaluation of the model and sub-model structures, for instance, could have given us interesting insights into the performance of the system of equations which seek to estimate the inter- relationships

between the various macro variables. For instance, in all the five-year plan models the use of the input-output matrix was most crucial for deriving sectoral output, imports and value-added profiles for the terminal year. What has happened to the assumed commodity balances? To what extent the input-output coefficients assumed in say, the Sixth and Seventh Plans, were found to be realistic? To what extent the technological changes taking place in the industrial world disturbed the assumptions of constancy in input-output coefficients? What has been the final outcome on consumption sub-models and the pattern of consumption for different types of goods in relation to the production structure? To what extent the fulfilment of the growth targets in the Sixth and the Seventh Five Year Plans could be explained by their respective model structures (Table 1)? Could it be attributed to an improvement in plan modelling over the years? Or to what extent failures to attain the targets in the earlier five-year plans could be attributed to their model structures? Only then could have the students of Indian planning been able to judge the validity of what Ashok Rudra concluded in one of the most outstanding and fascinating contributions on Indian planning models. He said; "in India the plan models have failed quite dismally - just as badly as planning itself has done" (Ashok Rudra, 1985, p.762). Such pertinent questions have surprisingly remained outside the purview of Gupta's book. It is quite revealing that while dealing with Plan performance in macro-economic terms, Gupta has also ignored real economic aggregates and targets therefor and concentrated on financial aspects for establishing 'interlinks' which also concern governmental policies, covering a wide range including the monetary, fiscal and financial policies. The various scenarios based on simulation exercises concentrate on the role of inflation on the Plan size, etc., without making reference to the effects on output and employment growth and on income distribution issues. Therefore, it does not probably appear odd to the author that in a chapter dealing with "macro-economic" analysis of the "plan performances", the quintessence of the conclusions relates to budgetary deficit, inflation, and a proper sequencing of economic reforms and liberalization in which "the budget deficit and management of domestic demand must always get a precedence" (p.121). Thus, in evaluating plan performances by Gupta, the short-term stabilisation issues have taken precedence over the development goals and performances of Indian five-year plans.

Table 1 : Targetted and Actual Growth Rates Over Plan Periods

(In per cent per annum)

Plan	Target	Actual	Macro variable
1.	2.	3.	4.
First Plan (1951-52 - 1955-56)	2.1	3.6	National Income
Second Plan (1956-57 - 1960-61)	4.6	4.0	National Income
Third Plan (1961-62 - 1965-66)	5.4	2.2	National Income
Fourth Plan (1969-70 - 1973-74)	5.7	3.3	Net Domestic Product
Fifth Plan (1974-75 - 1978-79) [@]	5.5	3.8	Gross Domestic Product
Sixth Plan (1980-81 - 1984-85)	5.2	5.6	Gross Domestic Product
Seventh Plan (1985-86 - 1989-90)	5.0	5.6*	Gross Domestic Product

[@] Inclusive of 1979-90 (i. e. six years)

* Estimated for 1989-90

Note: Targets for the First to Fourth Plans are based on implied growth rates worked out by us.

16. *Secondly*, the book under review has reproduced the bare essentials of all the seven Five-Year Plan models without providing an insight into the model structures. As a result, the reader is unable to appreciate the model formulations without going into the original sources. What is more, even sufficient care has not been taken in ensuring accuracy in the presentation of the model descriptions. For instance, the Third Five Year Plan model was based on a paper by Sukhamoy Chakravarty (1964) which Gupta has reproduced in his book. But, Gupta's version of it is somewhat unintelligible to the reader. It contains several printer's DEVIL, apart from the fact that the model as reproduced by Gupta

has a missing equation - "17 equations with 18 unknowns" (p.31)². Apart from these presentational problems, the book does not contain any reference to the need for critical evaluations of the models themselves and their operational utility. Models have been subjected to such evaluations in the hands of Rudra (1974, 1975 and 1985), Dahiya (1989), Jain (1989) and many others. Even a succinct summary of the issues involved would have been helpful to the reader as he surveys the empirical results, if any, against the specific Plan models.

17. Finally, Gupta has made passing references to the preparation of the five-year plans against long-term perspectives (p.67). Each five-year plan sets out, in quantitative terms, the results of the long-term goals and projections. Students of Indian planning would certainly expect some critical evaluation of such projections and the performances. As per the perspective prepared in the Third Five Year Plan, India would have attained saving and investment ratios of 18-20 per cent by 1975-76 when steel output was to reach 27.4 million tonnes and cement output, 51.3 million tonnes. The saving-investment ratios were soon achieved but steel output still remains at about one-third of what was visualised in the then perspective plan. Each successive perspective plan has the same story to tell (Table 2). These aspects of long-term perspectives have hardly been analysed in literature; around them lies nevertheless an interesting story of achievements and constraints of Indian planning. Any worthwhile study on Indian Planning could not have missed their import. The dichotomy between saving and investment ratios and the lags in the performance of physical output experienced persistently in every five-year plan period lies at the root of the structural maladies afflicting the Indian Planning process. There are two apparent explanations for the dichotomy namely, (i) flawed demographic perspective; and (ii) deterioration in the capital-output ratios, which no doubt deserve special mention, but there are deeper issues of strategy and economic logic embedded in the structure of the Indian economy which are behind these apparent causes. Gupta does not even show an awareness of this crucial question.

2. This has been pointed out to us by Dr. N.D. Jadhav; see his paper in this issue.

Table 2: Perspectives of Development

Macro Aggregates/ commodities	I. Third Plan Perspective*					II. Fourth Plan Perspective					III. Fifth Plan Perspective				
	1960- 61	1965- 66	1970- 71	1975- 76	1968- 69	1973- 74	1978- 79	1980- 81	1973- 74	1978- 79	1983- 84	1973- 74	1978- 79	1983- 84	1985- 86
1. (a) Saving Income Ratio(%)	8.5	11.5	15.16	18.19	8.8	13.2	--	18.0	12.2	15.7	19.0	12.2	15.7	19.0	20.0
(b) Investment- Income Ratio(%)	11.0	14.15	17.18	19.20	10.0	14.5	--	17.18	13.7	16.3	18.7	13.7	16.3	18.7	19.7
2. (a) Coal (million tonnes)	54.6	-	170.180	255.0	71.5	93.5	130	145	79	135	203	79	135	203	238
(b) Finished Steel (million tonnes)	--	-	--	27.4	4.7	8.1	12.5	15.0	5.4	9.4	17.1	5.4	9.4	17.1	20.5
(c) Cement (million tonnes)	8.5	13.0	24.26	51.3	12.2	18.0	27.0	32.0	16.0	25.0	38.0	16.0	25.0	38.0	44.7
(d) Aluminium (000 tonnes)	18.5	80.0	230.250	--	125.3	220	450	500	190	370	600	190	370	600	740
(e) Food-grains (million tonnes)	76	100	125	--	94	129	155	167	114	140	162	114	140	162	170
Macro Aggregates/ commodities	IV. Sixth Plan Perspective					V. Seventh Plan Perspective					VI. Mid-term Appraisal of the Seventh Plan Perspective				
	1979- 80	1984- 85	1994- 95	1994- 95	1984- 85	1989- 90	1999- 2000	1984- 85	1984- 85	1989- 90	1985- 86	1985- 86	1986- 87	1989- 90	1989- 90
1. (a) Saving Income Ratio(%)	21.2	24.5	27.5	27.5	23.3	24.5	25.8	19.5	22.0	21.7	22.0	22.0	21.7	22.0	22.0
(b) Investment- Income Ratio(%)	21.7	25.1	26.9	26.9	24.5	25.9	26.4	21.0	24.4	23.4	23.7	24.4	23.4	23.7	23.7
2. (a) Coal (million tonnes)	104	165	325	325	147	226	417	--	--	--	212	--	--	212	212
(b) Finished Steel (million tonnes)	7.4	11.5	20.8	20.8	8.77	12.6	21	8.8	9.98	10.42	12.8	9.98	10.42	12.8	12.8
(c) Cement (million tonnes)	17.7	34.34.5	65	65	30.1	49.0	87	30.17	33.10	36.49	49.0	33.10	36.49	49.0	49.0
(d) Aluminium (000 tonnes)	192	300	700	700	276.5	499	850	276	264	257	451	264	257	451	451
(e) Food-grains (million tonnes)	109	149.154	205	205	150	178.183	235.240	145.5	150.4	144.1	178.183	150.4	144.1	178.183	178.183

* The Third Plan figures are based on Planning Commission, August 1962.

Source : Except for the Third Plan, respective Plan documents. For the Third Plan, see * above. With a view to condensing the table, the actuals which are generally close to the base period are not presented here.

18. In general, one expected in Gupta's book an evaluation of macro-economic real sector performance as well as sectoral achievements and failures against the backdrop of the Plan models, strategies and techniques, and not just in terms of the structural adjustment development issues which have unfortunately dominated the recent debate on India's development experience. Because of the latter phenomenon, the longer term substantive questions of development which concern saving, capital accumulation, structure of output, and many other real sector issues, have been relegated to the background, and questions of short-term stabilisation have come to the forefront. Gupta's book under reference, by and large, belongs to this unfortunate genre. And hence it has failed to provide even a semblance of an answer to the basic question on Indian planning: what has been the framework, what has been the achievement, and why has been the achievement what it has been ?

19. These few critical comments are not intended in any sense to underestimate the importance of Gupta's contribution. It is indeed substantial. Before we conclude this review, we are constrained to make a suggestion which is that if a revised edition of the book is ever to be contemplated, it deserves a more careful editing. Apart from the errors contained in the model frames presented above, there are a number of drafting errors and errors in tables which require correction. Thus, we are told of 'solow' tradition (p. 440) and Hick-neutral technological change (p. 434). The phrases like value-added (p. 224 & p. 396) and transports (p. 397), hit you on your face. There is also a 'circuiters logic' (p. 489). Then there are expressions truly giving circular reasoning. In one case, the percentage column is captioned as 'lakhs' (p. 228). There is a total mix-up between 'social rate of return' and 'economic rate of return' (pp. 73-74). For the public sector projects covering non-basic sectors, the criterion is surely based on an 'economic rate of return' of 12 per cent which is "estimated on the basis of average profitability underlying the investment allocation of the plan" (p. 73). These, we believe, are only a few examples.

References

1. Chakravarty, Sukhamoy (1987) : *Development Planning : The Indian Experience*, Clarendon press, Oxford.
2. Dahiya, Bhagwan (1989) : *Planning Theories and Techniques in India : A Critique*, Concept Publishing Company, New Delhi.
3. Jain, Anil Kumar (1986) : "Strategies and Techniques of India's Five-Year Plans", *Economic Bulletin for Asia and the Pacific*, January.
4. Rudra, Ashok (1985) : "Planning in India : An Evaluation in Terms of Its Models", *Economic and Political Weekly*, April 27