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The Case of India, 1950-1965

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Economic Development Reports, No. 87

January 1968

PROJECT FOR QUANTITATIVE RESEARCH
IN ECONOMIC DEVELOPMENT
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Harvard University
Cambridge, Mass.

DOMESTIC DEMAND AND FOREIGN TRADE PATTERNS IN ECONOMIC DEVELOPMENT

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The purpose of this paper is to quantify and analyze the pattern of growth in the Indian economy during 1950-1965 with a view to identify the role of domestic demand and foreign trade as the determinants of observed structural transformation. Part I of the paper provides a general introduction to the problem; Part II presents the algebraic formulation of the inter-industry model used in the analysis, while Parts III and IV interpret the quantitative results and present some general conclusions.

Part I

The process of economic development is not a collection of random, purposeless "happenings," but one of systematic

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* The author wishes to thank Professor Hollis B. Chenery for many helpful suggestions and criticism of the paper. Indeed, this paper owes more to him than a formal acknowledgement would suggest. In addition, Belle Cole, Joseph Stern and Lance Taylor contributed valuable suggestions and advice at various stages. Dr. Morton Grossman's inexhaustible knowledge of the Indian economy was valuable in providing a perspective for evaluation of specific results. Theodore Taylor of the Harvard Computing Center provided help in computations. The mistakes that still persist are mine.

changes in the structure of demand, production and trade whose aggregate effects determine the direction and magnitude of changes in income and welfare. If one can understand the mechanics of this transformation in any meaningful way, at least partial insights can be gained in the process of development itself. In the study of a process as complex as economic development the ability to recognize "patterns" is essential before any insights can acquire the powerful sweep of a coherent theory.

The organic processes that accompany, or are the cause of, structural changes in the economy are far too complex to be understood with any degree of precision.[1/] But it is possible, and for certain purposes useful, to analyze the structural consequences of development in terms of a few interdependent changes in domestic demand and trade patterns. The approach is analogous to the "Black Box" principle[2/] of Cybernetics insofar as it centers around a systematic study of the directly measurable components of growth, to the exclusion of more fundamental causes of development like technological progress, labor productivity, level of savings, etc.[3/] The non-random changes in the structure

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1/ The structural changes for the purposes of this analysis are defined as changes in the numerical magnitudes of a set of ratios, signifying the weight of particular sectors in the total output. The mere fact of change in the set of ratios is not very revealing in itself, since these changes are precisely what one is trying to explain. More rewarding is the search for sources that may have autonomously contributed to the change.

2/ The "Black Box" principle in Cybernetics states that the behavior of a complex system is discovered simply by studying a few critical and observable relationships, and not by considering everything that goes on inside the "Black Box," i.e. the system.

3/ The relationship of these basic determinants to the growth process remains elusive, except in the Harrod-Domar sense where the rate of growth is a function of the savings ratio and the capital-output coefficient.

of production are regarded as autonomously determined through a process of interacting change in domestic demand, foreign trade and factor use.[4/] The inter-industry framework with linear input-output relations attempts to capture the interdependence between sectors, and thus measures the "total" effect of any of the elements throughout the entire range of sectors in the economy.[5/]

The usefulness of the structural analysis outlined above consists not only in explaining the aggregate of changes in the composition of domestic output, but in charting the process of change with all its whirlpool effects between a set of inter-dependent elements. Although as yet the empirical bases of structural analysis are extremely limited and thus do not allow any general empirical inference, such studies can be a fruitful source of comparative description and analysis of growth processes in countries with similar levels of development.[6/] As an

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4/ The pioneering work in this field is that of Hollis B. Chenery who has applied mathematical methods in measuring and interpreting structural changes over time and across countries. See, for instance, his "Patterns of Industrial Growth," American Economic Review, 1960 and "The Pattern of Japanese Growth, 1914-1954," Econometrica, January 1962 (jointly with Shishido and Watanabe).

5/ However, partial analyses of changes in production and trade are possible without the use of inter-industry framework, but within the contest of observed deviations from a path of proportional expansion between any two periods. For such analyses, see Stephen R. Lewis and Ronald Soligo, "Growth and Structural Change in Pakistan Manufacturing Industry, 1954-1964," Pakistan Development Review, Spring 1965, and the present author's "Import Substitution and Structural Change in the Indian Manufacturing Industry, 1950-1960," Journal of Development Studies, Winter 1967.

6/ Such an exercise requires time-series data on the relevant variables, as well as a knowledge of the input-output relations which is usually lacking. Much less concrete theorizing results from the use of cross-section observations.

illustration, the structural analysis isolates and quantifies the contribution of domestic demand as a source of change in total "product" mix. These measures in turn can serve as an empirical test of the balanced growth doctrine that the pattern of industrial development in countries with large internal markets is primarily a consequence of the pattern of domestic demand. This is because the inter-industry demands imposed on each other by a group of industries increase the mutual profitability of simultaneous investment in all of them. Thus if the domestic demand is growing rapidly the peculiar constraints of minimum efficient scale and indivisibilities need not be strictly binding.

The structural analysis is also useful in measuring the response of an open economy to changes in trade parameters. The autonomous effects on domestic production of a favorable foreign demand (and a fairly elastic domestic supply) are obvious: the phenomenon of "export-led" growth is widely recognized and documented.[7/] On the other hand, the planners' case for "import substitution" as a development strategy has been the subject of much controversy. The neoclassical trade theory denies the existence of an independent foreign exchange gap apart from the domestic savings gap,[8/] while the constraints implied by a foreign exchange gap (which has nothing to do with exchange rate

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7/ See, for instance, W. W. Rostow, Process of Economic Growth, (Oxford University Press, 1960) and J. F. W. Rowe, Primary Commodities in International Trade, (Cambridge University Press, 1965).

8/ See, for instance, Maurray C. Kemp, Pure Theory of International Trade, (Cambridge University Press, 1965); Bo Soderson, Study of Economic Growth and International Trade, (Almquist and Wiksell Publishers, Stockholm, 1964); and Gerald M. Meir, International Trade and Development, (Harper and Row, New York, 1963).

disequilibria)[9] are the central features of some recent models of development.[10] It is only in the context of a binding foreign exchange gap that import substitution becomes a valid strategy -- a strategy that has as its purpose the closing of this gap in the shortest possible time.[11]

Within the structural approach, however, it is clear that import substitution can be an independent element of growth in much the same way as exports.[12] The indirect producers' effects consequent on the displacement of imports, whether for direct

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[9] Given a particular vector of final demand, determined either politically or via international "demonstration effect," which is feasible only through the availability of "non-competitive" imports, it can be shown that an economy will encounter balance-of-payment pressures, regardless of the level of exchange rate. A recent detailed discussion is available in Staffan B. Linder, Trade and Trade Policy for Development, (Frederick A. Praeger, New York, 1967).

[10] For a discussion of the mechanics of the two-gap theory, see Hollis B. Chenery and Allan M. Strout, "Foreign Assistance and Economic Development," American Economic Review, September 1966. Similarly, the linear optimizing models generally assume fixed foreign exchange gaps as side conditions, as for example in Richard S. Eckaus, "Planning in India," National Bureau of Economic Research, National Economic Planning, (Columbia University Press, 1967).

[11] This time-minimizing path is analytically quite similar to the von Neuman type turnpike trajectory.

[12] The fact that domestic production of displaced imports under certain conditions is an autonomous component of growth does not imply that all import substitution policies are necessarily efficient. Surely, each of the feasible import-competing packages has to be critically evaluated with respect to both the long-term goals of development as well as the "tactical" considerations of choice of technology, product-mix, scale of operation, location, etc. For a partial discussion of the tariff side alone, see Harry G. Johnson, "Tariffs and Economic Development," Journal of Development Studies, October 1964.

or derived demand, autonomously influence the change in domestic production. Hollis B. Chenery's study of industrial development in Japan between 1914-1954 shows that import substitution accounted for nearly 40 per cent of the rise of industry, as against less than 10 per cent for exports.[13] This is a remarkable conclusion in view of the fact that Japanese growth is popularly regarded as being based on exports. Import substitution in intermediate and investment goods sectors in the initial period implies changes in the structure of production that influence the entire time-profile of outputs feasible in later periods.[14] If so, it is not clear whether one can maintain the equivalence of a dollar earned through increased exports and a dollar saved through displacement of imports, since the structural implications of the two are likely to be quite different.[15] Hence only a disaggregated analysis which seeks to measure the "total" effect on domestic production (i.e., the one implied by inter-industry repercussions) of a given change in trade parameters can provide any meaningful guidance with regard to the desirability of particular structural changes.

The implications of structural analysis for resource allocation and planning, though not obvious, are significant. The general sweep of conclusions that emerge from such analyses reinforce the plausibility of rapid, discrete changes in economic structure as being more relevant to the process of growth than

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13/ Hollis B. Chenery, et al., "The Pattern of Japanese Growth, 1914-1954," op. cit.

14/ For instance, Jagdish Bhagwati, "Some Recent Trends in the Pure Theory of International Trade," in Roy Harrod and D. C. Hague, International Trade Theory in a Developing World, (Macmillan and Company, London, 1964).

15/ Only if one assumes that the exports in question are products of import-competing industries will the equivalence seem to be valid.

marginal changes of a more secular nature. The analysis is thus able to differentiate between broad groups of sectors whose structural consequences are significant for initiating the growth process and others which are ancillary to the main thrust of development. These generalizations about aggregative growth could in term be used as a basis for judging the over-all priorities, since the projected future structure of the economy will influence the investment decisions.[16/] In fact, practice is far ahead of theory in this respect.[17/]

It may even be possible to integrate some of the techniques of structural analysis into normative models of growth and capital accumulation. If any particular set of structural parameters can be associated with a given vector of final demand, then maximizing the structural deviations is analogous to maximizing a welfare function. Similarly, in labor-surplus economies the rate of growth of gainful employment may be functionally related to peculiar changes in structural patterns.

16/ A note of warning is necessary here. This is not to imply that any quantitative generalization based on structural analysis, either temporal or cross-country, can be automatically used to establish investment priorities for planning purposes. This would be totally invalid in much the same way as capital-output ratios are a poor guide to allocation of resources or setting of priorities. The value of structural analysis in this particular context consists in providing qualitative rather than quantitative guidelines for judging the probability that a particular investment is likely to lead to a desired outcome relative to alternative investments.

17/ The development plans are occasionally tied in with longer term "perspective" plans which visualize significant changes in economic structure over the relevant horizon. For instance, if the perspective plan "foresees" industrial self-sufficiency as a distant goal, the allocation of resources in intervening development plans will reflect that bias.

Part II

The model used in this study is adapted from the model originally developed by Chenery to analyze the pattern of long-term growth in the Japanese economy.[18] The model is of the modified Leontief input-output type where total final demand multiplied by the corresponding elements of the inverse matrix gives the "self-sufficiency" level of output, and the negative effect of imports restores for each sector the actual output.[19] The total change in domestic production in each sector between any two periods is expressed as a function of three component changes: i) the change in the composition of final domestic demand; ii) the change in the volume of exports; and iii) the change in the volume of imports. The analysis consists firstly in measuring the observed deviations from a growth pattern where the elements of supply and demand expand according to the proportions prevailing in the initial period. Secondly, the deviations in production in each sector are broken down into component effects of deviations in the three autonomous factors listed above.

The model may be algebraically described as follows:

$$X_i^t - \sum_j a_{ij} X_j^t = Y_i^t + E_i^t - M_i^t \qquad (1)$$

$$(i=1....n;\ t=1,2)$$

where

18/ Hollis B. Chenery, et al., "The Pattern of Japanese Growth, 1914-1954," op. cit.

19/ Dorfman, Samuelson and Solow, Linear Programming and Economic Analysis, (McGraw-Hill Company, New York, 1958), chapter 9.

X_i^t = the output of i^{th} sector in period t

E_i^t = the export of i^{th} sector in period t

M_i^t = the import of i^{th} sector in period t

Y_i^t = the domestic final demand for supplies of i^{th} sector in period t

a_{ij}^t = input coefficients for i^{th} sector's output used in j^{th} sector in period t

$\sum_j a_{ij}^t X_j^t$ = total deliveries from i^{th} sector for use as intermediate products in all sectors.

The Leontief solution to (1) is given by

$$X_i^t = \sum_j r_{ij}^t (Y_j^t + E_j^t - M_j^t) \qquad (2)$$

where $\{r_{ij}\} = [I-A]^{-1}$, being the elements of inverse to the input-output coefficient matrix.

In order to introduce the notion of deviations from a proportionate growth pattern, we define the ratio of total domestic demand in any two periods as

$$\lambda^{12} = \sum_i Y_i^2 \; / \; \sum_i Y_i^1 \; . \qquad (3)$$

The solution corresponding to each production level (X_i^p) then is λ^{12} times the initial level of output, i.e.

$$X_i^p = \lambda^{12} X_i^1 = \sum_j r_{ij}^1 [\lambda^{12} Y_j^1 + \lambda^{12} E_j^1 - \lambda^{12} M_j^1] . \qquad (4)$$

The difference between the actual values in period 2 and the values given by the proportional expansion of the system between periods 1 and 2 may be defined as the following set of deviations.[20/]

[20/] In order to compare our results to those of the Japanese study (footnote #16), we have adopted the same measures for the deviations from proportional growth.

$$\delta X_i^{12} = X_i^2 - \lambda^{12} X_i^1 \tag{5}$$

$$\delta Y_i^{12} = Y_i^2 - \lambda^{12} Y_i^1 \tag{6}$$

$$\delta E_i^{12} = E_i^2 - \lambda^{12} E_i^1 \tag{7}$$

$$\delta M_i^{12} = M_i^2 - \lambda^{12} M_i^1 \; . \tag{8}$$

The deviations in production levels under (5) can now be expressed as a function of deviations in the "autonomous" elements (6) through (8)

$$\delta X_i^{12} = \sum_j r_{ij}^2 \left[\delta Y_j^{12} + \delta E_j^{12} - \delta M_j^{12}\right]. \tag{9}$$

Thus the deviations in production in each sector from proportionate growth between the two periods can be expressed as the sum of three component elements,[21]

i) the effect of deviation in domestic demand

$$\sum_j r_{ij}^2 \, \delta Y_i^{12}$$

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[21] At least a part of deviations in production levels will be due to technological changes, i.e., to changes in the intermediate use of commodity j in period 2. Chenery's analysis of the Japanese economy includes technological change $\left[-\sum_j r_{ij}^2 \, T_j^{12}\right]$ as an autonomous element and is determined as a residual based on $T_j^{12} = \sum_k X_{jk}^1 - \sum_k a_{jk}^2 \, X_k^1$. We have omitted technological changes from our analysis, since we have a coefficient table only for the second period, and hence the changes in the input coefficients $\left[a_{jk}^1 - a_{jk}^2\right]$ cannot be ascertained. We have assumed that the input coefficients during the period do not change -- an assumption which may be justified on the ground that a 15-year period is too short for any significant changes in coefficients.

ii) the effect of deviations in exports

$$\sum_j r_{ij}^2 \, \delta E_j^{12}$$

iii) the effects of deviations in imports

$$- \sum_j r_{ij}^2 \, \delta M_j^{12} \, .$$

In this manner the model seeks to relate the total increase in output during the period in question to changes in domestic demand and foreign trade patterns.

The main value of the inter-industry analysis is that the interdependence between autonomous and induced elements in the growth process can be explicitly recognized. The autonomous factors arise from a change in domestic and foreign demand, while induced effects are synonymous with indirect producers' effects via the input-output relations that follow any given autonomous change. Following Chenery's analysis, we adopt the following schema of sources of sector growth as a parallel explanation of changes in value-added.[22/]

(1) Autonomous or Primary Effects, viz., changes in the volume of internationally-traded goods.

(2) Induced Effects, viz., changes in intermediate demand as a direct consequence of changes in autonomous factors under (1) above.[23/]

(3) Derived or Income Effects, viz., the direct and indirect effects of changes in final demand, both private and public.[24/]

22/ Hollis B. Chenery, et al., "The Pattern of Japanese Growth, 1914-1954," op. cit., page 115.

23/ The effects of pecuniary external economies transmitted from the primary to the auxiliary sectors is excluded, since there is no simple quantitative measure of such effects.

24/ It is necessary to separate the pure income effects from the autonomous effects under (1), since the former are strictly a function of the growth of income and are not directly related to changes in trade parameters.

The quantitative magnitudes of the foregoing sources of growth are obtained by multiplying the value-added ratios in the table of coefficients with appropriate deviations. For instance, the GNP effect of changes in exports during the period is obtained as

$$[1 - \sum_i a_{ij}] \delta E_i^{12}.$$

Thus the observed deviations from proportional expansion of value-added in real terms between any two periods are shown as the sum of autonomous, induced and income effects. The quantitative magnitudes assumed by these various effects provide a clue to the relative importance of "independent" factors in growth process of trade-cum-income variety as against the purely indigenous effects due to inter-industry deliveries.

Part III

We now wish to analyze the change in production and trade in the Indian economy during the period 1950-1965, a period which coincides with the three successive five-year plans of development. The development of the Indian economy during this period is commonly described as an attempt to increase the degree of industrialization, the latter being essentially a function of non-random changes in the structure of production and trade. Our purpose is to quantify and analyze the relevant structural changes in the light of their component causes that stem from original changes in trading and consuming patterns. In terms of the model developed in Part II, our main concern is with interpreting the numerical solution to Eq. (9) of the model using Indian data for the period in question.

The bulk of the information utilized in the following analysis is provided by the 78-sectors Inter-industrial Flows

Table prepared by the Planning Division of the Indian Statistical Institute. The subsidiary data is derived from the Census of Manufacturing and Five-year Plan documents.[25/]

The changing pattern of production and trade

The period under review was one of significant sectoral changes in production and value-added, as summarized in Table I. The relative share of primary production -- agriculture and animal husbandry -- has declined by about 8 per cent, while there has been a corresponding rise in the manufacturing sector. Transport and construction sectors register only modest gains in relative share, while that of non-industrial services has remained more or less constant. The major part of shift in favor of manufacturing sector is due to the increased production of goods primarily used as intermediate products; their value of production in 1965 in constant prices was three times higher than in 1950. The high growth rates of steel, chemicals and equipment industries, and to a lesser extent of textiles, almost entirely account for the rapid growth in manufacturing.

The foregoing sectoral changes are not surprising in themselves; they are the outcome of relatively heavy public sector investment in manufacturing sectors during the last two five-year plans. The main focus of the Second and Third Five-Year Plans was on the development of large-scale manufacturing industry, partly as a political decision and partly in response to severe

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25/ The sources of data and the methods of computation are described in detail in the statistical appendix, as well as in footnotes to the basic tables. Particular attention is drawn to Table B and C of the Appendix which describe the detailed origin and disposition of total supplies in the two years.

TABLE I

GROWTH IN SECTOR OUTPUT, 1950/51-1964/65

(Rs. Crores, 1960 prices)

Sectors	1950/51 Production	1950/51 Value Added	1950/51 % of (2)	1964/65 Production	1964/65 Value Added	1964/65 % of (5)
	(1)	(2)	(3)	(4)	(5)	(6)
A. PRIMARY PRODUCTION, Total	7384.7	5675.3	51.3	9150.3	7440.1	42.8
1. Agriculture	5046.2	4445.8	40.2	7413.5	6473.3	37.2
2. Plantations	88.2	70.4	0.5	235.4	182.0	1.0
3. Animal husbandry	2179.3	1119.7	10.1	1162.7	597.4	3.4
4. Mining	71.0	39.4	0.5	338.7	187.4	1.1
B. MANUFACTURING, Total	4656.7	1524.6	13.8	11299.2	3909.1	22.5
5. Food industries	1356.7	179.2	1.6	22.2.7	304.9	1.8
6. Textiles	904.7	252.9	2.3	2209.2	625.7	3.6
7. Steel and metals	135.3	41.2	0.4	1097.3	359.1	2.1
8. Heavy equipment	79.8	30.7	0.3	967.2	360.9	2.1
9. Petroleum products	49.0	12.0	-	109.1	26.7	0.1
10. Chemicals	175.9	59.8	0.5	452.5	165.5	1.0
11. Fertilizers	3.0	0.8	-	67.6	18.7	0.1
12. Building materials	161.8	121.4	1.1	628.6	392.9	2.3
13. Rubber and paper products	67.4	21.9	0.1	205.6	65.9	0.3
14. Electricity	43.0	26.0	0.2	184.2	111.4	0.6
15. Other finished products	369.6	149.2	1.3	307.5	117.2	0.7
16. Construction	676.3	248.7	2.2	1805.0	663.7	3.8
17. Transport	634.2	416.8	3.8	1052.7	696.5	4.0
C. NON-INDUSTRIAL SERVICES	4480.5	3866.7	34.9	6989.6	6031.7	34.7
Totals	16521.9	11166.6	100.0	27439.1	17380.9	100.0

balance-of-payment difficulties.[26] The fuels-metals-machines complex started in the latter part of 1950s has provided its own justification for growth for reasons of complementarity.[27] But more fundamentally, the plausibility of the observed change in sectoral composition can be inferred on the basis of favorable income elasticities of demand for manufacturing output.[28] During 1950-1965, India's national income was rising at about 3.8 per cent per year, while per capita consumption grew at 1.7 per cent per year.[29] There were pronounced changes in domestic production and trade to adapt themselves to supply a substantially changed "bill of goods." The most dramatic of these adjustments is the massive decline in the production (and demand) of the output of animal husbandry (Table I, col. 6), where the negative deviation from the path of proportional expansion is the largest of all sectors. On the other hand, the deviations from proportional expansion are positive for the entire range of sectors in manufacturing, implying that the actual path of development has varied substantially from what it would have been if no structural change had occurred.

26/ The statements of the desirability of bringing about a structural change in the direction of a vastly increased share of manufacturing activity are indeed the least ambiguous parts of the Second Five Year Plan document.

27/ Edward S. Mason briefly describes the process by which the fuels and engineering installations in India complement each other's growth over time; see his comment in Max F. Millikan (ed.) National Economic Planning, National Bureau of Economic Research, New York, 1967, p. 370. The same set of circumstances has led Allan Manne to discover significant "block-triangularities" in the Indian flow matrix.

28/ These are based on a generalization of the Engel's consumption curves, as in H. S. Houthakker, "An International Comparison of Household Expenditure Patterns," Econometrica, October 1957.

29/ Government of India, Planning Commission, Third Five Year Plan Appraisal, New Delhi, 1967.

Analysis of structural change.

The observed structural transformation depicted in Table I has now to be analyzed more fully as a consequence of domestic demand and trade effects. To start with, Table II summarizes the numerical values of the deviations from an assumed path of proportional expansion where all elements of supply and demand expand in the ratio in which they were held in the initial period.[30/] Clearly, domestic demand has been a significant factor in influencing domestic production to diverge from proportionality -- negatively in the case of primary production, except mining, and positively for all manufacturing sectors with minor exceptions.

Table III summarizes the "total" effect of the domestic demand and trade factors on deviations in production taking into account the interdependence implied by input-output relations.[31/] The three determinants of sector growth have played different roles in different sectors. On the whole, changing patterns of domestic demand explain the larger part of deviations in almost all sectors, while trade effects appear to be marginal and represent the typical adjustment of an economy in the process of planned development, as we will elaborate in a moment. The rather large negative effect of domestic demand for primary products (and, a fortiori, positive effect for manufacturing goods) signify a change of preference of either consumers' or planners' from primary products to products of the manufacturing industry. This appears to be consistent not only with the hypothesis of Engel's Law, but also with the planners' preferences as revealed in the composition of production and investment targets during the period.

30/ See Eqs. (4) through (8) of the algebraic model.

31/ Refer to Eq. (9) of the algebraic model in Part II.

TABLE II

DEVIATIONS FROM PROPORTIONAL EXPANSION, 1950/51-1964-65

	Sectors	Domestic Final Demand (1)	Exports (2)	Imports (3)	Production (4)
A.	PRIMARY PRODUCTION	-2191.7	54.2	-324.9	-2436.3
	1. Agriculture	-38.2	-28.6	-299.1	-504.0
	2. Plantations	-25.9	106.8	1.3	97.0
	3. Animal husbandry	-2225.3	-38.6	-26.6	-2256.6
	4. Mining	97.7	14.6	-0.5	227.6
B.	MANUFACTURING	3103.7	-311.9	140.2	4000.0
	5. Food industries	291.6	-86.5	-15.8	84.8
	6. Textiles	553.8	-223.3	-51.0	796.1
	7. Steel and metals	455.0	14.7	112.4	885.0
	8. Heavy equipment	887.9	4.5	155.7	841.9
	9. Petroleum products	-33.4	1.7	-46.9	32.2
	10. Chemicals	95.8	-5.8	-21.7	176.6
	11. Fertilizers	67.5	-	6.1	62.9
	12. Building materials	135.2	8.8	-5.1	374.7
	13. Rubber and paper products	185.6	-25.5	2.4	99.8
	14. Electricity	68.2	-	-	116.7
	15. Other finished products	-314.3	27.6	4.1	-272.4
	16. Construction	744.8	-	-	744.0
	17. Transport	-34.0	-28.1	-	57.6
C.	18. NON-INDUSTRIAL SERVICES	-912.2	-13.9	-41.9	-40.3
	Totals (net)	-0.2	-271.6	-226.6	1523.3
	Totals (absolute)	6207.6	380.0	507.0	7094.6
	Relative weight	(.87)	(.05)	(0.7)	(1.00)

TABLE III

CAUSES OF DEVIATIONS FROM PROPORTIONAL EXPANSION OF OUTPUT, 1950/51-1964/65

Sectors	Domestic Final Demand (1)	Exports (2)	Imports (3)	Trade (2)+(3) (4)	Total Deviations in Output (5)
A. PRIMARY PRODUCTION, Total	-2639.9	-173.5	-173.5	379.0	-2437.2
1. Agriculture	-589.3	-256.1	340.8	84.7	-507.5
2. Plantations	4.0	94.1	-1.1	93.0	97.0
3. Animal husbandry	-2260.0	-24.6	30.6	6.0	-2253.9
4. Mining	205.4	13.1	8.7	21.8	227.2
B. MANUFACTURING, Total	4596.1	-343.3	-260.5	-603.8	3992.3
5. Food industries	153.3	-89.4	20.0	-69.4	84.3
6. Textiles	979.1	-245.0	54.3	-190.7	791.1
7. Steel and metals	1060.5	14.9	-190.5	-175.6	884.9
8. Heavy equipment	1015.3	0.2	-173.6	-173.4	841.9
9. Petroleum products	-14.4	0.2	46.6	46.8	32.4
10. Chemicals	163.0	-10.8	24.4	13.6	176.6
11. Fertilizers	65.9	3.0	-6.0	-3.0	62.9
12. Building materials	362.8	12.4	-0.7	11.7	374.8
13. Rubber and paper products	131.2	-27.7	-3.5	-31.2	100.0
14. Electricity	126.0	-4.0	-5.2	-9.2	116.8
15. Other finished products	-298.3	30.2	-4.1	26.1	-272.2
16. Construction	745.5	-0.9	-0.7	-1.6	743.9
17. Transport	106.2	-27.0	-21.5	-48.5	57.7
C. NON-INDUSTRIAL SERVICES	34.4	-42.0	-32.8	-74.8	-40.4
Total (net)	1990.6	-558.8	85.6	-473.2	1517.5
Total (absolute)	7270.4	558.8	672.3	1231.1	8501.5
Relative weight	(.86)	(.07)	(.08)	(.14)	(1.00)

In a purely quantitative sense, the trade factors have been insignificant in their influence on production, although qualitatively their influence is vital and far-reaching. Foreign trade sector has been traditionally small in the Indian economy -- exports limited to traditional products of the plantation and animal husbandry sectors while imports restricted to domestically unavailable equipment and raw materials. India's traditional exports have remained stagnant during the past decade, as evidenced by the negative "autonomous" effect on production (Table III, col. 2). The negative effects are the largest in the case of jute, tea, coffee, and cotton textiles -- the products that among themselves account for about 90 per cent of India's export trade. The prominent view about stagnating exports is that the traditional exports are faced with grossly unfavorable elasticities of foreign demand, while new lines of exports, chiefly the products of light manufacturing industry, are either too few or are faced with inelastic domestic supply.[32/] Yet it is interesting to note that the major positive effect of exports appears to come precisely from these "new" lines of production, viz., steel and metals and finished products (Table III, col. 2), though their quantitative significance is limited. In quite a few important cases exports have suffered decline largely because part of the exportable surplus was diverted to home consumption in the wake of growing demand, thus cutting into foreign sales. This is amply illustrated in the case of cotton textiles -- rapidly growing domestic demand and an equally rapid decline in exports as shown by the opposite signs of their respective

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32/ This seems to be the view of most observers of Indian exports as summarized recently in W. B. Reddaway, The Development of the Indian Economy, (Richard D. Irwin, 1962).

autonomous effects (Table III, cols. 1 and 2).[33/]

Within the framework of our model, only the primary products sectors show positive import substitution, while there has been negative import substitution (import liberalization) in all major manufacturing sectors. Domestic production substituted for imports only in the case of food processing, textiles, chemicals and petroleum products, while in steel, metals and equipment sectors, imports continued to grow at a higher rate than their domestic production. The explanation is that although domestic production in heavy industrial goods continued to rise in an absolute sense, their domestic demand was growing far more rapidly and imports were necessary both for creation of new capacity as well as for operation of plants already in place.[34/] The aggregate effect, thus, was one of import liberalization encouraged by means of licensing procedures that systematically discriminate in favor of imports of machinery and intermediate products. Further, the fact that a number of "assembly" operations depend on the imported materials and components for their existence means that increases in domestic demand must increase imports of such intermediate products.

The imports of primary commodities (outside of the PL 480 shipments) were, however, drastically curtailed in order to avoid leakages from a growing income stream and "conserve" foreign exchange for the imports of non-competitive variety.

33/ The inelasticity of domestic supply as a factor contributing toward export stagnation is also reported in Benjamin I. Cohen, "The Stagnation of Indian Exports," The Quarterly Journal of Economics, November 1964. However, he fails to relate the inelasticity of supplies to the fact of rapidly rising domestic demand, at least for important industries like cotton textiles. In latter industries, producers were able to supply an increased domestic demand without undue price rises, and no new capacity was created.

34/ Imported spare parts and components are quite commonly required to keep the capacity in operation.

The process of import substitution was thus significant only in the case of primary goods sectors, as shown by the positive quantities in column 3 of Table III.

We may now broaden our analysis so far by introducing a discussion of autonomous and induced elements in the growth of GNP during 1950-1965. The quantitative magnitude of these elements is summarized in Table IV, while full details are reported in Table E in the Appendix. We have grouped the sectors somewhat arbitrarily into four broad categories in order to speculate on their chief growth characteristics. According to our choice of concepts, the growth of sectors in groups A and D may be said to determine the growth of sectors in groups B and C, through indirect producers' effects and derived income effects. The growth of total output would thus largely be a consequence of the rate of growth of sectors in manufacturing and resource-based production. In most sectors of groups A and B the income effects are all positive (Table IV, col. 3), while all resource-based sectors, except mining, have negative income effects. This implies that income elasticity coefficients are, on the whole, higher for manufacturing and auxiliary sectors than for resource-oriented sectors. We have made a few sample calculations to show that this is the case:[35/]

Commodity	Elasticity Coefficient
Agriculture	0.34
Sugar	0.99
Beverages	0.99
Cotton textiles	1.23
Processed foods	1.40
Drugs and pharmaceutics	1.37
Electricity	2.92
Consumer durables	2.98

35/ The following calculations are based on data contained in the two structural tables in the Appendix and refer to the concept of 'arc elasticity.'

TABLE IV

AUTONOMOUS AND INDUCED ELEMENTS
IN ECONOMIC GROWTH, 1950/51-1964/65
(Rs. Crores, 1960 prices)

Sectors	Autonomous Changes in Trade (1)	Indirect Producers' Effects (2)	Income Effects (3)	Total Deviations from Proportional Expansion (4)	Proportional Expansion (5)	Total Value Added (6)
A. MANUFACTURING						
1. Heavy equipment	63.2	-131.5	380.8	312.5	48.1	360.6
2. Steel and metals	38.5	-89.3	347.1	296.3	64.5	359.1
3. Chemicals	-9.9	15.9	65.7	71.7	93.7	165.4
4. Textiles	-75.3	30.1	270.1	224.9	400.8	625.7
5. Fertilizers	1.2	-2.1	18.2	17.3	1.3	18.6
6. Rubber products	-9.4	1.5	14.6	6.7	25.7	32.4
7. Paper products	1.8	-3.9	27.0	24.9	8.6	33.5
8. Building materials	4.9	5.1	193.4	203.4	190.1	393.5
9. Leather products	8.0	0.2	7.3	15.5	33.1	48.6
10. Printing and publishing	-0.1	-3.6	-139.3	-143.0	189.0	46.0
11. Petroleum products	-11.1	22.5	-3.5	7.9	18.8	26.7
12. Miscellaneous	-	-	10.4	10.4	11.4	21.8
Total	11.8	-155.1	1191.8	1048.5	1085.1	2133.6
B. AUXILIARY SECTORS						
13. Electricity	-	-5.5	76.2	70.7	40.7	111.4
14. Construction	-	-0.6	274.1	273.5	389.3	662.8
15. Transport	-18.7	-14.4	75.7	42.6	652.5	695.1
Total	-18.7	-20.5	426.0	386.8	1082.5	1469.3

(continued)

Table IV (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
C. DERIVED GROWTH SECTORS						
16. Food industries	-13.6	4.4	32.8	23.6	280.5	304.1
17. Non-industrial services	-48.2	-16.3	29.7	-34.8	6066.5	6031.7
Total	-61.8	-11.9	62.5	-11.2	6347.0	6335.8
D. RESOURCE-LIMITED SECTORS						
18. Mining	4.8	16.8	103.9	125.5	61.7	187.2
19. Agriculture	-321.8	428.7	-609.8	-502.9	6976.2	6473.3
20. Plantations	91.8	-7.1	-13.1	71.6	110.2	181.8
21. Animal husbandry	-33.5	36.7	-1161.2	-1158.0	1755.4	597.4
Total	-257.8	475.1	-1680.2	-1462.9	8903.5	7440.6
TOTAL FOR ALL SECTORS	-326.5	287.6	0.1	-38.8	17418.1	17379.3

The autonomous trade changes and their relationship to indirect producers' effect are significant in line with a priori reasoning. Industries that have witnessed import substitution all show positive producers' effects exactly as one would expect, while industries enjoying import libralization give rise to negative producers' effects (Table IV, cols. 1 and 2). The indirect producers' effects are relatively the largest for the resource-based sectors, despite considerable setbacks in their export performance. This is largely a reflection of the fact that primary sectors contribute about 40 per cent to the total value-added, and any change originating here has widespread consequences.

Income effects seem to dominate the pattern of GNP growth. Indirect producers' effects would have been in line with the massive income effects but for the fact that autonomous changes in trade -- export decline and rapidly rising imports -- have virtually wiped them out, except in the case of primary sectors as pointed out earlier.

We may now summarize our generalizations about structural change in the Indian economy. The observed structural changes are in the direction of a growing weight of manufacturing activity in the GNP. This change (and the corresponding decline in the share of primary production) is a consequence par excellence of changes in domestic demand, and only marginally of changes in trade parameters. In absolute terms, changes in domestic demand are responsible for 85 per cent of changes in economic structure, while trade changes account for the remainder 15 per cent (Table III). As a reflection of the primacy of domestic demand, the derived effects of income expansion far outweigh the indirect producers' effects as well as trade effects (Table IV).

The pattern that emerges from our model closely corresponds to the actual development of the economy during the period in review. The large size of the domestic internal market prompted the strategic decision to initiate domestic production not only of finished products but also of investment goods. This longer run planning for import substitution, however, requires massive imports in the short and the intermediate run since the inputs for capacity creation can only be obtained from abroad. While export earnings remained stationary or grew only slowly, the only avaiable means of saving foreign exchange was through curtailing the import of non-investment goods. The fact that Indian currency was over-valued vis-à-vis her trading partners did not provide any extra incentive for import substitution in the investment goods sector.[36] Export earnings remained stagnant not only because of low demand elasticities of foreign consumers, but also because domestic consumers were bidding away the supplies by offering higher prices.[37]

The indirect producers' effects, contrary to popular expectation, have been largely negative, since there is virtually no import substitution in manufacturing sectors which are otherwise favored by strong income effects. For the economy as a whole, the positive income effect of demand for manufacturing output is offset by a correspondingly negative effect for the output

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[36] The situation has since been corrected by last year's devaluation of the Indian Rupee. However, there are many who feel that devaluation will only make the foreign exchange cost of import substitution higher without solving the problem of non-availability of certain materials at home.

[37] An excise tax on traditionally exported commodities has recently been imposed to restrain domestic consumption and increase export sales. It is too early to judge the effect of this measure.

of primary sectors, and the GNP changes in the final analysis appear to be a result typically of changes in trade patterns. The foreign exchange crisis occasioned by increased imports for industrialization is aggravated by stagnant export earnings; the resulting gap is filled partly by increased import substitution in primary sectors and partly through foreign aid and borrowings.

Part IV

The pattern of structural change that we have just outlined can be put in better perspective by comparing it with other patterns based on more or less similar assumptions. A comparative description of development patterns in different countries is shown in Table V, where the numerical measures in each case have been aggregated to correspond to a uniform classification.[38/] Although the periods covered in the four studies are not identical, the comparison is meaningful in illuminating the typical patterns of development. The comparison suffers from the fact that while technological changes have been computed, albeit imperfectly, for Argentina, Japan and Sweden, such changes are assumed away in the Indian case. We should, therefore, keep in mind that the domestic demand effects in Indian development (Table V, col. 1) conceal whatever technological changes may have taken place during the 15-year period.[39/] Subject to the foregoing

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38/ The Japanese data is based on Hollis B. Chenery et al., "The Pattern of Japanese Growth, 1914-1954," op. cit., Table V, p. 113. The Argentine and Swedish data are reconstituted from two unpublished papers respectively by Julio Berlinsky, "The Pattern of Growth of Argentina, 1935-1953," Spring 1966, Table 8, p. 23, and Lance A. Taylor, "Structural Change in Sweden, 1873-1913," 1966, Table 2, p. 9. The papers were made available to the author through the Project for Quantitative Research in Economic Development, Harvard University.

39/ Also refer to footnote #21.

TABLE V

COMPARATIVE ANALYSIS OF PATTERNS OF GROWTH

	Domestic Final Demand (1)	Exports (2)	Imports (3)	Trade (2)+(3) (4)	Techno-logical Changes (5)	Total Effects (6)
JAPAN, 1914-1954 (Billions of yen, 1951 prices)						
1. Agriculture	-1036	-69	280	211	-561	-1386
2. Mining	69	5	-94	-89	15	-5
3. Food	-422	-33	-27	-60	122	-360
4. Textiles	432	29	127	156	338	926
5. Other finished goods	627	80	42	122	287	1036
6. Intermediate products	354	238	639	868	1198	2420
7. Services	249	-3	99	96	787	1132
8. Unallocated	33	-30	55	25	283	341
Absolute total	3222	487	1354	1841	3591	8654
Relative weight	(.38)	(.06)	(.15)	(.21)	(.42)	(1.00)
ARGENTINA, 1935-1953 (Millions of pesos, 1953 prices)						
1. Agriculture and cattle	-2554	-10166	1493	-8673	-4866	-16093
2. Mining	-126	-318	2532	2214	-1655	433
3. Food	3304	-6059	549	-5510	59	-2147
4. Textiles	-1410	-1214	5109	3895	752	3237
5. Other finished goods	-2290	-805	3337	2532	5605	5847
6. Intermediate products	6033	-1722	10546	8824	-8976	5881
7. Services	173	-9737	6832	-2905	1866	-866
Absolute total	15890	30023	30399	60422	23778	100090
Relative weight	(.16)	(.30)	(.30)	(.60)	(.24)	(1.00)

(continued)

Table V (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
INDIA, 1950-1965 (Crores of rupees, 1960 prices)						
1. Agriculture	-2435	-161	370	211	-	-2226
2. Mining	205	13	9	22	-	227
3. Food	153	-89	20	-69	-	84
4. Textiles	979	-245	54	-191	-	788
5. Other finished goods	-298	30	-4	26	-	-272
6. Intermediate products	3763	-41	-333	-374	-	3389
7. Services	34	-42	-33	-75	-	-41
Absolute total	7867	621	823	1441	-	9311
Relative weight	(.85)	(.07)	(0.9)	(.16)		(1.00)
SWEDEN, 1873-1913 (Millions of kroner, 1913 prices)						
1. Agriculture	-492	-112	-36	-148	64	-576
2. Mining	241	164	-148	16	113	370
3. Food	-74	57	96	153	163	242
4. Textiles	58	4	70	74	-23	109
5. Other finished goods	139	11	-44	-33	0	106
6. Intermediate products	-70	237	-207	30	333	293
7. Services	186	6	-6	0	51	237
Absolute total	1260	591	607	1198	747	3205
Relative weight	(.39)	(.18)	(.19)	(.37)	(.23)	(1.00)

qualifications, the comparative analysis provides some interesting similarities and contrasts.

First of all, notice the behavior of individual sectors. The primary sectors in all cases have grown slower than real income, implying that their output behaves like an "inferior good" on the Engel's curve, the notable exception being the output of mining industries. The domestic demand changes seem to have invariably favored higher than proportional growth of output of manufacturing industries, both for finished products and for intermediate goods. Output of the Service industries moves in the same direction as manufacturing.

With respect to the relative importance of the three "autonomous" effects it is interesting to note that trade effects are relatively the largest in the Argentine development. The period after the thirties was one of vigorous protection in Argentina, which aimed at substituting all the major categories of imports by domestic production. During 1950-54 there were sharp declines in the export of agricultural commodities and processed meat, and import substitution appears to be the only source of growth of domestic output. But the over-all growth in itself was not dramatic (averaging about 2.6 per cent per year); an extreme policy of import substitution had drastically changed the trading pattern without initiating rapid growth either during the period or after. Import substitution in Japan, on the other hand, seems to be more in line with the growth of domestic demand for manufacturing output.

The earlier period of Japan's growth, i.e., between the First World War and the thirties, had virtually no import substitution, partly for reasons of limited home demand and partly because of unusually favorable export markets. It was

only during the period 1935-54 when Japanese growth was severely constrained by resource limitations and loss of export markets, chiefly in textiles, that import substitution became pronounced. Thus the increased domestic production of manufactures and intermediate products more than offset the fall in exports. In Sweden, import substitution in the manufacturing sector during 1873-1913 was constrained by the lack of domestic market (population 3 or 4 million in 1900), while export industries based on iron ore and timber provided a ready access to the growing European market. However, food processing and textile industries significantly displaced imports. The Swedish pattern in this respect closely resembles the Indian. Growth of industrial capacity requires an abnormal increase in imports of investment goods, since the elasticity of substitution between domestic resources and complex investment goods is zero or near zero in the short run. The substitution rigidities need not be binding in the long run, however -- each inflow of imported tools and equipment increases the viability of the domestic production structure and the compound effects of "learning by doing" further weaken the initial constraints. The longer time horizon for Japan in this analysis gives more prominence to import substitution than in India, where the process seems to have just begun.

Statistical Appendix

The bulk of the data used in the foregoing analysis is based on the very detailed Transactions table prepared by the Planning Unit of the Indian Statistical Institute. The original table was corrected for missing transport flows, and was aggregated to a uniform 78 x 78 sector classification. The input-output coefficients and inverse matrices were computed by the HERP VI program of the Harvard Economic Research Project. These tables are not reproduced here for reasons of bulk.

The structure of the economy for the year 1950/51 was obtained from a wide variety of sources, chiefly the Census of Manufacturing for that year and foreign trade publications. None of the various individual sources of information contain the details required for the present analysis, so that the total picture was reconstructed from composite sources. But the inter-industry framework provided a check for the consistency of data.

The analysis was carried out in terms of the 78 sectors of the economy, the latter were aggregated to 18 broad groups of sectors for presentation in the text. The aggregation of sectors is based on Table A. Tables B and C present the detailed disposition of output for 1964/65 and 1950/51 respectively. The deviations from proportional expansion of output during the period are listed in Table D, while the total effect of component "causes" of deviation are given in Table E. The analysis of the autonomous and induced elements in the growth of GNP is contained in Table F.

TABLE A

List of Sectors and Their Aggregation

Sector Aggregation	Sectors
A. Primary Production	
1. Agriculture	Foodgrains (32); Cotton (33); Jute (36); Raw silk (40); Oilseeds (45); Sugarcane (46); Tobacco (47); Fruits and vegetables (48); Other crops (49)
2. Plantations	Rubber (11); Plantations (18)
3. Animal husbandry	Animal husbandry (15)
4. Mining	Iron ore (7); Other minerals (10); Crude oil (60); Coal and coke (75)
B. Manufacturing	
5. Food industries	Flour milling (16); Sugar (17); Gur and Khandsari (19); Vegetable oils (20); Vanaspati (21); Salt (22); Starch (23), Milk products (24); Breweries (25); Biscuits and confectionery (26); Cigarettes and cigars (27); Bidi (28); Other tobacco products (29); Fruits and vegetables (30); Cashew-nut processing (31)
6. Textiles	Cotton yarn (34); Cotton textiles (35); Jute Textiles (37); Woollen yarn (38); Woollen textiles (39); Silk textiles (41); Man-made fibers (42); Artificial silk (43); Other textiles (44)
7. Steel and metals	Metal products (5); Iron and steel (6); Non-ferrous metals (9)
8. Heavy equipment	Electric equipment (2); Non-electric equipment (3); Transport equipment (4)
9. Petroleum products	Petroleum products (59)
10. Chemicals	Plastics (65); Dyestuffs (66); Paints and varnishes (67); Insecticides (68); Drugs and pharmaceutics (69); Soap and glycerine (70); Perfumes and cosmetics (71); Misc. chemicals (72)
11. Fertilizers	Fertilizers (50)

B.	Manufacturing (Cont.)	
12.	Building materials	Cement (8); Ceramics (51); Glass and glassware (52); Wood products (53); Timber (54); Wood (56); Other forest products (57)
13.	Rubber and paper products	Rubber footwear (61); Tires and tubes (62); Other rubber products (63); Paper and paper products (64)
14.	Electricity	Electricity (74)
15.	Other finished products	Leather (12); Other leather products (13); Leather footwear (14); Chinaware and pottery (55); Matches (76); Printing and publishing (77)
C.	Tertiary Activities	
16.	Construction	Construction (1)
17.	Transport	Motor transport (58); Railways (73)
18.	Non-industrial services	Non-industrial services (78)

TABLE B

STRUCTURE OF THE INDIAN ECONOMY, 1964/65

(Crores of Rupees 1960 Prices)

	Sector	Final Consumption	Exports	Imports	Total Final Demand	Total Intermediate Demand	Total Production	Value Added
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Construction	1655.0	-	-	1655.0	150.0	1805.0	663.7
2.	Electric Equipment	272.9	2.4	116.6	158.7	60.0	218.7	76.7
3.	Non-electric Equipment	408.7	2.2	225.2	185.7	83.5	269.2	110.8
4.	Transport Equipment	357.2	3.5	54.3	306.4	172.9	479.3	173.4
5.	Metal Products	305.0	2.5	13.2	294.3	157.5	451.8	165.2
6.	Iron and Steel	81.6	14.5	120.6	-24.5	565.1	540.6	163.3
7.	Iron Ore	16.9	7.9	-	24.8	6.3	31.1	9.7
8.	Cement	16.8	0.3	-	17.1	92.6	109.7	27.4
9.	Non-ferrous Metals	-3.9	0.6	46.4	-49.7	154.6	104.9	30.6
10.	Other Minerals	37.7	13.8	17.3	34.2	43.9	78.1	47.3
11.	Rubber	-3.6	-	5.4	-9.0	28.6	19.6	1.5
12.	Leather	0.2	25.9	-	26.1	37.9	64.0	12.6
13.	Other Leather Products	31.1	2.7	-	33.8	0.3	34.1	20.0
14.	Leather Footwear	53.1	3.4	-	56.5	-	56.5	16.0
15.	Animal Husbandry	1081.8	21.2	12.8	1090.2	72.5	1162.7	597.4
16.	Flour Milling	441.0	-	29.4	411.6	5.1	416.7	26.5
17.	Sugar	221.3	21.9	-	243.2	10.0	253.2	51.4
18.	Plantations	88.4	112.8	-	201.2	14.6	215.8	180.5
19.	Gur and Khandsari	320.7	-	-	320.7	-	320.7	11.5
20.	Vegetable Oils	362.3	36.3	4.9	393.7	241.1	634.8	85.2
21.	Vanaspati	95.8	0.2	-	96.0	6.1	102.1	9.4
22.	Salt	14.8	-	-	14.8	2.2	17.0	6.0
23.	Starch	1.2	-	-	1.2	7.3	8.5	1.5
24.	Milk Products	54.5	-	10.3	44.2	3.6	47.8	6.5
25.	Breweries	46.3	-	0.4	45.9	1.7	47.6	18.9

Table B (continued)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
26.	Biscuits, Confectionery	48.8	-	-	48.8	-	48.8	14.2
27.	Cigarettes and Cigars	84.8	0.8	-	85.6	-	85.6	22.7
28.	Bidi	152.8	-	-	152.8	-	152.8	35.2
29.	Other Tobacco Products	33.3	0.5	-	33.8	-	33.8	6.2
30.	Fruits and Vegetables	10.9	0.7	-	11.6	-	11.6	2.6
31.	Cashew Nut Processing	8.0	23.7	-	31.7	-	31.7	7.1
32.	Foodgrains	3752.1	-	178.5	3546.6	1085.7	4659.3	3999.6
33.	Cotton	-1.7	10.6	58.1	-49.2	344.5	295.3	269.7
34.	Cotton Yarn	19.7	9.3	-	29.0	542.1	571.1	176.8
35.	Cotton Textiles	766.1	58.5	-	824.6	24.6	849.2	203.3
36.	Jute	-2.2	5.1	8.8	-5.9	142.2	137.3	124.4
37.	Jute Textiles	-21.6	202.4	0.2	180.6	68.9	249.5	68.3
38.	Woollen Yarn	11.3	0.1	-	11.4	18.7	30.1	8.1
39.	Woolen Textiles	32.1	0.7	-	32.8	0.5	33.3	13.6
40.	Raw Silk	-0.4	0.3	-	-0.1	13.3	13.2	6.2
41.	Silk Textiles	20.2	1.7	0.5	21.4	1.3	22.7	4.6
42.	Man-made Fibers	-2.7	-	15.4	-18.1	88.4	70.3	34.3
43.	Artificial Silk	186.3	7.2	0.2	193.3	2.9	196.2	50.8
44.	Other Textiles	149.9	22.7	2.8	169.8	17.0	186.8	65.9
45.	Oilseeds	131.4	1.9	7.0	126.3	540.9	667.2	561.8
46.	Sugarcane	19.8	-	-	19.8	469.7	489.5	423.5
47.	Tobacco	3.2	17.5	-	20.7	63.0	83.7	76.7
48.	Fruits and Vegetables	781.9	27.0	26.5	782.4	43.2	825.6	774.4
49.	Other Crops	25.1	6.2	-	31.3	211.1	242.4	237.0
50.	Fertilizers	79.4	-	25.4	54.0	13.6	67.6	18.7
51.	Ceramics, etc.	0.2	0.2	2.4	-2.0	110.6	108.6	56.9
52.	Glass and Glassware	-43.7	1.0	0.3	-44.0	76.0	33.0	13.4
53.	Wood Products	63.1	0.4	0.9	62.6	79.0	141.6	85.8
54.	Timber	8.7	-	-	8.7	127.2	135.9	120.8
55.	Chinaware and Pottery	34.5	-	-	34.5	-	34.5	17.0

Table B (continued)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
56.	Wood	32.0	1.8	1.6	32.2	10.4	42.6	38.5
57.	Other Forest Products	7.5	6.5	1.0	13.0	44.2	57.2	50.1
58.	Motor Transport	139.0	-	-	139.0	337.0	476.0	266.4
59.	Petroleum Products	57.9	7.3	41.3	23.9	85.2	109.1	26.7
60.	Crude Oil	-10.6	-	27.2	-37.8	51.6	13.8	12.4
61.	Rubber Footwear	11.5	-	-	11.5	-	11.5	3.3
62.	Tires and Tubes	13.0	-	-	13.0	43.2	56.2	18.8
63.	Other Rubber Products	10.0	1.3	1.4	9.9	22.2	32.1	10.4
64.	Paper and Paper Products	30.9	1.1	20.7	11.3	94.5	105.8	33.4
65.	Plastics	11.1	-	6.1	5.0	26.4	31.4	10.1
66.	Dyestuffs	-	0.3	8.0	-7.7	35.8	28.1	13.2
67.	Paints and Varnishes	0.2	0.4	1.3	-0.7	30.8	30.1	7.9
68.	Insecticides	0.5	-	1.3	-0.8	9.0	8.2	3.2
69.	Drugs and Pharmaceutics	135.7	2.1	8.6	129.2	30.8	160.0	69.6
70.	Soap and Glycerine	75.9	-	-	75.9	2.3	78.2	22.0
71.	Perfumes and Cosmetics	4.3	3.6	1.0	6.9	7.1	14.0	2.2
72.	Misc. Chemicals	0.5	1.5	39.0	-37.0	139.5	102.5	37.3
73.	Railways	113.0	-	-	113.0	463.7	576.7	430.1
74.	Electricity	46.7	-	-	46.7	137.5	184.2	111.4
75.	Coal and Coke	72.9	2.8	-	75.7	140.0	215.7	118.0
76.	Matches	11.1	-	-	11.1	-	11.1	4.8
77.	Printing and Publishing	110.3	1.1	4.1	107.3	-	107.3	46.8
78.	Other Production and Non-industrial Services	4617.7	138.0	115.3	4640.4	2349.2	6989.6	6031.7
	TOTAL	17799.2	836.7	1261.7	17374.2	10064.9	27439.1	17380.9

TABLE C

STRUCTURE OF THE INDIAN ECONOMY, 1950/51

(Crores of Rupees, 1960 Prices)

	Sector	Final Consumption	Exports	Imports	Total Final Demand	Total Intermediate Demand	Total Production	Value Added
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Construction	580.1	-	-	580.1	96.2	676.3	248.7
2.	Electric Equipment	10.8	2.3	27.7	-14.6	24.4	9.8	3.4
3.	Non-electric Equipment	67.8	-	67.7	0.1	39.9	40.0	16.4
4.	Transport Equipment	17.6	-	57.8	-40.2	70.2	30.0	10.9
5.	Metal Products	-61.1	0.5	5.9	-66.5	74.9	8.4	3.1
6.	Iron and Steel	0.1	0.8	22.3	-21.4	123.9	102.5	31.0
7.	Iron Ore	-1.1	1.0	-	-0.1	1.2	1.1	0.3
8.	Cement	-9.5	0.5	0.5	-9.5	34.4	24.9	6.2
9.	Non-ferrous Metals	14.9	0.5	15.0	0.4	24.0	24.4	7.1
10.	Other Minerals	0.9	0.2	5.5	-4.4	9.3	4.9	3.0
11.	Rubber	-7.3	1.2	2.6	-8.7	13.1	4.4	0.3
12.	Leather	32.4	-	-	32.4	12.6	45.0	8.9
13.	Other Leather Products	12.1	-	-	12.1	-	12.1	7.1
14.	Leather Footwear	18.3	-	-	18.3	-	18.3	5.2
15.	Animal Husbandry	2107.8	38.1	25.1	2120.8	58.5	2179.3	1119.7
16.	Flour Milling	620.0	-	24.9	595.1	3.5	598.6	38.1
17.	Sugar	131.8	10.4	-	142.2	5.7	147.9	30.0
18.	Plantations	77.9	2.6	-	80.5	3.3	83.8	70.1
19.	Gur and Khandsari	12.3	-	-	12.3	-	12.3	0.4
20.	Vegetable Oils	-92.7	81.3	3.3	-14.7	244.7	230.0	30.9
21.	Vanaspati	32.8	-	-	32.8	3.9	36.7	3.4
22.	Salt	12.2	-	-	12.2	1.2	13.4	4.7
23.	Starch	8.4	-	-	8.4	2.8	11.2	2.0
24.	Milk Products	74.1	-	7.6	66.5	1.4	67.9	9.2
25.	Breweries	16.5	-	1.0	15.5	0.8	16.3	6.5

Table C (continued)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
26.	Biscuits, Confectionery	32.8	-	0.5	32.3	-	32.3	9.4
27.	Cigarettes and Cigars	40.5	0.2	1.2	39.5	-	39.5	10.5
28.	Bidi	112.1	-	-	112.1	-	112.1	25.8
29.	Other Tobacco Products	7.0	0.2	0.2	7.0	-	7.0	1.3
30.	Fruits and Vegetables	13.9	0.1	-	14.0	-	14.0	3.1
31.	Cashew Nut Processing	1.0	16.5	-	17.5	-	17.5	3.9
32.	Foodgrains	1391.2	-	67.1	1324.1	1294.2	2618.3	2247.5
33.	Cotton	42.5	15.5	56.8	1.2	196.8	198.0	179.6
34.	Cotton Yarn	61.1	-	19.6	41.5	157.7	199.2	61.7
35.	Cotton Textiles	171.8	63.4	1.3	233.9	10.1	244.0	58.4
36.	Jute	-66.3	11.6	0.8	-55.5	174.7	119.2	108.0
37.	Jute Textiles	20.7	270.7	2.1	289.3	24.4	313.7	85.9
38.	Woollen Yarn	-4.8	-	0.3	-5.1	7.4	2.3	0.6
39.	Woolen Textiles	18.8	1.1	6.9	13.0	0.2	13.2	5.4
40.	Raw Silk	3.6	-	1.6	2.0	9.3	11.3	5.3
41.	Silk Textiles	15.3	-	-	15.3	0.6	15.9	3.2
42.	Man-made Fibers	-0.4	-	15.1	-15.5	18.5	3.0	1.3
43.	Artificial Silk	37.5	-	-	37.5	1.2	38.7	10.0
44.	Other Textiles	67.1	-	-	67.1	7.6	74.7	26.4
45.	Oilseeds	333.8	3.3	15.0	322.1	218.8	540.9	455.4
46.	Sugarcane	208.7	-	-	208.7	110.9	319.6	276.5
47.	Tobacco	40.4	3.7	-	44.1	32.7	76.8	70.4
48.	Fruits and Vegetables	810.7	18.4	30.4	798.7	34.7	833.4	781.7
49.	Other Crops	261.0	10.0	197.0	74.1	254.6	328.7	321.4
50.	Fertilizers	7.6	-	12.3	-4.7	7.7	3.0	0.8
51.	Ceramics, etc.	-39.0	-	-	-39.0	41.3	2.3	1.2
52.	Glass and Glassware	-26.6	0.2	3.5	-29.9	37.6	7.7	3.1
53.	Wood Products	-22.3	-	-	-22.3	28.8	6.5	3.9
54.	Timber	29.1	-	-	29.1	34.3	63.4	56.4
55.	Chinaware and Pottery	8.7	-	-	8.7	-	8.7	4.3

Table C (continued)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
56.	Wood	21.1	-	1.2	19.9	6.0	25.9	23.4
57.	Other Forest Products	14.9	0.2	2.0	13.1	18.0	31.1	27.2
58.	Motor Transport	77.5	8.0	-	85.5	216.0	301.5	168.7
59.	Petroleum Products	58.2	3.6	56.2	5.6	43.4	49.0	12.0
60.	Crude Oil	1.2	-	22.7	-21.5	23.2	1.7	1.5
61.	Rubber Footwear	1.1	-	-	1.1	-	1.1	0.3
62.	Tires and Tubes	6.7	-	2.5	4.2	19.1	23.3	7.8
63.	Other Rubber Products	-6.5	17.8	-	11.3	14.3	25.6	8.3
64.	Paper and Paper Products	-77.9	-	10.1	-88.0	105.4	17.4	5.5
65.	Plastics	7.8	-	4.7	3.1	13.3	16.4	5.3
66.	Dyestuffs	10.7	-	5.8	4.9	13.8	18.7	8.8
67.	Paints and Varnishes	17.7	-	2.0	15.7	8.2	23.9	6.3
68.	Insecticides	-0.5	-	2.0	-2.5	5.7	3.2	1.2
69.	Drugs and Pharmaceutics	-0.1	1.8	10.8	-9.1	31.9	22.8	9.9
70.	Soap and Glycerine	14.5	-	-	14.5	0.6	15.1	4.2
71.	Perfumes and Cosmetics	10.7	4.0	1.0	13.7	3.2	16.9	2.7
72.	Misc. Chemicals	23.6	2.9	29.2	-2.7	61.6	58.9	21.4
73.	Railways	104.8	9.9	-	114.7	217.8	332.7	248.1
74.	Electricity	-13.7	-	-	-13.7	56.7	43.0	26.0
75.	Coal and Coke	11.2	5.1	0.5	15.8	47.5	63.3	34.6
76.	Matches	6.9	-	-	6.9	-	6.9	3.0
77.	Printing and Publishing	275.1	3.5	-	278.6	-	278.6	120.7
78.	Other Production and Non-industrial Services	3524.5	96.8	100.2	3521.1	959.4	4480.5	3866.7
	TOTAL	11344.2	707.9	949.5	11102.6	5419.2	16521.9	11102.6

TABLE D

Deviations from Proportional Expansion, 1950/51-1964/65

	Sectors	Domestic Final Demand	Exports	Imports	Domestic Production
		(1)	(2)	(3)	(4)
1.	Construction	744.8	-	-	744.0
2.	Electric Equipment	256.0	-1.2	73.1	203.3
3.	Non-electric Equipment	302.3	2.2	119.0	206.4
4.	Transport Equipment	329.6	3.5	-36.4	432.2
5.	Metal Products	400.9	1.7	3.9	438.6
6.	Iron and Steel	81.4	13.2	85.6	379.8
7.	Iron Ore	18.6	6.3	-	29.4
8.	Cement	31.7	-0.5	-0.8	70.6
9.	Non-ferrous Metals	-27.3	-0.2	22.9	66.6
10.	Other Minerals	36.3	13.5	8.7	70.4
11.	Rubber	7.9	-1.9	1.3	12.7
12.	Leather	-50.6	25.9	-	-6.6
13.	Other Leather Products	12.1	2.7	-	15.1
14.	Leather Footwear	24.4	3.4	-	27.8
15.	Animal Husbandry	-2225.3	-38.6	-26.6	-2256.6
16.	Flour Milling	-531.8	-	-9.7	-522,5
17.	Sugar	14.5	5.6	-	21.1
18.	Plantations	-33.8	108.7	-	84.3
19.	Gur and Khandsari	301.4	-	-	301.4
20.	Vegetable Oils	507.7	-91.3	-0.3	273.9
21.	Vanaspati	44.3	0.2	-	44.5
22.	Salt	-4.3	-	-	-3.0
23.	Starch	-12.0	-	-	-9.1
24.	Milk Products	-61.8	-	-1.6	-58.7
25.	Breweries	20.4	-	-1.2	22.0
26.	Biscuits and Confectionery	-2.7	-	-0.8	-1.9
27.	Cigarettes and Cigars	21.3	0.5	-1.9	23.6
28.	Bidi	-23.1	-	-	-23.1
29.	Other Tobacco Products	22.3	0.2	-0.3	22.8
30.	Fruits and Vegetables	-10.9	0.5	-	-10.4
31.	Cashew Nut Processing	6.3	-2.2	-	4.2
32.	Foodgrains	1569.3	-	73.2	551.2
33.	Cotton	-68.4	-13.7	-31.0	-15.4
34.	Cotton Yarn	-76.2	9.3	-30.8	258.6
35.	Cotton Textiles	496.5	-41.0	-2.0	472.6
36.	Jute	101.8	-13.1	7.5	-49.7
37.	Jute Textiles	-54.1	-222.3	-2.1	-242.7
38.	Woollen Yarn	18.8	0.1	-0.5	26.5

Table D (continued)

		(1)	(2)	(3)	(4)
39.	Woollen Textiles	2.6	-1.0	-10.8	12.6
40.	Raw Silk	-6.0	0.3	-2.5	-4.5
41.	Silk Textiles	-3.8	1.7	0.5	-2.2
42.	Man-made Fibers	-2.1	-	-8.3	65.6
43.	Artificial Silk	127.5	7.2	0.2	135.5
44.	Other Textiles	44.6	22.7	2.8	69.6
45.	Oilseeds	-392.3	-3.3	-16.0	-181.5
46.	Sugarcane	-307.7	-	-	-12.0
47.	Tobacco	-60.2	11.7	-	-36.8
48.	Fruit and Vegetables	-490.1	-1.0	-21.2	-482.0
49.	Other Crops	-384.6	-9.5	-309.1	-273.3
50.	Fertilizers	67.5	-	6.1	62.9
51.	Ceramics, etc.	61.4	0.2	2.4	105.0
52.	Glass and Glassware	-2.0	0.7	-5.2	20.9
53.	Wood Products	98.1	0.4	0.9	131.4
54.	Timber	-37.0	-	-	36.4
55.	Chinaware and Pottery	20.8	-	-	20.8
56.	Wood	-1.1	1.8	-0.3	2.0
57.	Other Forest Products	-15.9	6.2	-2.1	8.4
58.	Motor Transport	17.4	-12.6	-	2.9
59.	Petroleum Products	-33.4	1.7	-46.9	32.2
60.	Crude Oil	-12.5	-	-8.4	11.1
61.	Rubber Footwear	9.8	-	-	9.8
62.	Tires and Tubes	2.5	-	-3.9	19.6
63.	Other Rubber Products	20.2	-26.6	1.4	-8.1
64.	Paper and Paper Products	153.1	1.1	4.9	78.5
65.	Plastics	-1.1	-	-1.3	5.7
66.	Dyestuffs	-16.8	0.3	-1.1	-1.2
67.	Paints and Varnishes	-27.6	0.4	-1.8	-7.4
68.	Insecticides	1.3	-	-1.8	3.2
69.	Drugs and Pharmaceutics	135.9	-0.7	-8.3	124.2
70.	Soap and Glycerine	53.1	-	-	54.5
71.	Perfumes and Cosmetics	-12.5	-2.7	-0.6	-12.5
72.	Misc. Chemicals	-36.5	-3.1	-6.8	10.1
73.	Railways	-51.4	-15.5	-	54.7
74.	Electricity	68.2	-	-	116.7
75.	Coal and Coke	55.3	-5.2	-0.8	116.4
76.	Matches	0.3	-	-	0.3
77.	Printing & Publishing	-321.3	-4.4	4.1	-329.8
78.	Others and Non-Industrial Services	-912.2	-13.9	-41.9	-40.3
	TOTAL	-0.2	-271.6	-226.5	1523.3

TABLE E

Causes of Deviations from Proportional Expansion of Output, 1950/51-1964/65

	Sectors	Domestic Final Demand (1)	Exports (2)	Imports (3)	Total Effects (4)
1.	Construction	745.5	-0.9	-0.7	743.9
2.	Electric Equipment	286.9	-1.5	-82.0	203.4
3.	Non-electric Equipment	335.8	0.5	-129.9	206.4
4.	Transport Equipment	392.6	1.2	38.3	432.1
5.	Metal Products	440.7	-0.4	-1.7	438.6
6.	Iron and Steel	495.4	16.2	-131.8	379.8
7.	Iron Ore	24.4	6.5	-1.5	29.4
8.	Cement	70.5	-0.6	0.8	70.7
9.	Non-ferrous Metals	124.4	-0.9	-57.0	66.5
10.	Other Minerals	68.9	13.5	-12.1	70.3
11.	Rubber	21.7	-8.4	-0.6	12.7
12.	Leather	-34.9	28.4	-	-6.5
13.	Other Leather Products	12.4	2.8	-	15.2
14.	Leather Footwear	24.4	3.4	-	27.8
15.	Animal Husbandry	-2260.0	-24.6	30.7	-2253.9
16.	Flour Milling	-532.2	-	9.8	-522.4
17.	Sugar	15.3	5.6	0.2	21.1
18.	Plantations	-17.7	102.5	-0.5	84.3
19.	Gur and Khandsari	301.4	-	-	301.4
20.	Vegetable Oils	364.3	-93.6	3.4	274.1
21.	Vanaspati	44.2	0.1	0.2	44.5
22.	Salt	-4.0	-0.1	0.2	-3.9
23.	Starch	-8.8	-0.4	0.2	-9.0
24.	Milk Products	-60.5	-	1.7	-58.8
25.	Breweries	20.8	-	1.3	22.1
26.	Biscuits and Confectionery	-2.7	-	0.8	-1.9
27.	Cigarettes and Cigars	21.3	0.5	1.9	23.7
28.	Bidi	-23.1	-	-	-23.1
29.	Other Tobacco Products	22.3	0.2	0.3	22.8
30.	Fruits and Vegetables	-10.9	0.5	-	-10.4
31.	Cashew Nut Processing	6.3	-2.2	-	4.1
32.	Foodgrains	628.1	-14.8	-61.3	552.1
33.	Cotton	-38.7	-24.7	48.1	-15.3

Table E (continued)

		(1)	(2)	(3)	(4)
34.	Cotton Yarn	242.4	-15.3	31.4	261.2
35.	Cotton Textiles	505.4	-40.5	1.3	466.2
36.	Jute	90.8	-134.7	-7.5	-50.4
37.	Jute Textiles	-22.0	-221.6	-0.1	-243.7
38.	Woollen Yarn	20.8	-0.1	5.8	26.5
39.	Woollen Textiles	2.7	-0.9	10.8	12.6
40.	Raw Silk	-8.1	1.3	2.2	-4.6
41.	Silk Textiles	-3.6	1.8	-0.5	-2.3
42.	Man-made Fibers	54.6	2.7	8.2	65.5
43.	Artificial Silk	128.3	7.5	-0.2	135.6
44.	Other Textiles	50.5	21.4	-2.4	69.5
45.	Oilseeds	-120.2	-81.8	20.1	-181.9
46.	Sugarcane	-15.4	3.2	0.1	-12.1
47.	Tobacco	-49.3	11.9	0.5	-36.9
48.	Fruits and Vegetables	-500.5	-2.4	21.7	-481.2
49.	Other Crops	-576.0	-14.1	316.9	-273.2
50.	Fertilizers	65.9	3.0	-6.0	62.9
51.	Ceramics, etc.	107.5	0.1	-2.6	105.0
52.	Glass and Glassware	16.0	0.4	4.6	21.0
53.	Wood Products	130.9	3.1	-2.7	131.3
54.	Timber	38.6	0.7	-2.9	36.4
55.	Chinaware and Pottery	20.8	-	-	20.8
56.	Wood	-	1.6	0.4	2.0
57.	Other Forest Products	-0.7	7.4	1.7	8.4
58.	Motor Transport	19.1	-14.6	-1.6	2.9
59.	Petroleum Products	-14.4	0.2	46.6	32.4
60.	Crude Oil	-19.3	0.1	30.4	11.2
61.	Rubber Footwear	9.8	-	-	9.8
62.	Tires and Tubes	15.5	-0.8	5.0	19.7
63.	Other Rubber Products	20.5	-27.1	-1.5	-8.1
64.	Paper and Paper Products	85.4	0.2	-7.0	78.6
65.	Plastics	4.9	-0.1	0.9	5.7
66.	Dyestuffs	-2.8	-0.3	1.9	-1.2
67.	Paints and Varnishes	-8.9	0.4	1.1	-7.4
68.	Insecticides	1.5	-0.4	2.0	3.1
69.	Drugs and Pharmaceutics	115.9	-1.1	9.6	124.4
70.	Soap and Glycerine	54.4	-	0.1	54.5
71.	Perfumes and Cosmetics	-10.3	-3.0	0.8	-12.5
72.	Misc. Chemicals	8.3	-6.3	8.0	10.0

Table E (continued)

		(1)	(2)	(3)	(4)
73.	Railways	87.1	-12.4	-19.9	54.8
74.	Electricity	126.0	-4.0	-5.2	116.8
75.	Coal and Coke	131.4	-7.0	-8.1	116.3
76.	Matches	0.3	-	-	0.3
77.	Printing and Publishing	-321.3	-4.4	-4.1	-329.8
78.	Others and Non-industrial Services	34.4	-42.0	-32.8	-40.4
	TOTAL	1990.6	-558.8	85.6	1517.4

TABLE 7

AUTONOMOUS AND INDUCED ELEMENTS IN INDUSTRIAL GROWTH, 1950/51-1964/65

(Value Added, Crores of Rupees, 1960 Prices)

		INCOME EFFECTS		AUTONOMOUS EFFECTS			INDIRECT EFFECTS			DEVIATIONS		Proportional Expansion	Total Value Added
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
		Direct	Total	Exports	Imports	Total	Exports	Imports	Total	Direct	Total	(11)	(12)
1.	Construction	273.9	274.1	-	-	-	-0.3	-0.3	-0.6	273.9	273.5	389.3	662.8
2.	Electric Equipment	89.8	100.6	-0.4	25.6	25.2	-0.1	-54.4	-54.5	115.0	71.3	5.3	76.7
3.	Non-electric Equipment	124.4	138.2	0.9	49.0	49.9	-0.7	-102.5	-103.2	174.3	84.9	25.7	110.6
4.	Transport Equipment	119.2	142.0	1.3	-13.2	-11.9	-0.9	27.1	26.2	107.3	156.3	17.1	173.4
5.	Metal Products	146.6	161.1	0.6	1.4	2.0	-0.8	-2.0	-1.0	148.6	162.1	4.9	167.0
6.	Iron and Steel	24.6	149.7	4.0	25.9	29.9	0.9	-65.7	-64.8	54.5	114.8	48.5	163.3
7.	Iron Ore	5.8	7.6	2.0	-	2.0	-	-0.5	-0.5	7.8	9.1	0.5	9.6
8.	Cement	7.9	17.6	-0.1	-0.2	-0.3	-	0.4	0.4	7.6	17.7	9.7	27.4
9.	Non-ferrous Metals	-8.0	36.3	-0.1	6.7	6.6	-0.2	-23.3	-23.5	-1.4	19.4	11.1	30.5
10.	Other Minerals	22.0	41.7	8.2	5.3	13.5	-	-12.6	-12.6	35.5	42.6	4.7	47.3
11.	Rubber	0.6	1.7	-0.1	1.0	0.9	-0.5	-1.0	-1.5	1.5	1.1	0.5	1.6
12.	Leather	-10.0	-6.9	5.1	-	5.1	0.5	-	0.5	-4.9	-1.3	13.9	12.6
13.	Other Leather Products	7.1	7.3	1.9	-	1.9	-0.3	-	-0.3	9.0	8.9	11.1	20.0
14.	Leather Footwear	6.9	6.9	1.0	-	1.0	-	-	-	7.9	7.9	8.1	16.0
15.	Animal Husbandry	-1143.4	-1161.2	-19.8	-13.7	-33.5	7.2	29.5	36.7	-1176.9	-1158.0	1755.4	597.4
16.	Flour Milling	-33.8	-33.8	-	-0.6	-0.6	-	1.2	1.2	-34.4	-33.2	59.6	26.4
17.	Sugar	2.9	3.1	1.1	-	1.1	-	-	-	4.0	4.2	47.0	51.2
18.	Plantations	-28.3	-14.8	90.9	-	90.9	-5.2	-0.4	-5.6	62.6	70.5	109.7	180.2
19.	Gur and Khandsari	10.8	10.8	-	-	-	-	-	-	10.8	10.8	0.6	11.4
20.	Vegetable Oils	68.1	48.9	-12.3	-	-12.3	-0.3	0.5	0.2	55.8	36.8	48.4	85.2
21.	Vanaspati	4.1	4.1	-	-	-	-	-	-	4.1	4.1	5.3	9.4
22.	Salt	-1.5	-1.4	-	-	-	-	0.1	0.1	-1.5	-1.3	7.4	6.1
23.	Starch	-2.1	-1.6	-	-	-	-0.1	-	-0.1	-2.1	-1.7	3.1	1.4
24.	Milk Products	-8.4	-8.2	-	-0.2	-0.2	-	0.4	0.4	-8.6	-8.0	14.4	6.4
25.	Breweries	8.1	8.3	-	-0.5	-0.5	-	1.0	1.0	7.6	8.8	10.2	19.0
26.	Biscuits and Confectionery	-0.8	-0.8	-	-0.2	-0.2	-	0.4	0.4	-1.0	-0.6	14.7	14.1

Table F (continued)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
27.	Cigarettes and Cigars	5.6	5.6	0.1	-0.5	-0.4	-	1.0	1.0	5.2	6.2	16.4	22.6
28.	Bidi	-5.3	-5.3	-	-	-	-	-	-	-5.3	-5.3	40.4	35.1
29.	Other Tobacco Products	4.1	4.1	-	-0.1	-0.1	-	0.2	0.2	4.0	4.2	2.0	6.2
30.	Fruits and Vegetables	-2.4	-2.4	0.1	-	0.1	-	-	-	-2.3	-2.3	4.9	2.6
31.	Cashew Nut Processing	1.4	1.4	-0.5	-	-0.5	-	-	-	0.9	0.9	6.1	7.0
32.	Foodgrains	1347.1	539.2	-	62.8	62.8	-12.7	-115.4	-128.1	1409.9	473.9	3534.8	4008.7
33.	Cotton	-62.1	-35.1	-12.4	-28.1	-40.5	-10.0	71.7	61.7	-102.6	-13.9	281.2	267.3
34.	Cotton Yarn	-23.6	75.0	2.9	-9.5	-6.6	-7.6	20.1	12.5	-30.2	80.9	101.5	182.4
35.	Cotton Textiles	118.9	121.0	-9.8	-0.5	-10.3	0.1	0.8	0.9	108.6	111.6	91.4	203.0
36.	Jute	92.2	82.3	-11.9	6.8	-5.1	-110.1	-13.6	-123.7	87.1	-46.5	169.1	122.6
37.	Jute Textiles	-14.8	-6.0	-60.8	-0.6	-61.4	0.1	0.6	0.7	-76.2	-66.7	134.5	67.8
38.	Woollen Yarn	5.1	5.6	-	-0.1	-0.1	-	1.7	1.7	5.0	7.2	0.9	8.1
39.	Woollen Textiles	1.1	1.1	-0.4	-4.4	-4.8	-	8.8	8.8	-3.7	5.1	8.5	13.6
40.	Raw Silk	-2.8	-3.8	0.1	-1.2	-1.1	0.5	2.2	2.7	-3.9	-2.2	8.3	6.1
41.	Silk Textiles	-0.8	-0.7	0.3	0.1	0.4	0.1	-0.2	-0.1	-0.4	-0.4	5.0	4.6
42.	Man-made Fibers	-0.9	23.1	-	-3.5	-3.5	1.1	7.0	8.1	-4.4	27.7	2.0	29.7
43.	Artificial Silk	33.0	33.2	1.9	0.1	2.0	-	-0.2	-0.2	35.0	35.0	15.7	50.7
44.	Other Textiles	15.7	17.8	8.0	1.0	9.0	-0.5	-1.8	-2.3	24.7	24.5	41.3	65.8
45.	Oilseeds	-330.3	-101.2	-2.8	-13.5	-16.3	-66.1	30.4	-35.7	-346.6	-153.2	712.9	559.7
46.	Sugarcane	-266.2	-13.3	-	-	-	2.8	0.1	2.9	-266.2	-10.4	432.9	422.5
47.	Tobacco	-55.2	-45.2	10.7	-	10.7	0.2	0.5	2.5	-44.5	-32.0	110.2	78.2
48.	Fruits and Vegetables	-459.7	-469.5	-0.9	-19.9	-20.8	-1.4	40.3	38.9	-480.5	-451.4	1223.7	772.3
49.	Other Crops	-376.0	-563.2	-9.3	-302.2	-311.5	-4.5	612.0	607.5	-687.5	-267.2	503.1	235.9
50.	Fertilizers	18.7	18.2	-	1.2	1.2	0.8	-2.9	-2.1	19.9	17.3	1.3	18.6
51.	Ceramics, etc.	32.2	56.3	0.1	1.3	1.4	-	-2.7	-2.7	33.6	55.0	1.9	56.9
52.	Glass and Glassware	-0.8	6.5	0.3	-2.1	-1.8	-0.1	4.0	3.9	-2.6	8.6	4.9	13.5
53.	Wood Products	59.4	79.3	0.2	0.5	0.7	1.7	-1.1	0.6	60.1	80.6	6.1	86.7
54.	Timber	-32.9	34.3	-	-	-	0.6	-2.6	-2.0	32.9	32.3	88.3	120.6
55.	Chinaware and Pottery	10.3	10.3	-	-	-	-	-	-	10.3	10.3	6.7	17.0
56.	Wood	-1.0	-	1.6	-0.3	1.3	-0.2	0.7	0.5	0.3	1.8	36.6	38.4
57.	Other Forest Products	-13.9	-0.6	5.4	-1.8	3.6	1.1	3.3	4.4	-10.3	7.4	42.6	50.0
58.	Motor Transport	9.7	10.7	-7.1	-	-7.1	-1.1	-0.9	-2.0	2.6	1.6	264.1	265.7
59.	Petroleum Products	-8.2	-3.5	0.4	-11.5	-11.1	-0.4	22.9	22.5	19.3	7.9	18.8	26.7
60.	Crude Oil	-11.2	-17.3	-	-7.5	-7.5	0.1	34.8	34.9	18.7	10.1	2.3	12.4

Table F (continued)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
61.	Rubber Footwear	2.8	2.8	-	-	-	-	-	-	2.8	2.8	0.5	3.3
62.	Tires and Tubes	0.8	5.2	-	-1.3	-1.3	-0.3	3.0	2.7	-0.5	6.6	12.2	18.8
63.	Other Rubber Products	6.5	6.6	-8.6	0.5	-8.1	-0.2	-1.0	-1.2	-1.6	-2.7	13.0	10.3
64.	Paper and Paper Products	48.3	27.0	0.3	1.5	1.8	-0.2	-3.7	-3.9	50.1	24.9	8.6	33.5
65.	Plastics	-0.4	1.6	-	-0.4	-0.4	-	0.7	0.7	-0.8	1.9	8.3	10.2
66.	Dyestuffs	-7.9	-1.3	0.1	-0.5	-0.4	-0.2	1.4	1.2	-8.3	-0.5	13.8	13.3
67.	Paints and Varnishes	-7.2	-2.3	0.1	-0.5	-0.4	-	0.8	0.8	-7.6	-1.9	9.9	8.0
68.	Insecticides	0.5	0.6	-	-0.7	-0.7	-0.2	1.5	1.3	-0.2	1.2	1.9	3.1
69.	Drugs and Pharmaceutics	59.1	50.4	-0.3	-3.6	-3.9	-0.2	7.8	7.6	55.2	54.1	15.5	69.6
70.	Soap and Glycerine	14.9	15.3	-	-	-	-	-	-	14.9	15.3	6.6	21.9
71.	Perfumes and Cosmetics	-2.0	-1.6	-0.4	-0.1	-0.5	-0.1	0.2	0.1	-2.5	-2.0	4.2	2.2
72.	Misc. Chemicals	-13.3	3.0	-1.1	-2.5	-3.6	-1.2	5.4	4.2	-16.9	3.6	33.5	37.1
73.	Railways	-38.3	65.0	-11.6	-	-11.6	2.4	-14.8	-12.4	-49.9	41.0	388.4	429.4
74.	Electricity	41.2	76.2	-	-	-	-2.4	-3.1	-5.5	41.2	70.7	40.7	111.4
75.	Coke and Coal	30.3	71.9	-2.8	-0.4	-3.2	-1.0	-4.0	-5.0	27.1	63.7	54.2	117.9
76.	Matches	0.1	0.1	-	-	-	-	-	-	-0.1	0.1	4.7	4.8
77.	Printing and Publishing	-139.3	-139.3	-1.9	1.8	-0.1	-	-3.6	-3.6	-139.4	-143.0	189.0	46.0
78.	Others and Non-industrial Services	-787.2	29.7	-12.0	-36.2	-48.2	-24.2	7.9	-16.3	-835.4	-34.8	6066.5	6031.7
	TOTAL	-1018.4	0.1	-36.9	-289.6	-326.5	-230.5	518.1	287.6	-1344.9	-38.8	17418.1	17379.3