INTERSECTORAL RESOURCE FLOWS IN INDIA

(1970 - 71 to 1983 - 84)

DISSERTATION SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR
THE AWARD OF THE DEGREE OF MASTER OF PHILOSOPHY
IN APPLIED ECONOMICS OF
THE JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI

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1991

I hereby affirm that the research for this dissertation titled "Intersectoral Resource Flows in India,1970-71 to 1983-84" being submitted to the Jawaharlal Nehru University for the award of the Degree of Master of Philosophy was carried out entirely by me at the Centre for Development Studies, Trivandrum.

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Certified that this dissertation is the bonafide work of Ms. Jaya Mohanty and has not been considered for the award of any other degree by any other University.

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ACKNOWLEDGEMENT

An acknowledgement is often difficult to pen down. In my effort I would like to thank

The Reserve Bank of India for deputing me to participate in the M Phil Programme.

Dr. S.L.Shetty whose persuasive arguments led me to join the course.

My Supervisors Dr. S.P.Padhi and Dr G.N. Rao. It was Dr S.P.Padhi who restructured the ramblings of a meandering mind and enabled the thesis to take shape in a very short span of time.

Anitha and Mathew for making legible the illegible.

My friends Helen, Beena, Vaiju, Sunanda, Christopher, Bong, Mallik, Upendra, Albin and Baskar for making my stay at the Center a very enjoyable and memorable one.

My family for all the help and support.

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Section 1: Intersectoral Resource Transfers in Development Theory

The theory of economic development embodied in some of the dual economy models, deriving from the seminal contribution of Arthur Lewis, suggests that the extraction of the agricultural surplus, ie the transfer of resources from agriculture in the traditional rural sector to industry in the modern urban enclaves constitutes a necessary condition for the development of under developed societies.

This thesis was further reiterated as a universally valid law of economic development by Ranis and Fei (1964). Though in their earlier model Ranis and Fei were mainly concerned with the intersectoral flow of labour and marketed surplus from agriculture, the internal surplus generated within the industry was recognised as the principal source of accumulation. The concept of net transfer of real resources from agriculture to industry was introduced only in their later model. There they argued that it would be the savings of the agricultural sector that constituted the principal source of accumulation during the earlier stages of development, when the internal surpluses of the industrial sector are still very limited.

Thus in the Ranis-Fei extension of the Lewis model the transfer of real resources from agriculture to Industry defined as export surplus is the sine qua non of economic development. But in the Lewis model itself what is important for the development process is the transfer of surplus labour through the market mechanism and not the transfer of marketed surplus or the net transfer of resources. Further, the principal source of accumulation is the internal surplus from within the industrial sector itself. However, Lewis did make allowance for the possibility of a special case when the net transfer of resources might become crucial. This is the case when the industrial sector can neither produce its own food nor import it from the rest of the world.

In this case the industrial sector would not only draw labour but also marketed surplus of food from a stagnant agricultural sector. The increasing size of the industrial labour force would inevitably increase demand for food in this sector and thus shift the terms of trade in favour of agriculture. This would entail a rising industrial product wage corresponding to a decline in the share of profits in industry. Under these circumstances specific policy interventions may become necessary to maintain a net transfer of resources from agriculture to industry to keep the accumulation process going.

Also, there is the study by Jorgenson (1966) which emphasises the importance of intersectoral differences in factor endowments, technology and behaviourial parameters rather than intersectoral flows themselves. And the most important of these models rule out the possibility of net resource transfers except some invisible resources (transfers) brought about by changes in the terms of trade in assuming balanced intersectoral trade. But it should be recognised that the basic concept of development in the entire range of dualistic models is the same. This concept essentially identifies development with the process of industrialisation. Agriculture is viewed as a facilitator making available to industry the necessary quantities of labour, marketable surplus, resources for financing investment and possibly exports for financing necessary imports.

In such a context the Fei-Ranis emphasis on the transfer of resources is justified especially in an underdeveloped society where the industrial sector is still very small compared to agriculture; where accumulation of capital in the former may have to be heavily dependent on the resource transfer from the latter in the absence of large scale inflows from abroad.

However, it can be argued that the specific pattern which is identical to the industrialisation while it may have been characteristic of the classical pattern of development of capitalism in Europe and else where is not the only possible

pattern of development, ie, there is nothing sacrosant about resource transfer from agriculture per se, and that the importance or unimportance of such transfers may well depend on the initial conditions of the specific pattern of development and the specific economic system and institutional framework in which such a development occurs.

Section 2: Intersectoral Resource Transfers: Historical Experiences

While examining the role of resource transfers from agriculture it is interesting to see how important the question is in the context of planned development in a socialist state as in the Soviet Union. The original and the most authoritative exponent of the view is that it is essential to mobilise surpluses from agriculture was Eugene Preobrazhensky (1926). Stated in its simplest form what Preobrazhensky meant by the law of primitive socialist accumulation was accumulation in the hands of the state of material resources lying outside the complex economy. His argument was that in order to preserve the socialist state and build socialism the system of state economy which controlled industry must penetrate and ultimately absorb the domain of the private economy which still controlled agriculture. In order to do so the state sector which is initially weak and small must undertake rapid accumulation. Partly this accumulation would be based on the surplus product generated internally within the state sector. This is socialist accumulation. But another part of the

accumulation would have to be based on portion of the surplus product drawn away from the primitive economy. Indeed this latter part of accumulation or primitive socialist accumulation would be the principal source of accumulation during the initial phase of building socialism when the state sector is still weak and small compared to the private economy.

Thus, there are essentially two aspects of Preobrazensky's thesis which are important. First is his concept of resource transfer between sectors - such a transfer would involve a net flow of material resource. Though the transfer would manifest itself in several policy instruments like taxation, credit policy, terms of trade manipulation etc what the transfer involves is essentially unequal exchange of material resources wherein the losing sector delivered more resources than what it received.

To all appearances this concept of resource transfer may not look very different from the Fei-Ranis concept. But there is a substantial difference. What Preobrazhensky saw in the unequal exchange of resources was the transfer of a part of the surplus valve generated in the private economy, the volume of this transfer being measured theoretically by the quantities of labour embodied in the goods delivered and goods received by the private economy. In contrast what Ranis and Fei mean by unequal exchange of material resources is the net export of surplus of the agricultural sector measured presumably at either current or constant prices. The

distinction is of course significant in any situation where different products are exchanged since exports and imports have to be measured in terms of some common unit. Hence, measures of transferred resources would be different in terms of Preobrazhensky's concept and the Ranis Fei concept, except in a special case where relative prices happen to coincide with the ratios of labour embodied in different commodities.

The second aspect of the thesis is the primacy of his concern with the transition to socialism, ie consolidation and development of socialist state sector at the cost of the private economy. There was also implicit in this strategy of industrialisation based on the mobilisation resources from agriculture a secondary result or corollary of his main thesis arising out of the fact that industry happened to be in the state sector, while agriculture was a part of the private economy.

In this context it is interesting to see the development of socialism in China. From all accounts it appears that the development of industry and agriculture are not so closely integrated here, and that the agriculture-industry dichotomy itself may no longer be appropriate as an analytical distinction. But if such a distinction is enforced then the empirical evidence may well reveal the progress of socialist development along the lines of a reverse resource flow from agriculture to industry. In fact even in the Soviet Union itself the estimates published by Ellman (1975)

may indicate that while there was a net resource outflow from agriculture during the First Five Year plan period, the volume of this outflow was very small compared to the aggregate investment in industry, ie agriculture played only a minor role in financing the massive spurt in industrialisation.

Also, the work of Ishikawa needs special mention since it completely reverses the Ranis-Fei thesis that the transfer of resources from agriculture to industry constitutes a necessary condition of economic development in the early stages of development. Basing himself on the evidence from Japan, India, Taiwan and China, Ishikawa argues that, under the typical conditions obtaining in contemporary Asia economic development requires a net outflow of resources in the reverse direction from industry to agriculture.

But then caution should be the byword in interpreting his results, since the economies of Asia show wide variation in terms of social formation, levels of development or even sheer size. Further, his generalisations are also based on weak statistical evidence. For Meiji Japan, the Ishikawa evidence is inconclusive, while the generally prevalent view that industrialisation was financed by agriculture had also never been verified statistically. Such an estimate has been attempted only very recently for a period covering 1888-1930 by Mundle and Okhawa (1979). The estimates indicate a heavy drain of resources from agriculture for a greater

part even though it accounted for a very small part of the investment spurt in industry. Similarly for Taiwan, Lee's estimates of intersectoral resource flows since 1895 show a positive and rising net outflow throughout the reference period. In the case of India Ishikawa's high point estimate of intersectoral resource transfers at current prices for 1951-52, will have to be interpreted with caution. To begin with, Ishikawa himself warns against the weakness of his data base. Further more, Mundle's estimate indicates that the bench mark 1951-52 is not representative of the general direction of resource flows during the period of rapid growth in the mid-fifties and mid-sixties; it is only from the late sixties and onward that the claim of a net resource flow into agriculture became tenable one again. But this is precisely the period during which some tendencies towards long term stagnation began to appear in the economy, and consequently the Indian case could perhaps be cited as a counter example to the Ishikawa thesis. It is interesting to note that a hypothesis emerging from this is that the stagnation tendencies which started developing in the Indian economy since mid-sixties are primarily attributable to a net transfer of incomes into agriculture from the mid-sixties (Chakravarthi 1974).

Thus, the role of intersectoral resource transfer would depend on the particular pattern of development operating in a given economy, this pattern itself being determined by compulsions obtaining in that economy. In other words, the entire question of

the relationship between resource transfer and development can be meaningfully posed only in the specific context of actual individual economies.

Section 3: Intersectoral Resource Transfers and Economic Development in India.

Thus, the question of the role of intersectoral resource transfers in India's economic development can only be approached in relation to the internal dynamics of the specific social formation operating in the Indian economy. It is from this point of view that the long term tendency of a decline in the growth rate of the Indian economy which appeared in the mid-sixties is largely attributable to a net transfer of resources from agriculture.

Adopting the special case of the Lewismodel where the industrial work force is dependent on the marketed surplus of food crops from agriculture for its subsistence, Chakravarthi has argued that with the increasing excess demand for food grains, the terms of trade started shifting in favour of agriculture from the mid-sixties and onwards, thus forcing up the industrial product wage. He has further argued basing himself on a time series of income terms of trade constructed by Thamarajakshi that the shifting terms of trade have resulted in net income transfers to the agriculture sector. And if it is assumed as Chakravarthi does that the saving rate is lower in agriculture than in industry then it follows that such a transfer of income would result in a decline in the rate of

saving and investment. According to Chakravarthi the decline in the growth rate in the Indian economy during the late sixties and early seventies is explained by the operation of this mechanism.

However, there are several problems with the Chakravarthi thesis. First of all, his point that shifting terms of trade have led to a net income transfer into agriculture is based on Thamarajakshi time series of income terms of trade. Now income terms of trade is essentially marketed surplus of agriculture multiplied by intersectoral net barter terms of trade. Essentially this is not a measure of the net flow of earnings between the two sectors let alone net flow of factor incomes. As such it provides no indication of any net income transfer into agriculture.

Furthermore the assumption that a smaller proportion of incomes is saved in agriculture compared to non-agriculture is based on weak statistical evidence. If true then the suggested transfer of incomes into agriculture should have shown up as a decline in the rate of private savings. But his own estimates show a decline in the government savings rather than private savings.

Thus, in the absence of an analysis of the models of surplus generation, its appropriation and utilisation in agriculture which can explain why the saving rate in agriculture should be lower, the assumption cannot be justified with such weak statistical evidence.

Also, the applicability of development theories of the Lewis variety which locate the basic constraint of growth on the supply side of the factor markets has been challenged in the Indian context by Bagchi (1972). In an important study on the growth of private investment in India during 1900-1939, Bagchi has demonstrated that it was neither the shortage of labour nor of capital or raw materials or entrepreneurship that could explain the low growth of accumulation during the period. Shifting the burden of explanation from the supply side of the factor markets to the demand side of the product market, Bagchi has argued that the rate of investment was low because the opportunities for profitable investment were low, ie, that a number of factors were responsible for restricting the level of demand especially the narrowness of the home market.

For the post-colonial period, Bagchi has recently argued that the pace of industrialisation in particular the deceleration of the industrial expansion from about the mid-sixties is to be explained by demand conditions. During the early easy import substitution period, ie, the years immediately following the political replacement of the colonial government by an independent national government, the clamping down of protective tariff barriers around the home market, created a sudden demand gap and opportunities for profitable investment inside the protective barriers. According to Bagchi this accounts for the relatively rapid accumulation of

capital during the fifties. But given the narrow base of the home market and the highly skewed income distribution, Bagchi has argued that the captive market for mass consumer goods was so quickly saturated by the mid sixties, that the only available market for profitable investment was the small market for sophisticated durable consumer goods, catering only to the richest income groups.

Another thesis closely resembling Bagchi has been put forward by Raj(1976). Quoting the results of an official study on capacity utilisation Raj also argued that an explanation for the stagnation of the industrial growth from the mid-sixties has to be sought basically in the inadequacy of demand rather than in the shortage of financial resources, foreign exchange, raw materials etc. However, whereas Bagchi emphasises the role of limited protection and subsequent saturation of the home market to explain the turning point of the mid sixties, Raj stresses on the sluggish role of agriculture in this context. He argues that since a large part of the consumption goods market is made up of agricultural consumers and again this market which has a narrow base because of the extreme inequalities, the slow growth of agriculture income and output results in a severe restriction on the level of effective demand. As a secondary argument he also mentions the slow growth of agricultural raw material supplies for agro-based consumer goods industries.

The Bagchi - Raj thesis of a restricted home market for industry has been emphasised by several authors. For instance Mitra (1967) under-lined the distortionary effects of a narrow market base on the pattern of industrialisation. Sau (1972) estimated that the highest 10 percent of the urban and rural consumers accounted for a third of the total consumption expenditure. Furthermore it is easy to deduce from Bardhan's (1971) estimate of a declining real per capita income for rural consumers who constitute the large bulk of consumers and Thamarajakshi's (1971) estimates of expenditure elasticities which are respectively greater than and less than one for non agricultural items and agricultural items, that the already narrow home market for manufactured consumer goods should be shrinking even further over time. This has been confirmed by both Mundle and Sau's estimation.

But the low purchasing power of a large mass of consumers does not provide a satisfactory explanation for the narrow limits of the home market. And an adequate theory of stagnation of the home market should be able to explain at least two aspects of the phenomenon : one is the decline of public investment which accounts for a large bulk of investment demand. The other is the inadequate commercialization of the Indian economy. For it is the limited conversion of inputs and outputs into commodities and not the high incidence of poverty which actually sets the limit to private market demand.

The decline in public investment has also been analyzed in an interesting article dealing with a model of inflationary recession by Patnaik (1972). In 1964, even before the stagnation tendency became evident Rudra (1964) had constructed a quantitative model which demonstrated how disproportionality between industry and agriculture could lead to a sharp explosion of agricultural prices. Basing himself on this relationship, Patnaik argued that slow growth of agriculture would result in a severe disproportionality between agriculture and industry which in turn would shift the terms of trade in favour of agriculture. Such a shift would result in a decline of real wage rates of the industry. Patnaik also assumed that beyond a point this would lead to a decline in public investment. He also assumed that a decline in private investment demand for industrial mass consumption goods would take place. This decline in public investment and decline in demand for consumption goods would necessarily lead to the emergence of excess capacity in industry and hence a decline in private investment.

The development of the home market actually begins with the expropriation of the agricultural population, the separation of direct producers from their means of production. This process of differentiation of the peasantry which disintegrates the independent peasant economy and gradually replaces it by a polarisation of the agricultural population into a class which owns all the means of production and another which owns nothing but its labour is of course nothing but the development of capitalism in

agriculture. Thus the problem of the limitedness of the home market in India cannot be analyzed except in relation to the development of capitalism in agriculture and this brings us directly to the question of the mode of production. It is generally argued that the mode of production which is developing in Indian agriculture is in fact a capitalist variety. But the main question here is why capitalism in agriculture has not developed further. It is precisely this question which is of central importance for a theory of development of the Indian economy as a whole.

It is in this context that the problem of intersectoral resource transfers assumes crucial importance. For the purpose of understanding the development of capitalism in agriculture or the lack of it, agriculture cannot be viewed in isolation from the rest of the economy. The question why capitalist development has not proceeded further is explained partly by the relation between the agricultural and non-agricultural sectors. The motive force of capitalist development is the accumulation of capital. An important determinant of the rate of accumulation in agriculture is the volume of surplus available for such accumulation in agriculture. Hence it is possible that the limited differentiation of the peasantry and the slow pace of development of capitalist agriculture is partly attributable to the drain of resources generated in agriculture.

Thus, in the context of the Indian economy it turns out that it is not easy to establish a direct positive relationship between surplus transfers from agriculture and economic development. The binding constraint on development and industrialization in particular seems to be not so much the paucity of resources as the limited size of the home market. In this context it is possible that a resource transfer from agriculture could be an important explanatory factor underlying the stagnation tendencies of the mid-sixties. For it can be argued that (a) the development of the home market was primarily restricted by the differentiation of peasantry in agriculture. (b) and also by the decline of investment demand which has been attributed to a disproportionality crises generated by the slow growth of agriculture. Both these factors which have been limiting the growth of the home market can be attributed at least partly to the withdrawal of resources from agricultural which have restricted the development of capitalist agriculture. The focus on intersectoral resource-transfer is not because the transfers are necessary for the development of industry but because they have restricted the development of agriculture.

It is from this point of view of the development of the home market for industry that a study of the inter-sectoral terms of trade assumes significance. In this context, the study by Mundle(1981), which establishes a causal link between inter-sectoral resource flow and the growth process via the development of the home market, is useful. For this purpose, he divides his

period of study into two sub-periods. The first sub-period (between 1956 and 1965) witnessed increasing net out-flow of real resources from agriculture. During this period, the nonagricultural sector was growing faster than agriculture and there was an accelerated growth of industrial production proper. The demand for industrial production was first created by a highly protected, existing home market and sustained by heavy public investment. But such a growth process was in any case based on a narrow home market, whose growth, it is argued, was restricted by the significant drain of the agricultural surplus. As a result, there was a decline in the rate of industrial growth in the second sub-period (1965 to 1971). In the new economic conjuncture, there began to recur a reduction in the net resource outflow from agriculture. Such a reversal of the inter-sectoral resource flow is explained in terms of the following three sets of variables : the relative rates of growth in agriculture and non-agriculture; strength of the input-output relations between sectors and inter-sectoral term of trade (Mundle (1981), p.184). What is perhaps brought out in the above analysis is that the inter-sectoral relations and how these affect the growth process in a particular case depends on the historical context and economic conjuncture.

It is because of this that a fresh look at inter-sectoral transfers of resources for the Indian economy is perhaps called for; the economic conjuncture in the 1970 and early 80's is different in respect of each of the three sets of proximate

determinants of intersectoral resource transfers namely,(i) the relative rates of growth of industry and agriculture,(ii) intersectoral terms of trade and (iii) intersectoral input-output relations.

Our period of study is 1970-71 to 1983-84. In Chapter 2, we will do a review of the broad macro trends in the economy, in particular, the developments in the commodity producing sectors of agriculture and non-agriculture. Chapter 3 will present our estimates of the balance of trade, while chapter 4 will look into the savings flows. Chapter 5 will present the summary, conclusions and implications of our empirical analysis.

Chapter II

Growth, Structural Change, and Terms of Trade in the Seventies and Early Eighties: An Overview

Section 1: The Structure and Growth of the Indian Economy

Theoretically, a movement away from agriculture is construed as a natural part of the development process[1], but the Indian growth experience has provided evidence to the contrary. Instead of the economy evolving from a predominantly - agrarian structure to a mature industrial economy, there was a virtual break down of the growth process due to stagnation in agriculture and decelaration in the Industrial sector.

Even though agricultural growth stood at 2.7 percent in the seventies the deceleration in the secondary sector continued. It was the growth in the tertiary sector output at 4.5 percent that acted as a buffer and helped in improving the over all growth in the gross domestic product (GDP) to 3.6 percent. Thus, while agriculture stagnated during the seventies, the deceleration in the industrial sector which started around the mid-sixties spilled over into the third decade of the planning era as well. However, irrespective of developments in the other two sectors the growth in the tertiary sector marched on unabated.

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[1] Clark- Fisher postulated a hypothesis wherein the economic growth of a nation would result in an increase in the shares of the secondary and tertiary sectors in national income and employment, while the share of agriculture would experience a secular decline. Clark (1940) Kuznets (1971) and (1972) and Chenery et al (1975, 1979,1986,1989) found evidences to support this hypothesis empirically.

The eighties have witnessed a resurgence of the growth process. Both agriculture and manufacturing have recorded high growth rates. While agriculture grew at a rate of 3.0 percent, manufacturing recorded an impressive growth rate of 7.6 percent, surpassing even the growth rate of the tertiary sector at 6.1 percent. As a consequence the over all growth rate of the economy accelerated at 5.1 percent (Table 2.1).

Table 2.1

Growth Rates in the Various Components of GDP

Sl. No.	Sector	1950-51 to 1960-61	1960-61 to 1968-69	1968-69 to 1978-79	1979-80 to 1987-88	1950-51 to 1987-88
1.	Primary Sector	2.8	1.0	2.5	2.6	2.2
1.1	Agriculture	3.0	0.7	2.7	3.0	2.3
2.	Secondary Sector	6.3	5.5	4.5	7.0	5.4
2.1	Manufacturing	6.2	4.6	4.8	7.6	5.3
3.	Tertiary Sector	4.2	4.5	4.5	6.1	4.7
4.	Commodity Producing Sector	3.5	1.9	3.2	4.4	3.0
5.	Essential infrastructure	4.8	4.9	4.5	5.7	4.9
6.	Other Sector	3.8	5.3	3.8	6.6	4.7
7.	Public admin. and defence	5.4	7.8	5.3	7.5	6.9
8.	GDP	3.8	3.1	3.6	5.1	3.7

Source:- Mohanty D. & Raghavan V., (1990), Economic and Political Weekly, July 17.

Table-2.2

Sectoral Composition of Gross Domestic Product, New Series, Base (1980-81=100)

(Percentage)

Sl. No	Sector	I Plan (1951-56)	II Plan (1956-61)	III Plan (1961-66)	Annual plan (1966-69)	IV Plan (1969-74)	V Plan (1974-79)	VI Plan (1980-85)	VIII Plan (1985-88)
1.	Primary Sector	54.9	51.8	46.6	43.6	42.9	40.6	36.8	32.11
1.1	Agriculture	49.0	46.5	41.6	38.4	38.1	36.3	36.0	29.8
2.	Secondary	15.7	17.9	21.2	22.5	23.0	23.8	25.0	27.7
2.1	Manufacturing	11.9	13.5	15.8	16.0	16.7	17.5	18.6	21.1
3.	Tertiary Sector	29.4	30.3	32.2	33.9	34.1	35.6	38.2	40.2
4.	Commodity Producing Sector	66.8	65.3	62.4	59.6	59.6	58.1	55.4	53.2
5.	Essential infrastructure	23.8	25.2	27.4	29.2	29.1	30.6	32.4	33.6
6.	Other Services	7.2	7.0	7.2	7.6	7.3	7.1	7.4	7.8
7.	Public adm. and defence	2.2	2.5	3.0	3.6	4.0	4.2	4.8	5.4
8.	Total GDP (1+2+3=4+5+6+7)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source:- Same as Table-2.1

A look at the sectoral composition of GDP indicates that while in the fifties the primary sector especially agriculture accounted for the largest share (49.0 percent) of GDP followed by the tertiary sector (at 29.4) and the secondary sector (at 15.7 percent) the economy seems to have turned a full circle in the eighties and it is the tertiary sector which accounts for the largest share (40.2 percent) of the GDP followed by agriculture (at 29.8 percent) and manufacturing (at 21.1 percent) (See table 2.2).

This, as has already been stated, is because of the stagnation phases which have characterised the growth of the commodity producing sectors, while the tertiary sector has registered a uniform growth rate. Therefore, the sectoral composition of GDP in the seventies and eighties appears to be skewed in favour of the tertiary sector.

Section 2: Growth Profile of the Commodity Producing Sectors:

2.1 Trends in Agricultural Production

Indian Agriculture has made significant strides during the past three decades inspite of setbacks due to periodical droughts and the pressure of population[2] Food grains production has increased by three to four times and the per capita availability of essential commodities such as cereals, sugar, edible oils, tea, eggs and milk have increased. Also, there has been rapid increases in the marketable surplus which have helped the nation to become self sufficient; further it has also been possible to build up a

[2] Population has increased at a rate of 2 percent per annum

buffer stock which along with the public distribution system has provided the much needed food security net to the population.

But inspite of these gains, the secular trends in agricultural production has been around 2.65 percent per annum, well short of the 4 percent per annum envisaged by the planners. Another feature exercising the minds of the planners has been the visible signs of deceleration in both food grains and non food grain production after the green revolution of the mid-sixties. These fears have gained ground in the light of the growing mass of literature especially since the seventies.

Patnaik (1981) showed that there was a marked deceleration in the growth rates not only of total agricultural produce, but also of food grains produce separately. Ahluwalia (1985) found that the growth rates declined slightly in the post-green revolution period, but the decline was statistically insignificant. Kannan (1984) presented evidence of a deceleration in the case of non food grains crops and no deceleration in the case of food grains.

The hypothesis that growth has not fallen after the new technology has also received some support. 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 the estimated growth rates in the period 1969-70 to 1978-79 were generally higher than those in the period 1960-61 to 1969-70. Samant (1983) showed that the compound growth rates of food grains production from 1950-51

to 1967-68 was 2.2 percent per annum which rose to 2.5 percent per annum with the extension of the period up to 1980.

Our analysis of the secular trend of agricultural production reveals that this sector recorded a growth rate of 2.65 percent per annum. Dividing the time period of thirty six years into the pre and the post green revolution period, one finds that the growth rate of 2.74 percent in the later period has only been marginally higher when compared to a growth rate of 2.57 percent in period I. In the early eighties, agricultural production recorded a growth rate of 3.33 percent per annum. What is of significance is that the high growth rates achieved in period II are primarily the result of increase in productivity.

Table 2.3

Agriculture Growth Rates - in percentages

Items	1950-51 to 1985-86	Period I 1950-51 to 1969-70	PeriodII 1970-71 to 1985-86	1980-81 to 1985-86
1. Index of agricultural production	2.65	2.57	2.74	3.33
2. Food grains:				
2.1. Production	2.66	2.44	2.96	3.67
2.2. Area	0.67	1.05	0.33	0.04
2.3. Yield.	1.77	1.20	2.55	5.02
3. Non Food grains :				
3.1. Production	2.60	2.83	2.53	2.53
3.2. Area	1.03	1.65	0.44	(-)0.72
3.3. Yield	1.16	0.81	1.52	2.22

Source: Agricultural statistics at a glance May 1987, Directorate of Economics and Statistics,Ministry of Agriculture, Government of India.

Food grains output grew at a rate of 2.66 percent as a result of 0.67 percent growth in area and 1.77 percent growth in yield, while that of the non food grains increased at a rate of 2.60 percent due to a growth of 1.03 percent in area and 1.16 percent in yield. Thus the area under non food grains has shown a faster increase whereas yield rates in the case of food grains have been higher.

While the growth rate of area under food grains dropped from 1.05 percent in period I to 0.33 percent in period II, the growth rates in yield more than doubled from 1. 20 percent to 2.55 percent. For the eighties however, despite a marginal increase of 0.04 percent in area under food grains a high growth of 3.67 percent in output is mainly the result of a phenomenal increase in the growth rate of yield to 5.02 percent. The growth rate in the production of non-food grains declined from 2.83 percent in period I to 2.53 percent in period II despite a rise in the growth rate of yield from 0.81 percent to 1.52 percent. Notwithstanding improved productivity growth by 2.22 percent the growth rate of production stagnated at 2.53 percent due to a contraction in area at the rate of 0.72 percent per annum. Thus, the most significant feature of India's agricultural development has been the slowing down in the pace of growth of non-food grains production vis-a-vis food grains production. (See Table 2.3)

2.2 Trends in Industrial Production

The secular trend indicates that the industrial production recorded a growth rate of 5.72 percent per anum for the entire

period. Industrial production index which recorded a growth rate of 7.12 percent in the fifties and sixties (period I), registered a growth rate of only 5.03 percent in the seventies and early eighties[3] (period II). Decomposing the production index into the three broad classifications of mining and quarrying, manufacturing and electricity with weights of 9.69, 81.08 and 9.23 respectively, one found that while mining and quarrying registered a growth rate of 4.75 percent per annum, manufacturing and electricity grew at 5.31 percent and 10.63 percent respectively.

Table 2.4

Industrial Production* - Growth Rates in Percentage

Items	1950 to 1985	Period I 1950 to 1969	Period II 1970 to 1985	1980** to 1985
1 General Index of Industrial Production	5.74	7.12	4.89	6.97
1.1 Mining and Quarrying	4.75	4.98	6.11	10.92
1.2 Manufacturing	5.30	6.99	6.35	6.08
1.3 Electricity	10.64	13.18	7066	8.66

* Source derived with base 1970-71=100
** New series on the Index number of Industerial production Base (1980-81=100)

Source:- Economic Survey (1987-88) Ministry of Finance, Government of India, New Delhi.

[3] For purpose of our trend analysis the Index of industrial production on calendar year basis has been used for the 35 year period spanning 1950-85 with 1970 as the base year. The new industrial production index with base 1980-81=100 has been treated separately. Growth rates have been arrived from exponential form log y=a+bt. See Dandekar (1980) for a discussion on methodological issues.

Turning to the sub-periods one finds that while mining and quarrying which grew at the rate of 4.98 percent in period I recorded an increased growth rate of 6.11 percent during period II. On the other hand the growth rate in manufacturing registered a marked deceleration from 6.99 percent in period I to 4.53 percent in period II. Electricity too experienced a slow down in production with growth rates falling from 13.28 percent per annum in period I to 7.66 percent in period II. The analysis for the eighties reveals that the new industrial production index recorded a growth rate of 6.99 percent per anum with mining and quarrying (weight 11.46) registering a growth rate of 10.92 percent per annum, manufacturing (weight 77.1) and electricity (weight 11.43) recording growth rates of 6.08 percent and 8.66 percent respectively.

Thus the deceleration which began in the mid-sixties was carried on into the seventies and stagnation embraced all major industrial categories - basic goods, intermediate goods, capital goods and consumer goods industries. In broad economic terms the explanation for this phenomenon lies in the confluence of a set of factors, which seem to have brought about this pervasive stagnation such as the adverse impact of agricultural growth affecting supplies of food grains as well as raw materials, inadequate demand for traditional consumer good industries, dilution of the importance of import substitution in industrial policy, defence imperatives and consequent diversion of substantial resources for it and above all a persistent slow down in the rate of public sector investment. The outstanding features of the development of the industrial scenario has been that both the basic and capital

goods groups have together played a prominent role, while the importance of the intermediate goods industry as well as the consumer goods in particular the consumer non durables have suffered declines.[4] (See Table 2.4)

Section 3: Industry- Agriculture Linkages, Input Output Coefficients and Terms of trade:

3.1. Industry-Agriculture Linkages

Thus the industry agriculture relationship has become a matter of particular interest especially in the context of the recent spurt in Industrial growth and the composition of it. Broadly speaking, there are two views on this. First, it is generally argued that the rise in industrial growth without any concurrent increase in agricultural production can be merely transitory. In the long run, industrial growth would slow down, through forward and backward linkages between agriculture and industry. On the other hand, it is argued that with the diminishing importance of agriculture in the economy, industry can now expand on its own momentum.

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[4] In the eighties as per the use based classification both the basic and capital goods industries contributed more to the annual compound growth rate than their respective weights in the general index, in fact there was a fairly sharp rise in the contribution of basic goods group following a step up in crude petroleum output. On the other hand, both intermediate goods and consumer goods groups made smaller contribution to the industrial growth than their respective weights in the general index. However there was a sharp decline in the consumer goods group which was mainly concentrated in the consumer non durable sub group. The consumer durables sub group made a larger contribution to the industrial growth than its weight in the general index. The components of the basic goods group (2.8 percent), capital goods group (1.0 percent) and consumer durable sub group (0.3 percent) accounted for a little over 69 percent of the growth rate of 5.9 percent for the period 1980-81 to 1984-85.

One of the explanatory factors for this widening industry agricultural growth disparities could be found in the relative growth of income and employment not only in the industrial sector but also in the tertiary sector; for if incomes in the non agricultural sector as a whole grew at a faster rate than employment then it tends to generate more demand for industrial goods vis-a vis agricultural goods and consequently the disparity between industrial and agricultural growth rates widen. Bhattacharya et al (1989) have empirically tested this proposition and found that the growth differentials between agriculture and industry at the state level, during the period 1970-71 to 1980-81 can be adequately explained in terms of the growth differentials between income and employment in the non-agricultural sector. The evidence also suggests that at the macro level, relatively slow growth of employment in the public sector and an almost stagnant employment in the organised private sector have been mainly responsible for the widening disparity between agriculture and industry in the eighties.

3.2 Input- output coefficients:

Traditional literature on the intersectoral linkages in the growth process generally emphasize the role of agriculture as a primary supplier of wage goods (supply linkage) on the one hand and receiver of major output of industrial goods (demand linkage) on the other.[5]

[5] See Johnston and Mellor (1961) and Krishna (1982)

An extremely valuable source of information which enables an understanding of the demand and supply linkages has been the input-output transactions matrices which have been constructed for the Indian economy at different points in time since 1951-52.

A look at the input-output coefficients indicates that a_{12} - the coefficient of agricultural input use in the non agricultural sector -has declined at the rate of 1.04 percent per annum for the reference period (1968-69 to 1983-84). This decline in the input use coefficient a_{12} is a probable indication of the weakening of the agriculture industry supply linkages (Chakravarthy 1988). Furthermore there has been a diversification of the Indian industry and in the course of this diversification, it has been found that the intermediate goods industries with forward and backward linkages has declined in importance. Last but not the least has been the progressive decrease in the share of the value added by agriculture in gross value added of the domestic product implying a decline in agricultural input use.

On the other hand the a_{21} coefficient - the coefficient of non-agricultural input use in agriculture - has recorded an over all growth rate of 2.60 percent for the period under review. The main reason for this rapid increase in the input use coefficient has been the accelerated increase in the use of modern inputs such as fertilisers, electricity, diesel oil, pesticides and insecticides which recorded a phenomenal increase of 254 percent, with the result that these inputs doubled itself in the period 1961-62 to

1987-88.[6] The slight slowing down in this input use coefficient for the eighties could be located at the levelling off of the technological revolution which has been rather crop specific and region specific. (See Table 2.5, Chart 2.1).

Table 2.5

Inter-sectoral Input-output coeffecients 1968-69 to 1983-84

(implicit deflators)

Year	a_{12}	a_{21}
1968-69	0.161808	0.104300
1969-70	0.169164	0.110198
1970-71	0.176855	0.116429
1971-72	0.184896	0.123013
1972-73	0.193302	0.129970
1973-74	0.202091	0.137320
1974-75	0.199242	0.143078
1975-76	0.196433	0.149078
1976-77	0.193666	0.155329
1977-78	0.190935	0.161843
1978-79	0.188244	0.168630
1979-80	0.176632	0.166296
1980-81	0.165736	0.163994
1981-82	0.155513	0.161725
1982-83	0.145920	0.159487
1983-84	0.136920	0.157280

[6] Op cit Thamarajakshi, 1990.

CHART 2.1

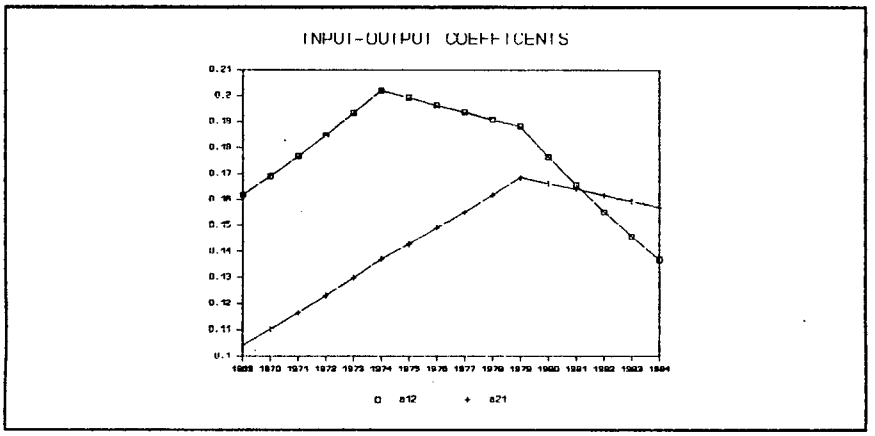

Figure 2.1

CHART 2.2

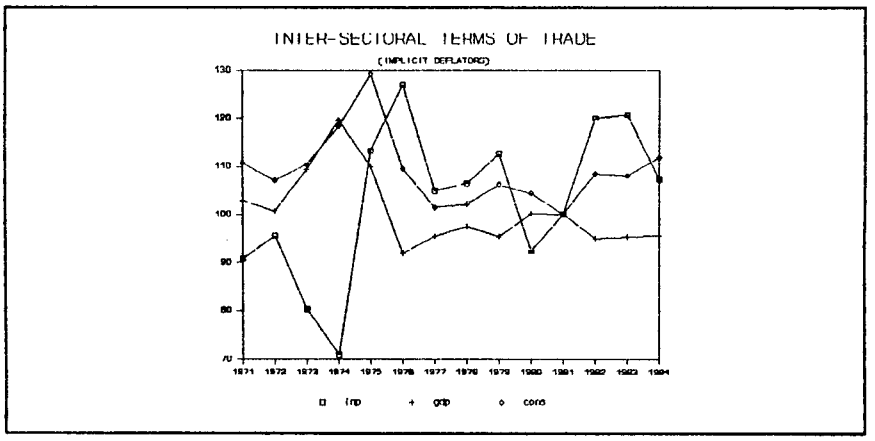

Figure 2.2

CHART 2.3

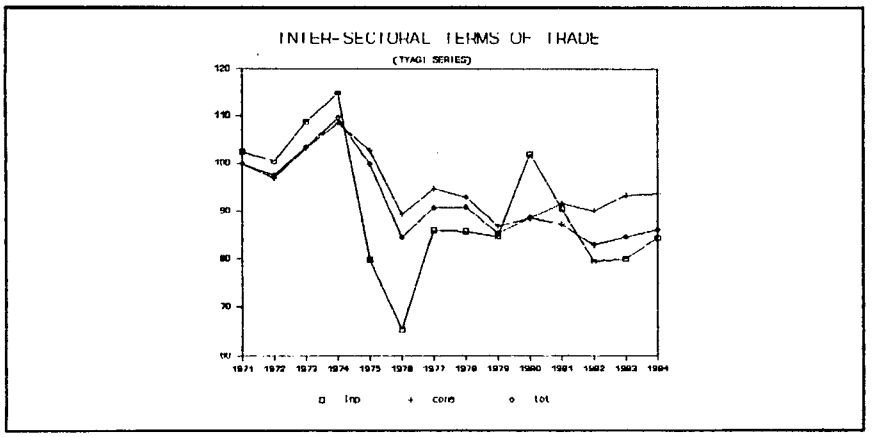

Figure 2.3

3.3. Terms of Trade:

A slow growth of the net availability of food grains or alternatively the movement of intersectoral terms of trade in favour of agriculture is believed to be the cause of the deceleration in the industrial sector. However, empirically speaking there has been no slow down in the growth of food grains production since the mid-sixties (Ahluwalia 1985), nor has there been any fall in the marketed surplus of agriculture (Thamarajakshi: 1977) so as to account for the industrial deceleration. But as far as the agriculture vis-a-vis industry terms of trade is concerned, one encounters a series of mixed evidences. While Thamarajakshi (1977) and Mitra (1977) visualised a favourable terms of trade for the agricultural sector during the mid sixties and early seventies, Kahlon and Tyagi (1983)[7] observed evidences that stand quite contrary to the others' view. Mundle (1977) however maintains that in terms of inter sectoral resource flows of which terms of trade is just a single component, the industrial sector has been undergoing a loss since the mid-sixties.

Thamarajakshi (1990) while extending the series of net barter terms of trade has indicated that while the terms of trade improved at an annual compound rate of 2.38 percent during 1961-62 to 1973-74, it deteriorated at the rate of 0.99 percent during 1974-75 and 1987-88. Tyagi (1987) demarcates the time span 1964-65 to 1974-75 as a period when the net barter terms of trade moved against

[7] The Kahlon-Tyagis methodology has been put to extensive scrutiny by Nalini Vittal (1986) and numerous doubts of a crucial nature have been raised.

agriculture and the following nine-year period (1975-76 to 1983-84) as a time when terms of trade have been adverse to agriculture. From the above evidences it is clear that the terms of trade have been adverse to agriculture for most of the period of analysis undertaken (1970-71 to 1983-84). (See Table 2.6).

Table 2.6

Inter Sectoral Terms of trade

Years	Thamarajakshi (Base 1978-79-100)	Tyagi (1971-72=100)
1970-71	109.9	100.0
1971-72	104.0	97.5
1972-73	106.8	103.5
1973-74	115.7	109.6
1974-75	112.4	99.9
1975-76	101.5	84.6
1976-77	99.9	90.7
1977-78	104.5	90.8
1978-79	100.0	85.4
1979-80	95.9	88.6
1980-81	89.7	87.3
1981-82	95.9	82.9
1982-83	91.7	84.7
1983-84	97.0	86.1

Source: Thamarajakshi (1990), D.S. Tyagi (1987)

The foregoing analysis brings out certain structural changes which have characterised the growth process of the Indian economy in the seventies and the early eighties. It is precisely these

factors - the widening of the industry-agriculture growth disparities, the decline in the agricultural input use coefficient and the adverse terms of trade against agriculture which called for a fresh look at the intersectoral resource flows in terms of commodity and savings transfers. (See Charts 2.2, 2.3)

Chapter III

Intersectoral Flow of Resources: Balance of Trade - Commodity Flows

The earliest attempt to estimate the intersectoral balance of trade for India was undertaken by Ishikawa (1967) for the year 1951-52. Subsequently there was an exercise by Thamarajakshi designed to construct not the balance of trade but the terms of trade between agriculture and industry. However, in order to compute the base year weighting diagram for this, Thamarajakshi (1969) had to calculate the intersectoral commodity flows in the base year. From these we get a balance of trade estimate for the two years 1951-52 and 1960-61 at constant prices. Then there is also the Mundle time series estimate of intersectoral commodity flows for the period 1951-52 to 1970-71.

Of these the Ishikawa estimate is not really comparable to the other two since his estimate pertain to the farm household sector rather than agriculture as a branch of production vis-a-vis non agriculture which is the demarcation used in the Thamarajakshi and Mundle[1] estimates. Moreover at the time Ishikawa was writing he

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[1] Agriculture has been demarcated through out this exercise as including division 0 of the Indian standard Industrial classification of 1961. Division 0 of the ISIC includes the following activities.

Major groups	Minorgroups
00 Field produce and plantation crops.	000-009
01. Plantation crops.	010-015
02. Forestry and logging	020-026
03. Fishing	030-032
04. Live stock and hunting	040-048

All other categories are treated as non agricultural. This demarcation is directly applied to the official CSO estimates of national product by Industrial origin and the census estimates of population. It can also be matched reasonably well with data on

had to rely only on the All India rural credit survey of 1951-52 which is quite different from the data sources available later to Thamarajakshi and Mundle. In this sense the later two exercises are similar but here too there are differences. Thus, while Thamarajakshi and Mundle have used the same NSS series of consumer expenditure, to measure consumer goods, their sources of data and methods of estimating intersectoral flow of producer goods are different. Also, there are some differences in the classification of commodities, of segregation of agriculture and non agricultural population etc, such that these two estimates are not comparable.

For the year 1951-52 all the estimates show a net inflow or trade deficit for agriculture. The Ishikawa-estimate is given only at current prices and shows a smaller net commodity inflow than the Mundle current price estimate. The Thamarajakshi-estimate is given only at constant prices and shows a smaller net inflow into agriculture than the Mundle constant price estimate. However for the year 1961-62 the Mundle estimate shows a net commodity outflow, ie a trade surplus, while the Thamarajakshi estimates indicate a trade deficit for this year also.

This chapter presents our estimates of the commodity flows. The first section is concerned with the measurement of the flow of consumer goods, while the second presents estimates of producer goods flow while the third analyses trends in the net resource flows.

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consumption expenditure, I-O transactions tables, capital formation and foreign trade. For prices sectoral (Cont'd on next page) prices under for agriculture and non agriculture as per the implicit deflators base (1980-81=100) and the Tyagi series with base (1971-72=100) is used.

Section 1: Intersectoral Flow of Consumer Goods.

Estimations of the intersectoral commodity flows for the seventies and eighties have been done on the same lines as Mundle's estimation for the earlier period of 1951/52 to 1970/71. Here the estimates of the purchases of non agricultural consumer goods by agriculture and the purchases of agricultural consumer goods by non-agriculture at both current and constant prices are presented.

The major sources of date for this purpose are:

a) Successive rounds of the NSS survey of consumption expenditure from the 22nd round onwards.

b) population census data and

c) The official National income white paper issued by the Central Statistical Organisation.

1.1 Methodology of Estimation

1) The NSS per capita consumption expenditure estimates[2] are given separately for rural and urban consumers by major groups of commodities. These were classified to give per capita consumption pattern of the following form :

[2] The two well known criticisms of the pattern of expenditure reflected in the NSS studies are that 1) they over estimate the per capita expenditure on food grains and 2) under estimate the per capita expenditure on products typically consumed by the rich such as consumer durables. These adjustments reinforce each other to increase the net imports into agriculture. But Bardhan (1983) has demonstrated that with usage of the appropriate deflator the NSS data do not throw up such a difference in the relative change in consumption expenditure of the rural rich and the rural poor.

Table A

	Commodities	
Consumers	Agriculture	Nonagriculture
Rural	c_{11}	c_{21}
Urban	c_{12}	c_{22}

For the purpose of this reclassification the NSS data in their published form are not very appropriate because some of the major commodity groups include some commodities which are agricultural and others which are nonagricultural. Hence a further decomposition of these major commodity groups was necessary before they could be regrouped into agriculture and non agricultural items[3]. For this purpose we used the special tabulation of the NSS 18th round 1963-64 (Feb 1963 Jan 1964) and the 19th round (July 1964- Jan 1965) which are more disaggregative than what is available in the following rounds of the NSS data[4]. Here a note

[3] The NSS commodity groups have been reclassified as.
Agricultural commodities
1. Cereals, gram, cereal substitutes
2. Milk and Milk products.
3. Meat Fish and Egg.
4. Pulses.
5. Vegetables, Fruits and nuts.
6. Pan and supari
7. Fire wood.

Non agricultural commodities.
8. Edible oils
9. Sugar, salt and spices.
10. Beverages and refreshments.
11. Clothing
12. Fuel and light other than fire wood
13. Tobacco and intoxicants
14. Durable goods.
15. Miscellaneous goods and services (including consumer rents and taxes)

[4] The decomposition of the composite commodities into pan supari and fire wood was on the basis of the NSS 18th and 19th round respectively.

of caution should be added about the regrouping. In an earlier exercise Mundle (1975)[5] used different regroupings and it was found that the final estimates turned out to be quite sensitive even to marginal variations in commodity classifications (Table 3.1).

Table 3.1

Annual Per Capita Consumption Expenditure

(Rs. current prices)

Year	Rural		Urban	
	Agricul. commodities (c_{11})	Non agricul. commodities (c_{21})	Agricul. commodities (c_{12})	Non agrocul. commodities (c_{22})
1970-71	278.64	277.08	122.16	260.86
1971-72	290.25	294.93	133.20	281.71
1972-73	302.35	313.93	145.24	304.35
1973-74	314.96	334.16	158.36	328.80
1974-75	328.08	355.68	172.67	355.22
1975-76	341.76	378.60	188.28	383.76
1976-77	364.31	407.31	213.90	420.78
1977-78	388.35	438.20	243.00	461.36
1978-79	413.97	471.43	276.06	505.86
1979-80	441.28	507.18	313.61	554.66
1980-81	470.40	545.64	356.28	608.16
1981-82	520.55	605.50	391.17	678.36
1982-83	576.04	671.93	429.49	756.67
1983-84	637.45	745.65	471.55	844.02

2. The population census gives estimates of total rural and urban population in each of the census years.(see Table 3.2) Each of

[5] In the earlier classification two small items fire wood and pan supari were not separated out of the non agricultural commodities.

these categories of population were further classified by us into agricultural and non agricultural population such that in each census year we derived a population distribution of the form :

Table 3.2

Rural Urban Population

(in millions)

Years	Rural Population (N_1)	Urban Population (N_2)
1970-71	434	107
1971-72	442	111
1972-73	450	116
1973-74	459	120
1974-75	467	125
1975-76	476	130
1976-77	485	135
1977-78	494	140
1978-79	503	145
1979-80	512	151
1982-81	522	157
1981-82	532	163
1982-83	542	170
1983-84	552	176

Table B

Population	Agricultural	Nonagricultural
Rural	N_{11}	N_{12}
Urban	N_{21}	N_{22}

For this decomposition, the proportional distribution of workers by industrial categories, within the rural and urban sectors was applied to the total population in each of these sectors. The 1971 and 1981 census were used for this purpose.(See Table 3.3)

Table 3.3

Distribution of Work Force (in lakhs)

Sl. No.	Item	1970-71 Rural	1970-71 Urban	1970-71 Total	1980-81 Rural	1980-81 Urban	1980-81 Total
1.	Primary	1249.32 (85.1)	4281.00 (13.6)	1292.13 (72.5)	1504.50 (83.6)	64.93 (14.1)	1569.43 (69.4)
2.	Secondary	94.82 (6.5)	103.12 (32.7)	197.92 (11.1)	141.75 (7.9)	160.36 (34.9)	302.11 (13.4)
3	Tertiary	122.90 (8.4)	169.63 (53.7)	292.53 (16.4)	153.71 (8.5)	234.27 (51.0)	387.98 (17.2)
4	Total (1+2+3=5+6)	1467.02 (100)	315.56 (100.0)	1782.58 (100.0)	1799.96 (100.0)	459.56 (100.0)	2259.52 (100.0)
5.	Agri.	1237.51 (84.4)	38.17 (12.1)	11275.68 (71.6)	1486.45 (82.6)	56.62 (12.3)	1543.01 (68.3)
6.	Non-Agri	229.51 (15.6)	277.39 (87.9)	5060.90 (28.4)	313.51 (17.4)	402.94 (87.7)	716.45 (31.7)
7.	Population	4340	1070.00	5410.00	5220.00	1570.00	67.90
8*.	W.F./Pop	33.80	29.49	32.95	34.48	29.27	33.28

Source: Census of India ,1981.
* represents the ratio of working force to population.

3. The annual estimates of populations for the years 1970-71 to 1983-84 were worked out for each category N_{11}, N_{12}, N_{21} and N_{22} by estimating the exponential growth rate of population between the census years in each category. It was assumed that the proportions of agricultural and non agricultural workers to total workers in the rural areas in the census years 1971 and 1981 are the same as that of the agricultural and non- agricultural population to the

total rural and urban population in the corresponding financial years of 1970-71 and 1980-81.[6](See Table 3.4)

Table 3.4

Agricultural & Nonagricultural Population in Urban & Rural Areas.
(in millions)

Year	Rural			Urban		
	Total (N1)	Agri. (N11)	Non agri. (N12)	Total (N2)	Agric. (N21)	Non agri. (N22)
1970-71	434	366	68	107	13	94
1971-72	442	372	70	111	13	98
1972-73	450	378	72	116	14	102
1973-74	459	385	74	120	15	105
1974-75	467	391	76	125	15	110
1975-76	476	397	78	130	16	114
1976-77	485	404	81	135	16	118
1977-78	494	411	83	140	17	123
1978-79	503	417	86	145	18	128
1979-80	512	424	88	151	19	133
1980-81	522	431	91	157	19	138
1981-82	532	438	94	163	20	143
1982-83	542	445	96	170	21	149
1983-84	552	453	99	176	22	154

[6] In the earlier exercise (1975) Mundle used the proportions of population distributions with in the rural and urban areas by industrial categories as given in the 1951 census approximations to the appliers to the rural and urban totals of 1961 and 1971 census. But it (P.T.O.) was found that there was no significant difference in the two methods.

Table 3.5

Net Inflow of Consumer Goods to Agriculture

(NSS based)

(Rs crores current prices)

Year (1)	Total imports (c21) (2)	Total Exports (c12) (3)	Net imports (col (2) - Col(3)) (4)
1970-71	10486.93 (45.30)	4492.52 (19.41)	5994.44
1971-72	11360.41 (45.18)	4905.41 (19.51)	6455.00
1972-73	12307.24 (45.06)	5357.45 (19.61)	6949.79
1973-74	13333.64 (44.92)	5852.47 (19.72)	7481.21
1974-75	14446.38 (44.78)	6394.55 (19.82)	8051.83
1975-76	15652.83 (44.63)	6988.43 (19.93)	8664.40
1976-77	17145.61 (43.73)	7757.24 (19.79)	9388.37
1977-78	18752.08 (42.85)	8611.28 (19.65)	10170.80
1978-79	20576.26 (41.99)	9560.06 (19.51)	11016.20
1979-80	22543.55 (41.14)	10614.18 (19.37)	11929.37
1980-81	24700.88 (40.32)	11785.41 (19.24)	12915.47
1981-82	27900.22 (40.18)	13530.00 (19.49)	14370.22
1982-83	31515.16 (40.05)	15533.30 (19.74)	15981.84
1983-84	35599.89 (39.90)	17833.80 (19.99)	17766.09

4. The per capita expenditure pattern estimated for a given year was then related to the population distributions of that year by multiplying the matching cells to give us the NSS based estimates of consumption expenditure by the following categories.

Table C

Consumers	Commodities	
	Agricultural	Nonagricultural
Agri	C_{11}	C_{21}
Nonagri	C_{12}	C_{22}

$C_{11} = c_{11} * N_{11} + c_{12} * N_{21}$ ------(1)

$C_{12} = c_{11} * N_{12} + c_{12} * N_{22}$ ------(2)

$C_{22} = c_{21} * N_{12} + c_{22} * N_{22}$ ------(3)

$C_{21} = c_{21} * N_{11} + c_{22} * N_{21}$ ------(4)

$C_{12} - C_{21}$ = Intersectoral flow of consumer goods valued at current prices. ------(5) (See Table 3.5)

5) The series of C_{12} and C_{21} represent the annual estimates of inter sectoral flow of consumer goods based on NSS data. But it is well known that there are wide divergences between the NSS estimates and the official estimates of private consumption expenditure.(See Table 3.6) Accordingly our estimates were adjusted for the official estimates by multiplying the NSS based ratios of C_{21} and C_{12} to total consumption expenditure (C') by the official (CSO) total consumption expenditure estimates to give us the adjusted estimates of agricultural purchases from non agriculture (C'_{21}) and non agricultural purchases from agriculture (C'_{12}).

Table 3.6

Estimates of Private Final Consumption Expenditure (CSO)

(Rs/ Crores. current prices)

Year (1)	Private Final Consumption Expenditure (2)
1970-71	32545
1971-72	35101
1972-73	38688
1973-74	46638
1974-75	56505
1975-76	57822
1976-77	60079
1977-78	75242
1978-79	81704
1979-80	99083
1980-81	113456
1981-82	124691
1982-83	146084
1983-84	161041

Source : NAS(1989,1990) CSO

$C'_{12} = C_{12} / C * C'$----------(6)

$C'_{21} = C_{12} / C * C'$----------(7)

The results are enumerated in Table 3.7. It is important to note in this context that the NSS data as well as the CSO data on consumption expenditure are valued at purchaser prices, consequently our estimates of intersectoral consumption goods flow

are valued at purchaser prices. While these are appropriate for deliveries from non agriculture to agriculture[7] the reverse flow from agriculture to non agriculture should in fact be valued at producer prices since all the service activities are treated as part of the non agriculture in our demarcation. But the lack of appropriate time series data on distribution margins makes it difficult to carry out the required adjustments.

Table 3.7

Intersectoral Flow of Consumer Goods:Adjusted Estimates

(Rs. crores current prices)

Year (1)	Agri.total imports (2)	Agri. total exports (3)	Agri. net imports (4)
1970-71	15963.51	6838.65	9124.86
1971-72	17373.05	7501.66	9871.39
1972-73	18900.95	8007.74	10673.21
1973-74	20557.21	9023.01	11534.20
1973-75	22352.69	9894.20	12458.49
1975-76	24499.28	10848.75	13450.53
1976-77	26722.61	12090.18	14632.43
1977-78	29376.98	12468.86	15908.12
1978-79	32285.06	15000.16	17284.90
1977-80	35471.60	16701.10	18770.50
1980-81	38964.01	15702.43	23261.58
1981-82	44120.72	21396.01	22724.71
1982-83	49947.40	24618.13	25328.97
1983-84	56530.46	28318.99	28211.47

[7] For conceptional clarifications see. Mody et al (1981); Mody (1979); Mody (1980); Mundle (1980a); Mundle (1980b)

4. These estimates at current prices were converted to estimates at constant prices by using two sets of deflators. a) one consisted of the set of implicit deflators for agricultural and non agricultural commodities of private final consumption expenditure as available in the National Accounts Statistics with base 1980-81=100 (See Table 3.10 and Table 3.8) and b) the other was the price indices of agricultural and non agricultural goods as constructed by DS Tyagi (1987) in his exercise on terms of trade. The Tyagi series with base 1971-72=100. (See Table 3.9 and Table 3.11).

Table 3.8
Intersectoral Flow of Consumers Goods:Adjusted Estimates

(Rs. crores constant prices)
(implicit deflators)

Year (1)	Agri Total imports (2)	Agri Total exports (3)	Agri net imports (4)
1970-71	33188.18	14258.29	18929.89
1971-72	34857.65	15306.08	19551.57
1972-73	34031.23	14945.46	19085.77
1973-74	30365.15	14630.29	15734.86
1974-75	26070.32	14594.60	11475.72
1975-76	32019.08	16328.93	15690.15
1976-77	36258.62	12901.43	23357.19
1977-78	37228.46	14531.66	22696.80
1978-79	38972.80	16545.96	22426.84
1979-80	38644.30	16197.67	22446.63
1980-81	38964.01	15702.43	23261.58
1981-82	39524.07	18212.19	21311.88
1982-83	40823.13	19361.41	21461.72
1983-84	41557.35	20184.65	21372.70

Table 3.9

Net Inflow of Consumer Goods to Agriculture:Adjusted Estimates

(Rs. crores constant prices)
(Tyagi's deflators)

Year (1)	Total imports (2)	Total exports (3)	Net imports (col (2)-col(3))col(4)
1970-71	15868.30	6921.71	8946.59
1971-72	16436.19	7304.44	9131.75
1972-73	16696.95	7135.95	9561.00
1973-74	15387.13	6222.77	9164.36
1974-75	13772.45	5558.54	8213.91
1975-76	15244.21	7072.20	8172.01
1976-77	16097.95	7961.55	8133.40
1977-78	16569.08	8217.73	8351.35
1978-79	17866.66	9542.09	8324.57
1979-80	16931.55	9330.22	7601.33
1980-81	16701.24	9194.22	7507.02
1981-82	17712.05	9878.12	7833.93
1982-83	19625.58	10666.43	8959.15
1983-84	20304.48	11300.48	9005.00

Table 3.10

Net Inflow of Consumer Goods into Agriculture
(NSS based)

(Rs crores, constant prices)
[implict deflators]

Years (1)	Total imports (C_{21}) (2)	Total Exports (C_{12}) (3)	Net imports (col (2) -col(3)) (4)
1970-71	21802.36	10349.06	11453.3
1971-72	22793.77	10544.74	12249.03
1972-73	22159.24	10653.10	11506.14
1973-74	19695.19	10226.16	9469.03
1974-75	16849.07	9631.80	7217.27
1975-76	20625.69	10087.22	10538.47
1976-77	23264.07	10673.14	12590.93
1977-78	23801.91	11144.40	12657.51
1978.79	24838.56	12258.06	12580.50
1979-80	24559.92	12708.04	12481.88
1980-81	24700.89	11785.41	12915.48
1981-82	24993.48	13144.86	11848.62
1982-83	25758.21	13717.17	12041.04
1983-84	26170.62	14651.50	11519.12

Table 3.11

Net Inflow of Consumer Goods into Agriculture
(NSS based)

(Rs.crores, constant prices)
[Tyagi's deflators]

Year (1)	Total imports (2)	Total Exports (3)	Net imports col(2) col(3) (4)
1970-71	10424.30	4547.09	5877.29
1971-72	10747.79	4776.45	5971.34
1972-73	10872.12	4646.53	6225.59
1973-74	9980.27	4036.16	5944.11
1974-75	8901.04	3592.45	5308.59
1975-76	9819.84	4555.69	5264.15
1976-77	10328.68	5100.17	5228.51
1977-78	10593.39	5253.98	5339.41
1978-79	11386.97	6081.46	5305.51
1979-80	10760.64	5929.71	4830.93
1980-81	10587.60	5828.59	4759.01
1981-82	11200.41	6246.54	4953.87
1982-83	12383.17	6730.21	5652.96
1983-84	12787.32	7116.44	5670.88

1.2 Trends in Consumer Goods Flow:

From these it is clear that while total imports of non agricultural items into the agricultural sector grew at the rate of 9.22 percent, for the entire period from Rs. 10486.93 crores in

1970-71 to Rs.35599.89 crores in 1983-84, exports of agricultural items to the non agriculture sector grew at a slightly faster rate of 10.42 percent from Rs.4492.52 crores in 1970-71 to Rs 17833.80 crores in 1983-84. As a consequence, the net import of non agricultural commodities grew at a modest pace of 8.1 percent from Rs.5994.44 crores in 1970-71 to Rs.17766.09 crores in 1983-84. An interesting point worth mentioning here is the fact that the share of imports of non agricultural goods in the total consumption expenditure averaged around 42.86 percent through out the time span considered, while the share of exports of agricultural goods in the total consumption expenditure stood at around 19.63 percent. For the earlier decades estimates by Mundle indicate that total imports as a percentage of total consumption expenditure stood at 23.87 percent, while exports were around 18.49 percent.

At constant prices it was found that the imports of non agricultural items grew at a marginal rate of 1.95 percent per annum for the entire period from Rs.21802.36 crores in 1970-71 to Rs.26170.61 crores in 1983-84. The exports of agricultural items grew at a higher rate of 2.65 percent per annum, from Rs.10349.06 crores in 1970-71 to Rs.14651.50 crores in 1983-84. Net imports therefore grew at a very low rate of 1.23 percent per annum only, from Rs.11453.33 crores in 1970-71 to Rs.11519.12 crores in 1983-84.

The use of the Tyagi series too reiterates the same trends, for imports of non agricultural goods grew at a rate of 1.39 percent per annum from Rs.10424.30 crores in 1970-71 to Rs 12787 crores in 1983-84. Exports of agricultural items on the other hand

grew at a much faster rate of 4.01 percent per annum from Rs.4547.09 crores in 1970-71 to Rs. 7116.44 crores in 1983-84. As a result net imports declined at the rate of 1.12 percent from about Rs.5877.29 crores in 1970-71 to Rs.5670.88 crores in 1983-84. The only plausible explanation for the faster increase in exports of agricultural commodities into the non agricultural sector as against the imports of non agricultural commodities into the agricultural sector could be shifting of terms of trade against agriculture. Thus, one finds that the agricultural sector as a whole has remained a net importer of consumption goods for the reference period, in continuation of the earlier trend as estimated by Mundle(1981). But the significant feature of the current analysis is that the value of net imports in current and constant terms has increased rather slowly/declined, in comparison to the rather sharp increases in the value of net imports as witnessed in the earlier period. (See Charts 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6)

1.3 Some Tentative Explanations:

The volume of consumer goods purchased by agriculture depend of on the per capita income and the size of its population. As the per capita income rises, the surplus income available for expenditure on manufactured items, after meeting subsistence (food) requirements will rise. Since per capita income reflects the productivity of labour in this sector we may say that the growth of the market for manufactures depends on the rates of growth of population and productivity in agriculture. We also need to take into account the distribution of the agricultural product, since the rise in per capita income can generate different volumes of non

CHART 3.1

INTER–SECTORAL CONSUMER GOODS FLOW

(CURRENT PRICES)

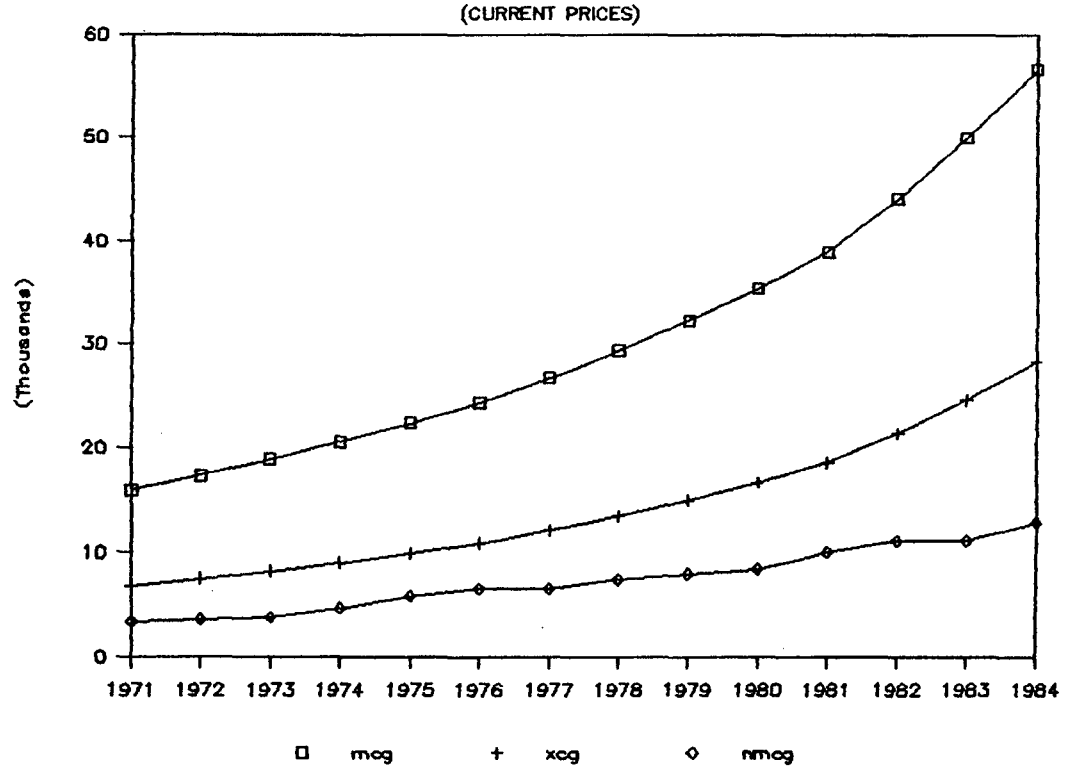


CHART 3.2

INTER–SECTORAL CONSUMER GOODS FLOW

(CONSTANT PRICES)

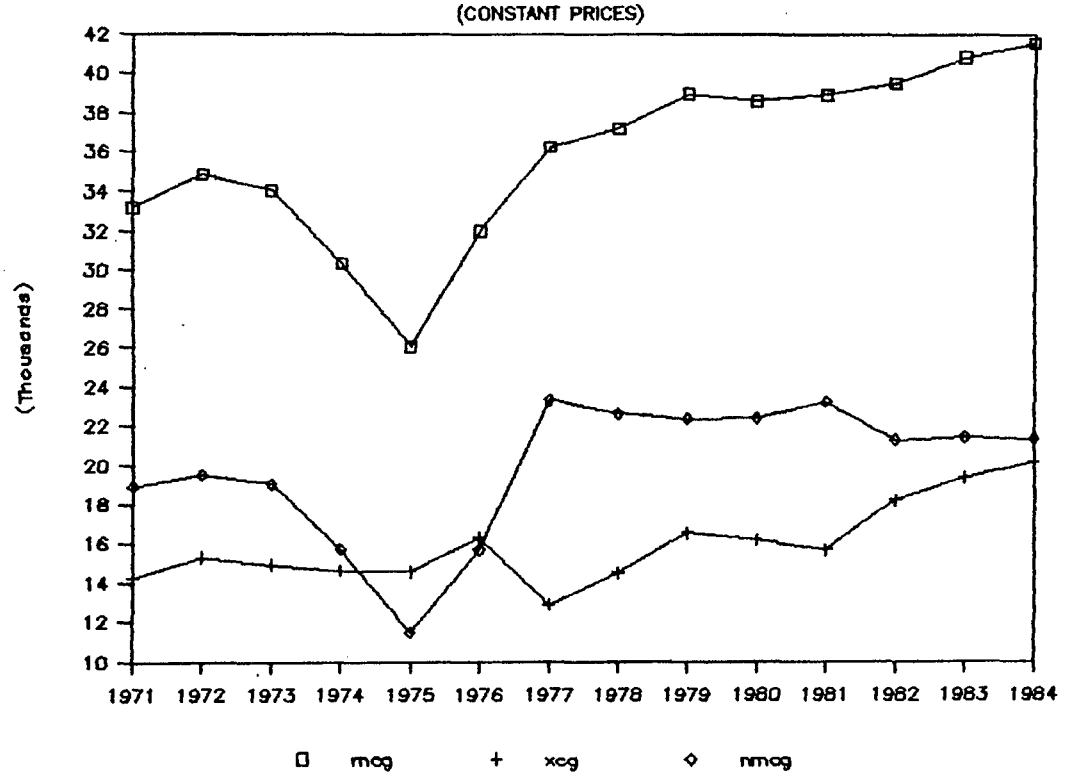


CHART 3.3

INTER–SECTORAL CONSUMER GOODS FLOW

(CURRENT PRICES)

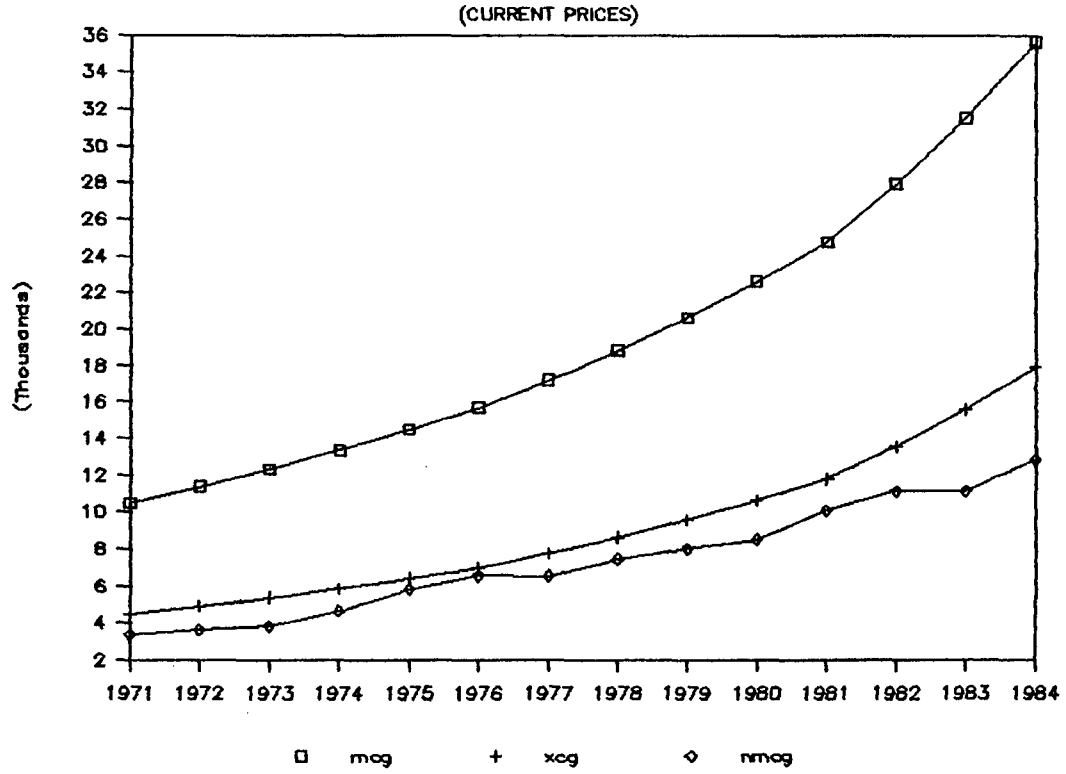


CHART 3.4

INTER–SECTORAL CONSUMER GOODS FLOW

(CONSTANT PRICES)

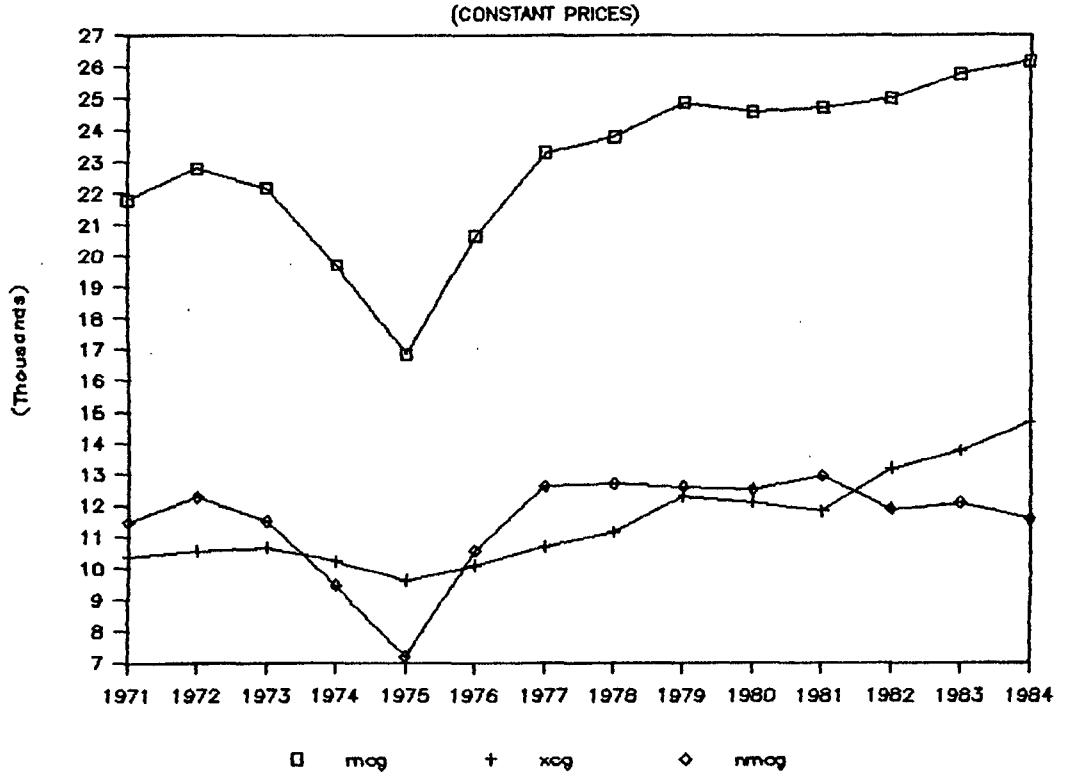


CHART 3.5

INTER-SECTORAL CONSUMER GOODS FLOW

(CONSTANT PRICES)

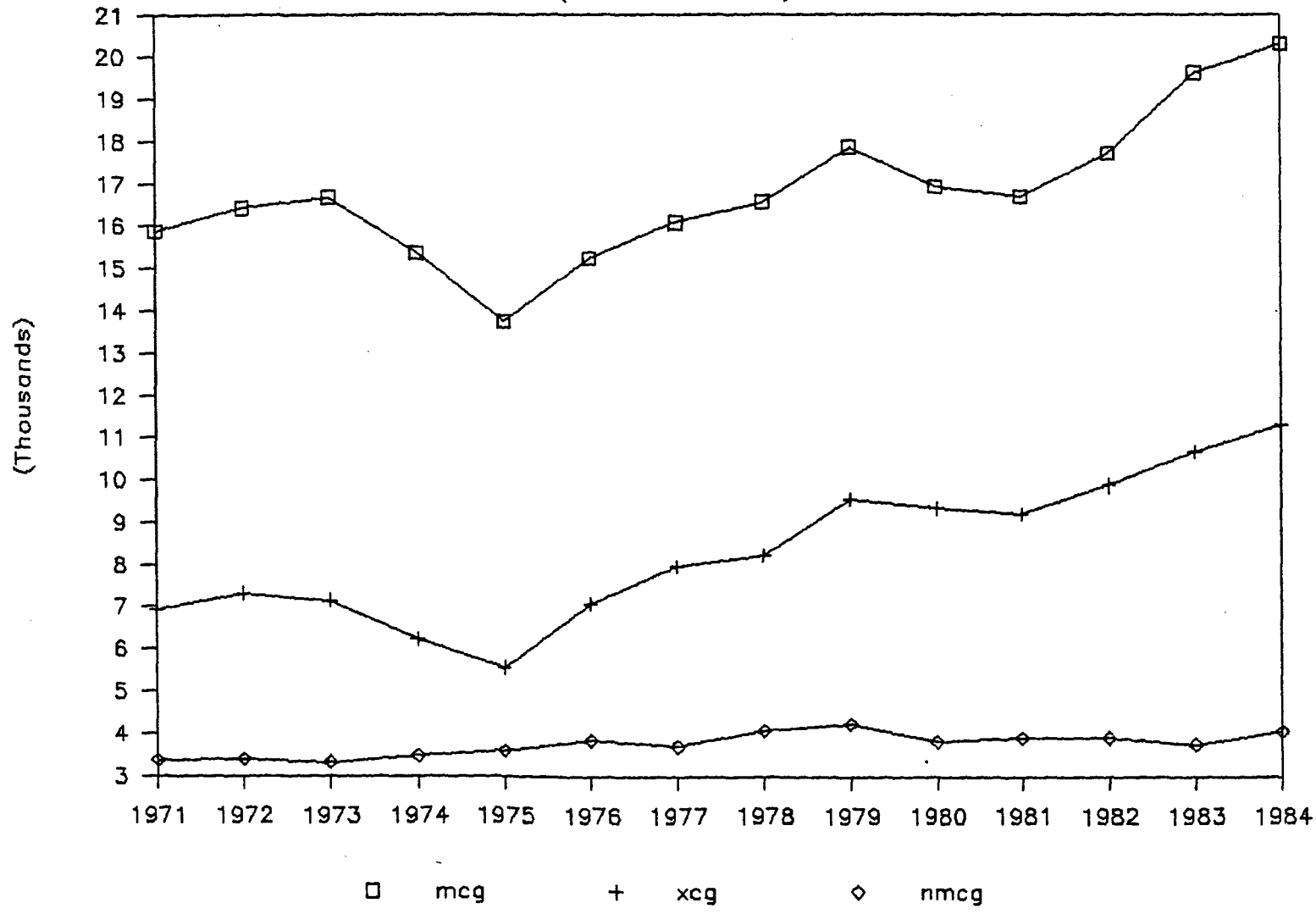
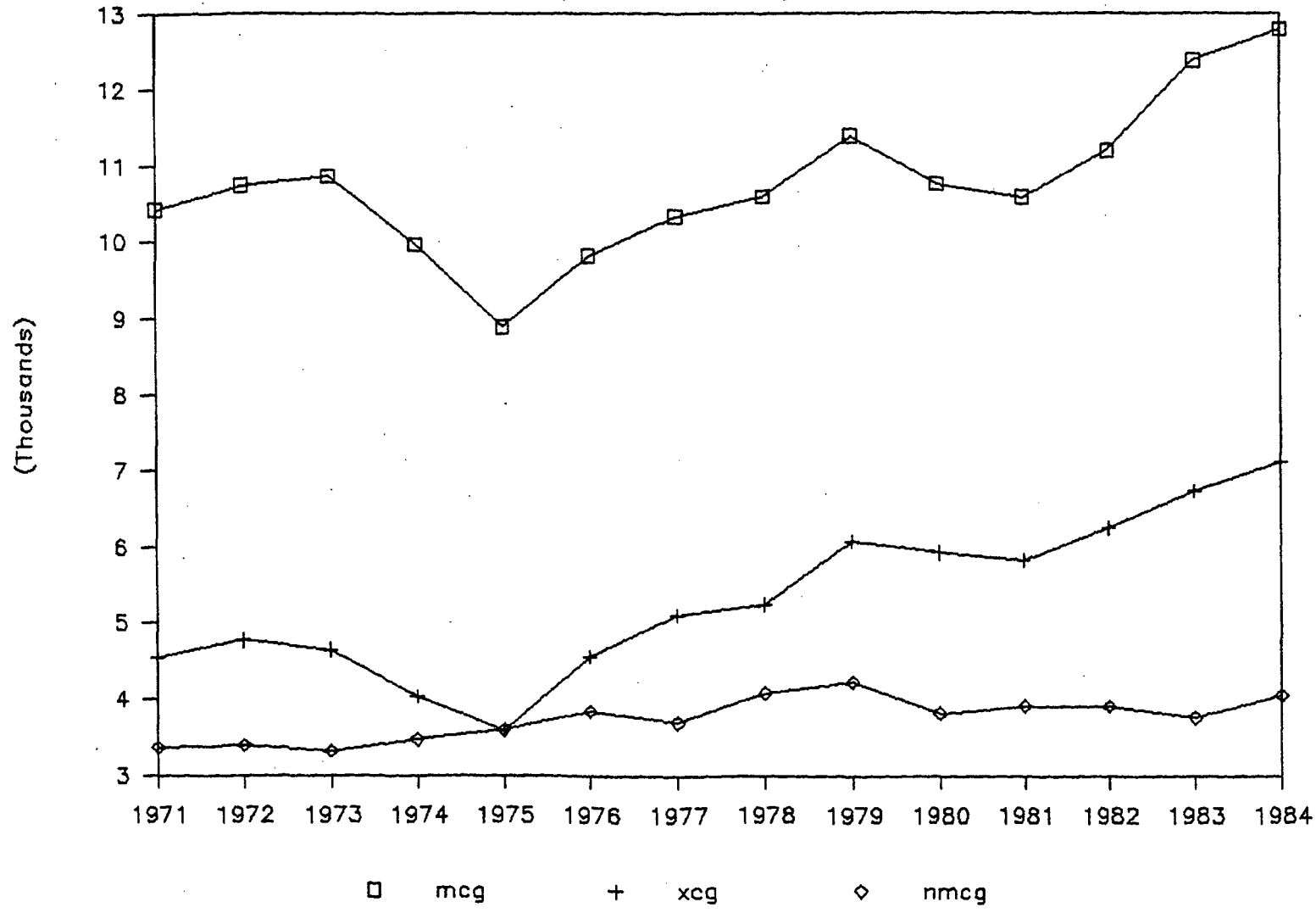


CHART 3.6

INTER-SECTORAL CONSUMER GOODS FLOW

(CONSTANT PRICES)



food demand depending on how the income is distributed. Turning to the imports of agricultural goods into the non agricultural sector, one can isolate the determinants of this magnitudes as the terms of trade, and the per capita consumption of agricultural commodities.[8]

Thamarajakshi (1990) finds evidence to substantiate the reason for agriculture remaining a net importer of consumer goods, even though the volume of imports is declining. From the table it is clear that the demand for non agricultural consumer products from the rural areas rose considerably in the period when the terms of trade deteriorated against agriculture. It increased from 35 percent in 1967-68 to 47 percent in 1983. During 1960-61 to 1978-79 purchases by agriculture from non- agriculture for final consumption rose by over a 100 percent from Rs.4918 crores to Rs.10170 crores at constant (1970-71) prices compared to rise of about 20 percent only during the decade preceding 1961.

Also, the structural changes characterising the gross domestic product, with the share of agriculture and allied sectors in the gross domestic product declining in value from 44 percent in 1972-73 to 38.6 percent in 1983-84 contributed its mite to the situation. Further, it was seen that the agricultural population increased at a lower rate of 1.63 per cent per annum as against the increase of the non agricultural population at a higher rate of 3.23 percent per annum. This evidence of the declining agricultural population has been further explained by the

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[8] Mundle (1984)

decreasing percentage of work force employed in agriculture and allied activities. From about 74 percent in 1972-74 the work force declined to about 68 percent in 1983. In absolute numbers, the numbers employed in these sectors rose by 12.5 percent during this period. Thus the value added per employed person at constant prices (1970-71) increased from Rs 864 in 1972-73 to Rs 1091 in 1983-84. Also the percentage of rural population below the poverty line was considerably lower at 40 percent in 1983, as compared to 54% in 1972-73. (See Table 3.12)

Further it seems reasonable to expect that the agricultural sector too is a participant in the consumer boom which is embracing all sectors of the economy especially the rural sector as the recent NCAER and other surveys[9] indicate.

As far as the exports of agricultural consumer goods are concerned one finds that with rising incomes in the non agricultural sector as a whole, the percentage of per capita consumer expenditure spent on agricultural commodities declined in

[9] The NCAER survey of 1987-88 prices 500 out of the 800 million Indian population as participants in the boom in consumer articles. The extent of rural consumption in respect to consumer durables is rather revealing. More than 70 percent of the bicycles, portable radios and mechanised wrist watches, sold in the country are bought in the rural areas. More than one half of the table fans motorcycles, electric irons, quartz watches and sewing machines are purchased by the rural sector. More significantly the purchases of the bottom 60 percent of the population accounted for as much as 33 percent of the mechanised wrist watches, 22 percent of small black and white Television sets, 25 percent of sewing machines, 24 percent of the quartz watches, 23 percent of cassette recorders 1 percent of colour Television sets, 13 percent of mopeds and 13 percent of moulded suit cases. According to the latest study on rural markets by the operations research group the size of the rural markets for packed consumer products such as washing/cleaning materials toiletries food beverages, cosmetics etc was of the order of Rs 1500 crores in 1988.

Table 3.12

Terms of Trade, Agricultural Performance 1961-62 to 1987-88

Period	Annual rate of change in terms of trade (%)	Annual rate of growth in crop production (%)	Value added per employed in agri & allied sectors 1970-71 prices (Rs.)	Percent of purchased inputs to total inputs (%)	Percent of rural sector's consumer expend-iture in non-agri. items (%)	Gross Capital formation in agri & allied sectors 1970-71 prices (Rs.Crs)	Rural poverty (Percent) ofpopulation below poverty line) (%)
1961-62 to 1973-74	+2.38	+2.52	864 (1972-73)	16.4 (1970-71)	34.6 (1967-68)	1137.4 (Average for 1961-62 to 1973-74)	54.1 (1972-73)
1974-75 to 1987-88	-0.99	+2.87	1091 (1983-84)	35.6 (1983-84)	47.1 (1983)	2097.9 (Average for 1974-75 to 1984-85)	40.4 (1983)

Source - Thamarajakshi, Economic & Political Weekly, March 31st 1990

both urban and rural areas. But this fact in conjunction with the evidence of a faster rise in the non-agricultural population and the terms of trade deteriorating at an annual compound rate of 0.99 percent (1974-76 to 1987-88) accounts for the phenomenon of the exports of agricultural goods into the non- agricultural sector rising at a faster rate than imports of non agricultural commodities into the agricultural sector.

The review of the intersectoral flow of consumer goods indicates that even though the agricultural sector as a whole remains a net importer of consumer goods the magnitude of the increases in imports has not been as sharp as in the earlier decades.

Section 2: Intersectoral Flow of Producer Goods.

One of the methods of measuring the intersectoral flow of intermediate goods is to begin with individual goods traded between agriculture and non agriculture. The aggregate trade between the two sectors is worked out from the data on outputs of each individual commodities by assuming that the total delivery by a sector to the other sector (d_t) is equal to the total output of the commodity (q_t) minus some retention norm(r_t) (Thamarajakshi 1969)

$$d_t = (1-r_t)q_t \quad \text{----------(1)}$$

The first problem one encounters in using this method is that conceptually the total delivery of a commodity by one sector to another cannot be worked out from the retention norms and output data alone. A third component, ie changes in stocks and inventories has to be introduced. Thus total intersectoral deliveries is equal to total output net of retention plus or minus changes in stocks, depending on whether the stocks remain with the delivery sector or accumulate as inventories in the receiving sector.

$$d_i = (1-r_i)\underline{q} + s \quad \text{-------(2)}$$

Thus the problems arising out of the output method, seem quite formidable. First of all, a regular series of annual output data are available only for a limited number of individual commodities, traded between the agricultural and non agricultural sectors.

Secondly, even where output data are available, it may be extremely difficult to arrive at retention norms of a sector without first having alternative estimates of deliveries to the other sector. Finally data on stocks are not available except for a limited number of commodities.

Another method of looking at intermediate goods flow is to look at input costs of individual commodities produced in a given sector and estimate what components of inputs have to be purchased by the other sector (Thamarajakshi 1969). But the problem of data availability marks this method which is rather difficult to apply.

2.1 Methodology of Estimation

An extremely valuable source of information for the purpose of building a time series of intersectoral flow of intermediate goods on the basis of individual commodity data are based on the Input-Output transaction matrices, which have been constructed for different points in time since 1952. The use of the I-O transactions matrices have been adopted by Mundle in his estimation of the producer goods flow. Adopting the same methodology, our estimation of producer goods flow can be outlined as follows.

a) In the first stage four I-O transactions matrices as published by the CSO were selected. These include I-O tables for 1968-69, 1973-74, 1978-79 and 1983-84. Since 1983-84 is the latest year for which I-O tables are available our analysis of the Intersectoral resource flows is terminated at that point.

b) The transactions matrices so selected have been reduced to a 2x2 matrices between agriculture and non agriculture as per the earlier sectoring.

c) The aggregate receipts by agriculture is at producer prices, while its payments to non agricultural sector is at purchaser prices. This makes it consistent with our demarcation of the sectors where service sectors including government fall in the non-agricultural sector. The transaction matrices were then converted to (i) 1980-81 prices using a set of implicit sectoral deflators and (ii) 1970-71 prices using the deflators worked out by Tyagi, to estimate the effect of price differentials between the sectors, on the comparability of matrices constructed at different points in time.

d) From this set of 2x2 transaction matrices at 1980-81 prices and 1970-71 prices a set of I-O coefficients were worked out. These coefficients are different from the conventional coefficients in the sense that the coefficient a_{ij} measures the amount of deliveries of the i^{th} industry required per unit of value added of the J^{th} industry instead of measuring the amount of deliveries of the i^{th} industry required per unit of output of the Jth industry.

e) The four bench mark estimates for the years 1968-69, 1973-74, 1978-79 and 1983-84 were used to interpolate the coefficients a_{12} and a_{21} for the intervening period by the straight line formula

$$a_{ij}(n) = a_{ij}(t) + [a_{ij}(T) - a_{ij}(t)] / [T-t] * (n-t) \quad -----(1)$$

Where t and T refer to years preceding and succeeding the bench mark in relation to the year n for which a particular coefficient is being estimated.

f) In the subsequent stage the gross produce by industrial origin was disaggregated in accordance with the demarcation of the two sectors into gross value added in agriculture and non agriculture.

g) By multiplying the gross value added of the sector x_j by the I-O co-efficient aij in particular year we derive the intermediate consumption of the sector i's output by the sectorjj(Q_{ij}) for that year.

$Q_{ij}(t) = (a_{ij}(t)) \times (x_j(t))$-(2)

where i = 1 j =2 t = 1 to 14.

h) These estimates of intersectoral intermediate goods at constant prices have been adjusted for intersectoral flows of capital formation to give us the final estimates of inter-sectoral flow of producer goods at 1980-81 prices and 1970-71 prices respectively. Here a word about out capital formation estimates would not be out of order. The estimates built up for our exercise have been based on the same methodology as those adopted by Mundle in his treatment of the Lal-Anjani estimates of capital formation.[10] The database for the non residential building construction was the two AIDIS survey of 1971-72 and 1981-82. The data for the intervening years was obtained on the basis of interpolation and extrapolation. As regards capital formation, relating to agricultural machinery and equipment the Lal and Anjani estimates for this sector were moved to the later years on the basis of the whole sale price index of plant and equipment, since data on the prices

[10] Imports by agriculture from non agriculture for purposes of capital formations consists of machinery and equipment and 37 percent of the value of non residential building construction

of individual items constituting machinery and equipment is not readily available. The data on the numbers of agricultural machinery and equipment were obtained from the live stock census of 1971-72 and 1981-82.

2.2 Trends in the Intersectoral Flow of Producer Goods.

Looking at the trends in the intermediate exports of producer goods by agriculture, one finds that for the entire period of 14 years, exports of producer goods grew at 2.43 percent per annum from Rs. 8880 crores in 1970-71 to Rs.12507 crores in 1983-84. The peak of the exports was for the year 1978-79, while the lowest point was recorded for the initial year 1970-71. Imports of intermediate goods grew at a much faster rate of 4.62 percent per annum for imports of Rs.4682 crores in 1971-72 recorded an amount of Rs.8410 crores in 1983-84 the beginning and end of the time span constituting the trough and the peak respectively. The imports of capital goods into agriculture recorded a growth rate of 8.29 percent per annum the reason being the rapidly increasing use of agricultural machinery and equipment. During the decade from 1972, the number of tractors rose from 1.5 lakhs to 4.8 lakhs, while the number of agricultural pump sets increased from 3.2 lakhs to 66.7 lakhs (Thamarajakshi 1990).

As a consequence of these developments one finds that while there was a net export of producer goods at a declining rate of 6.53 per cent per annum from 1970-71 to 1979-80, for the later years from 1980-81 onwards, agriculture turned out to become a net importer of producer goods, the peak and trough being 1973-74 and

1981-82 respectively and the imports growing at a rate of 49.39 per cent per annum. (See Table 3.13, Chart 3.7)

Table 3.13

Intersectoral Flow of Producer Goods

(Rs. crores, 1980-81 prices)

Year	Intermediate exports	Intermediate imports	Capital goods imports	Net Exports
1970-71	8880	4682	2435	1763
1971-72	9592	4854	2921	1817
1972-73	10355	4871	3046	2438
1973-74	11118	5517	3327	2274
1974-75	11303	5661	3593	2049
1975-76	11845	6659	3819	1367
1976-77	12432	6537	4137	1758
1977-78	12966	7495	4517	954
1978-79	13766	7987	4779	998
1989-80	12879	6872	5110	897
1980-81	12554	7622	5616	-684
1981-82	12540	7947	6341	-1748
1982-83	12472	7712	7444	-2684
1983-84	12507	8410	7504	-3407

CHART 3.8

INTERSECTORAL FLOWS—PRODUCER GOODS

(CURRENT PRICES)

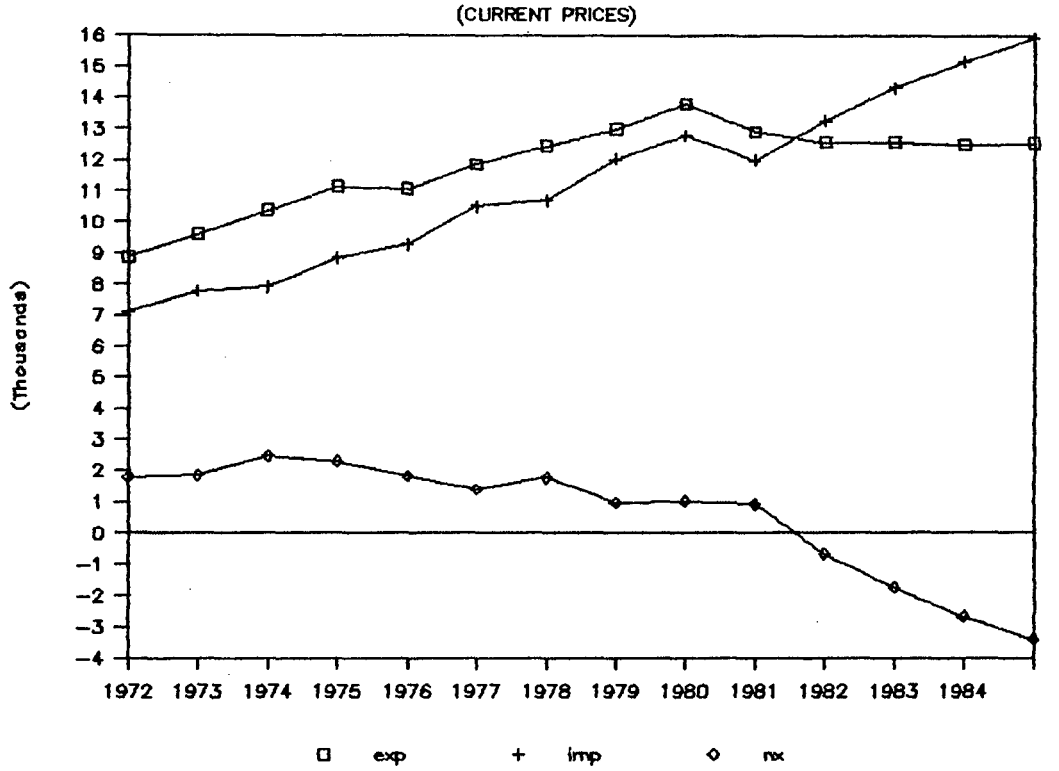

CHART 3.7

INTERSECTORAL FLOWS—PRODUCER GOODS

(CONSTANT PRICES)

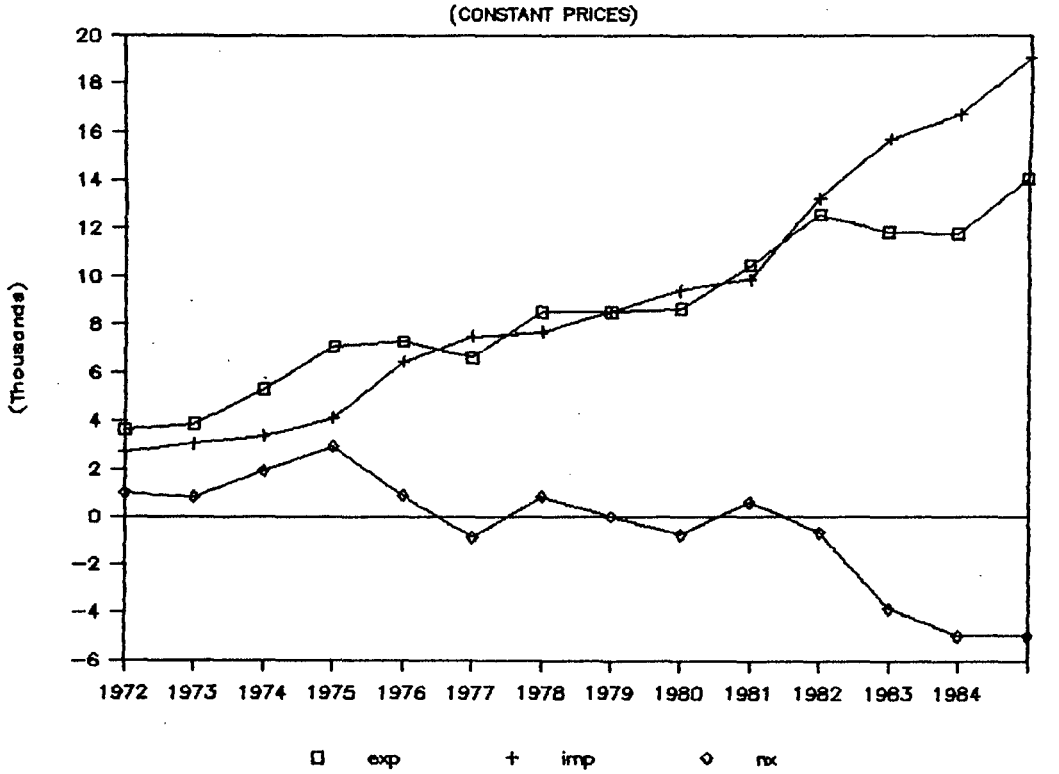

Table 3.14

Intersectoral Flow of Producer Goods

(Rs. crores, current prices)

Year	Intermediate exports	Intermediate imports	Capital goods imports	Net Exports
1970-71	3673	1758	949	966
1971-72	3884	1878	1195	811
1972-73	5309	2006	1387	1916
1973-74	7074	2489	1648	2937
1974-75	7269	4122	2291	856
1975-76	6604	4715	2766	877
1976-77	8485	4680	2991	814
1977-78	8506	5234	3284	-12
1978-79	8631	5640	3755	-764
1979-80	10424	5134	4720	570
1980-81	12554	7622	5616	-684
1981-82	11819	8989	6704	-3874
1982-83	11767	8791	7944	-4968
1983-84	14083	10162	8890	-4969

These estimates at constant prices have been converted into current price estimates using the implicit deflators of agricultural and non agricultural commodities worked out from the national accounts statistics. These current price estimates indicate that the net exports turned negative from 1977-78 onwards, the only exception being 1979-80 recording a net export of Rs. 570 crores.

As per the current price estimates the exports of producer goods recorded a growth rate of 9.56 percent per annum, while imports of producer goods grew at a faster rate of 13.82 percent per annum. Imports of capital goods, on the other hand, recorded a growth rate of 16.99 percent per annum, consequently net exports of producer goods from agriculture into non agriculture declined at the rate of 12.41 per cent per annum at current prices. (See Table 3.14, Chart 3.8)

Similar estimates based on the Tyagi series indicates that the coefficient of agricultural input use has increased at a marginal rate of 0.60 percent per annum for the period under review. The input use co efficient of non agricultural commodities on the other hand has increased consistently at the rate of 2.1 percent per annum for the period under review, from about 0.088396 in 1968-69 it rose to 0.138247 in 1983-84. (See Table 3.15, Chart 3.9)

Exports of producer goods at constant prices grew at the rate of 4.73 percent per annum ie from Rs.3944 crores in 1970-71 to around Rs 7692 crores in 1983-84. Imports of producer goods on the other hand grew at a marginally lower rate of 4.85 percent per annum from Rs.1703 crores in 1970-71 to Rs 8176 crores in 1983-84. The capital goods imports grew at a rate of 5.08 percent per annum. Such being the case, the Tyagi series indicates that the agricultural sector continued to remain a net exporter growing at the rate of 4.99 percent per annum, for the period under review, the peak and the trough years being 1983-84 and 1978-79 respectively. (See Table 3.16, Chart 3.10)

CHART 3.9

INPUT–OUTPUT COEFFICENTS

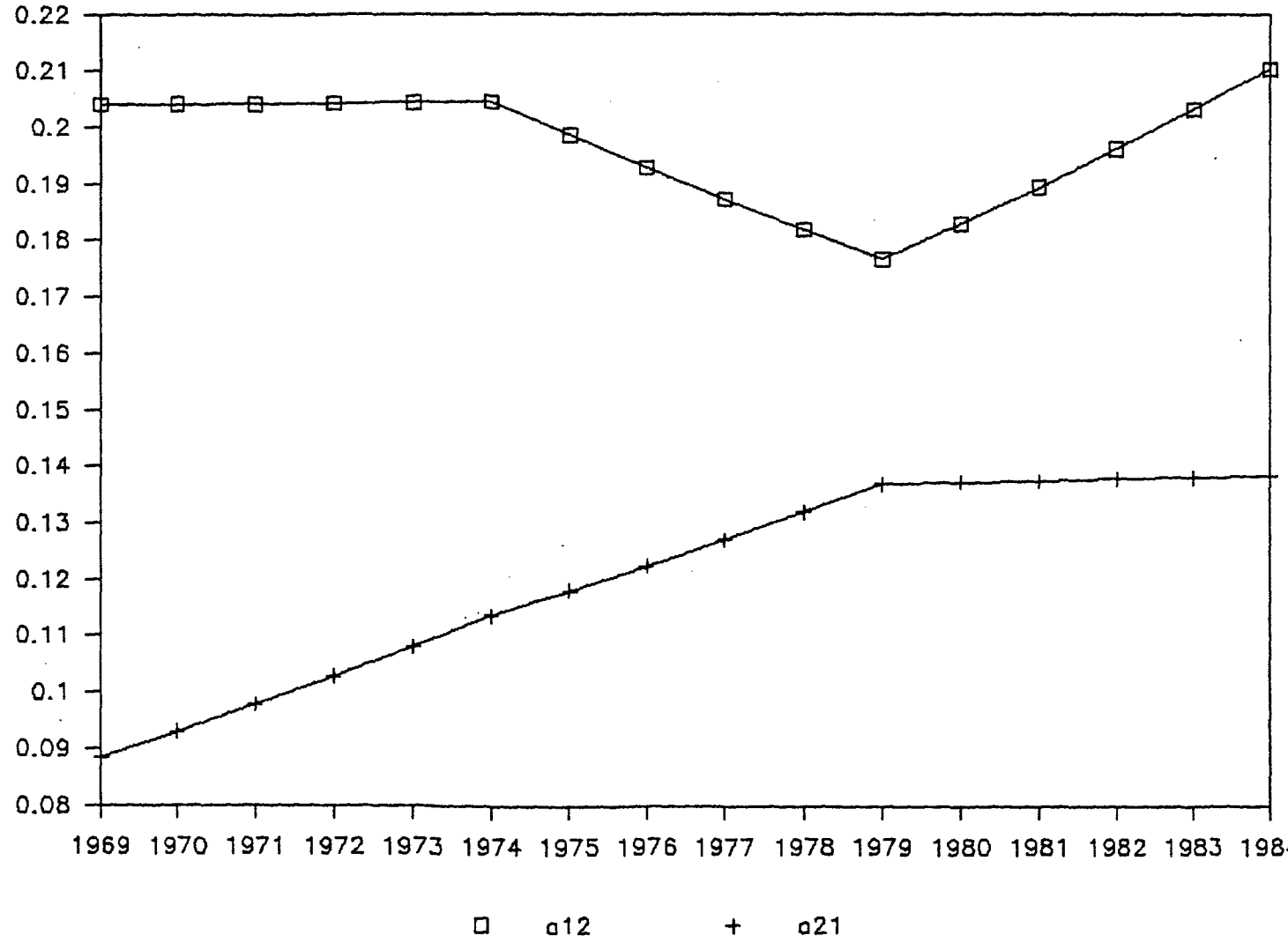

CHART 3.10

INTERMEDIATE EXPORTS OF PRODUCER GOODS

(CONSTANT PRICES)

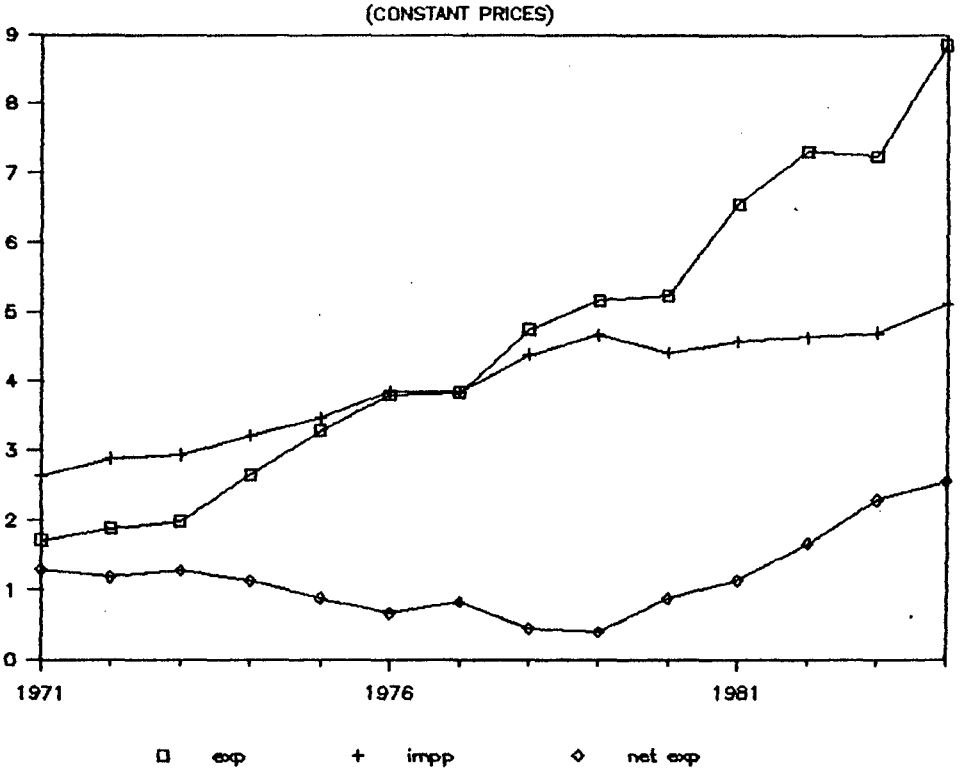

CHART 3.11

INTERMEDIATE EXPORTS OF PRODUCER GOODS

(CURRENT PRICES)

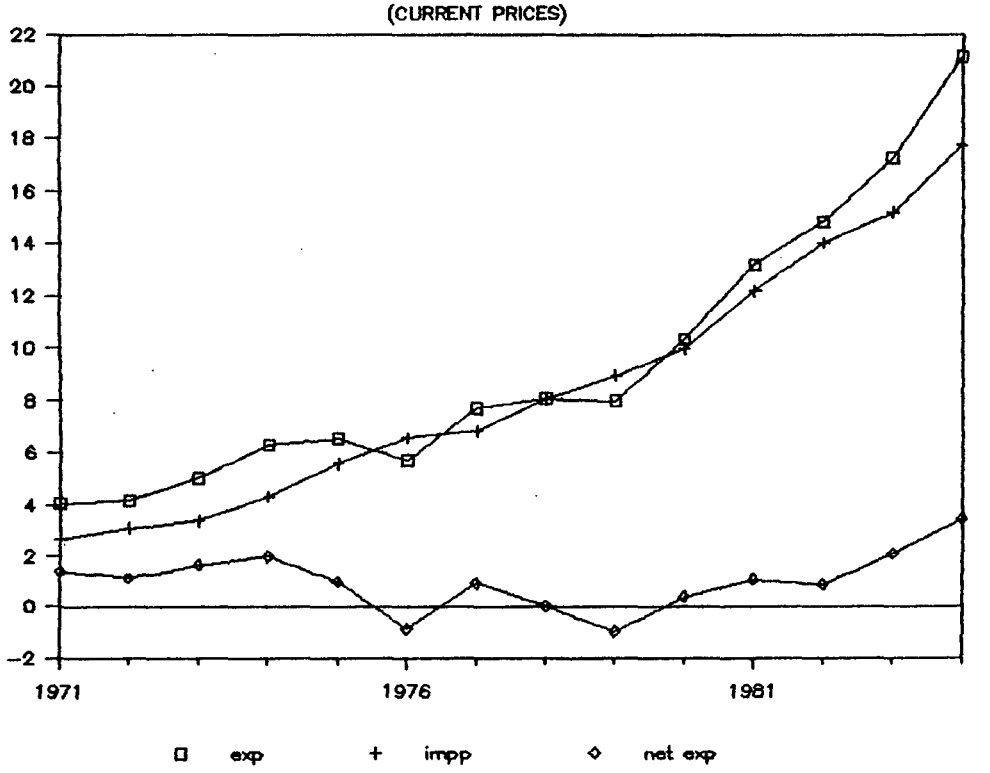

Table 3.15

Intersectoral Input Output Coefficients
(1968-69 to 1983-84)

(Tyagi's deflators)

Year	a_{12}	a_{21}
1968-69	0.204058	0.088396
1969-70	0.204140	0.092958
1970-71	0.204223	0.097756
1971-72	0.204306	0.102802
1972-73	0.204389	0.108108
1973-74	0.204473	0.113689
1974-75	0.198581	0.117996
1975-76	0.192859	0.122468
1976-77	0.187302	0.127108
1977-78	0.181906	0.131925
1978-79	0.176665	0.136924
1979-80	0.182941	0.137187
1980-81	0.189441	0.137451
1981-82	0.196171	0.137716
1982-83	0.203141	0.137981
1983-84	0.210359	0.138547

Note: a_{12} = agricultural input use coefficient
a_{21} = non agricultural input use coefficient

Table 3.16

Intersectoral Flow of Producer Goods

(Rs. crores Tyagi's deflators)

Year	Intermediate exports	Intermediate imports	Capital goods imports	Net exports
1970-71	3944	1703	947	1294
1971-72	4081	1783	1109	1189
1972-73	4222	1760	1183	1279
1973-74	4343	1988	1225	1130
1974-75	4351	2026	1436	889
1975-76	4520	2382	1464	673
1976-77	4680	2310	1539	831
1977-78	4839	2680	1714	445
1978-79	5070	2864	1807	399
1979-80	5296	2502	1917	877
1980-81	5716	2811	1766	1139
1981-82	6307	2936	1708	1663
1982-83	6992	2849	1851	2292
1983-84	7692	3176	1957	2559

The current price estimates show interesting trends for it is found that for the years 1976-77 and 1978-79 the net exports turned negative at Rs 859 crores and Rs.970 crores respectively. As per the current price estimates, intermediate exports grew at the rate of 12.16 percent per annum, while imports grew at 12.67 percent per annum, capital imports on the other hand grew at 16.99 percent per annum, while net imports recorded a growth of 6.58 percent per annum. (See Table 3.17, Chart 3.11)

Table 3.17

Intersectoral Flow of Producer Goods.

(Rs. crores current prices)

Year	Intermediate exports	Intermediate imports	Capital goods imports	Net exports
1970-71	4058	1714	949	1395
1971-72	4166	1884	1195	1087
1972-73	5032	1993	1387	1652
1973-74	6293	2655	1648	1990
1974-75	6535	3288	2291	956
1975-76	5704	3798	2766	-859
1976-77	7707	3835	2991	881
1977-78	8038	4752	3284	2
1978-79	7961	5176	3755	-970
1979-80	10322	5242	4720	359
1980-81	13181	6558	5615	1008
1980-82	14897	7314	6704	829
1982-83	17248	7252	7944	2052
1983-84	21137	8843	8890	3404

The possible explanation for the divergence in the results of the two sets of deflators could be due to methodological differences in the deflator construction as well as the differences in the estimation of the gross domestic product[11] in the 1970-71 and 1980-81 series. Here it would not be out of context to mention a word about the deflator exercises. For the purpose of our analysis

[11] For methodological issues in the estimates of gross the gross domestic product see CSO (1989) National accounts statistics, sources and methods october.

the prime reliance has been placed on the implicit deflators. Since the Tyagi series were available for the period under review, it was felt that an exercise incorporating them would serve as a consistency check for the analysis, as the construction of series on terms of trade is beyond the scope of the exercise at hand.

The evidences on the flow of intermediate goods indicate that the agricultural sector which had remained a net exporter of producer goods in the decades of the fifties and sixties has now become a net importer of producer goods primarily because of the declining agricultural input use coefficient caused by the weakening importance of agro based industries in the course of the industrial diversification on the one hand, and the rapid increase in the use of non agricultural inputs[12] in the course of the spread of the bio-technological revolutions. The declining share of agriculture in the gross domestic product along with the weakening of the industry agricultural linkages have also been causes for the present phenomenon.

With these few remarks on the nature and direction of the commodity flows, it is now possible to examine the question of the net resource flows.

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[12] IBID Tyagi (1987).

Section 3: Net Resource Flows

3.1 Estimates of Intersectoral Resource Inflows

Consolidating the balance of trade, and making adjustment for the flow of agricultural commodities into/from the rest of the world,[13] one arrives at the net resource inflow/outflow from/to the agricultural sector. Looking at Table 3.18 (Charts 3.12, 3.13), one finds that as per the CSO estimates there has been a net resource flow into agriculture. This inflow has been growing at the rate of 3.67 per cent per annum in constant terms and 10.82 per cent per annum in current terms. On incorporating the NSS data (See Table 3.19, Charts 3.14, 3.15) into the analysis one finds that the net resource flow has been increasing at a slightly higher rate of 4.13 per cent per annum in constant terms and 11.93 percent per annum in current terms. In terms of the Tyagi series, one finds that the net resource inflow into agriculture has been declining at the rate of 3.01 percent per annum (CSO estimates) in constant terms and increasing at the rate of 8.73 percent in current terms. (See Table 3.21, Charts 3.16, 3.17) Estimates based on the NSS data indicate a declining net resource inflow at the rate of 5.57 percent per annum in constant prices and increasing

[13] From our initial estimates of total purchase of agricultural goods by non agriculture in a given year the total quantum of agricultural goods imported from the rest of the world was first deducted to given us the quantities of commodities delivered by domestic agriculture to domestic non agriculture for its own requirements. To this was the added the total exports of agricultural commodities to the rest of the world. Data on this was collected from the Monthly Statistics of Foreign trade published by the DGCIS of the government of Indian A look at the trends in imports and exports of agricultural commodities indicate that there was a net import of agricultural goods into the Indian economy for the reference period, with the sole exception of the year 1975-76, a phenomenon made possible by the sudden spurt exports of oil seeds and oleagenous fruits by really 181 percent.

CHART 3.12

NET RESOURCE FLOW

(CURRENT PRICES)

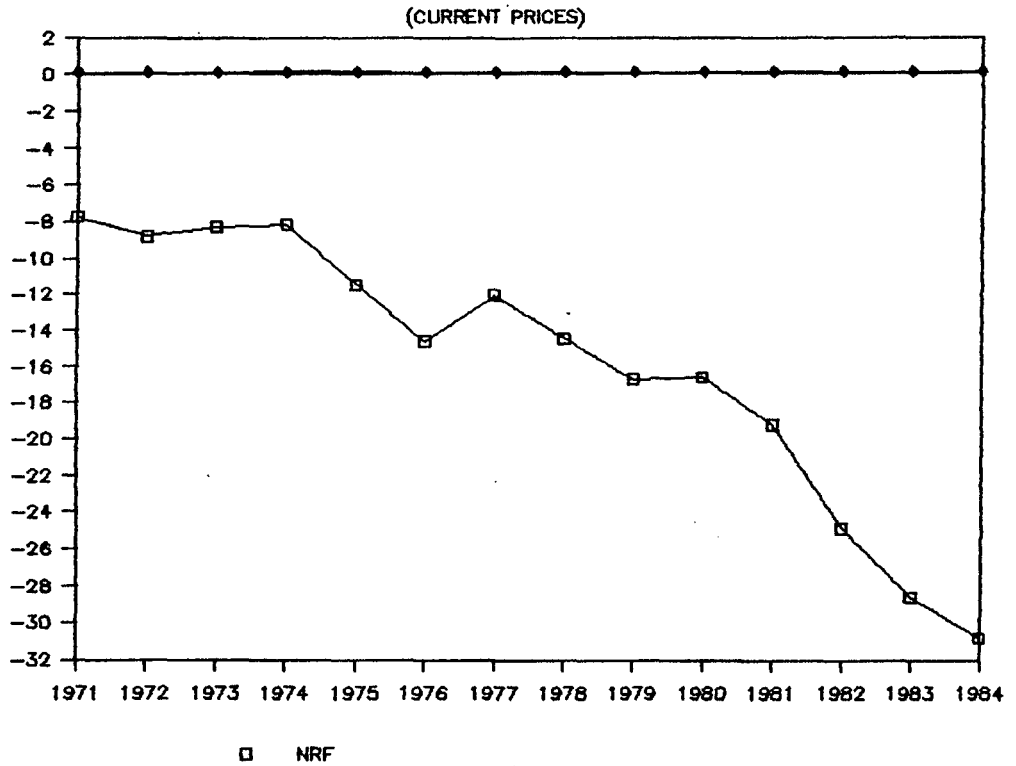

CHART 3.13

NET RESOURCE FLOW

(CONSTANT PRICES)

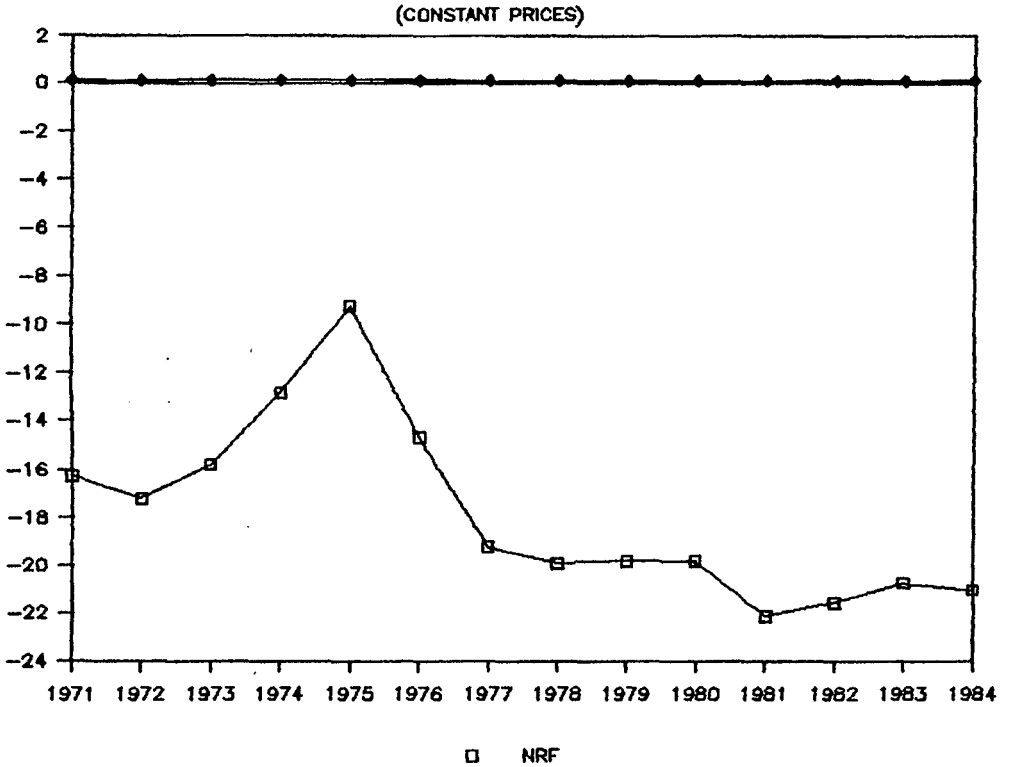

CHART 3.14

NET RESOURCE FLOW

(CURRENT PRICES)

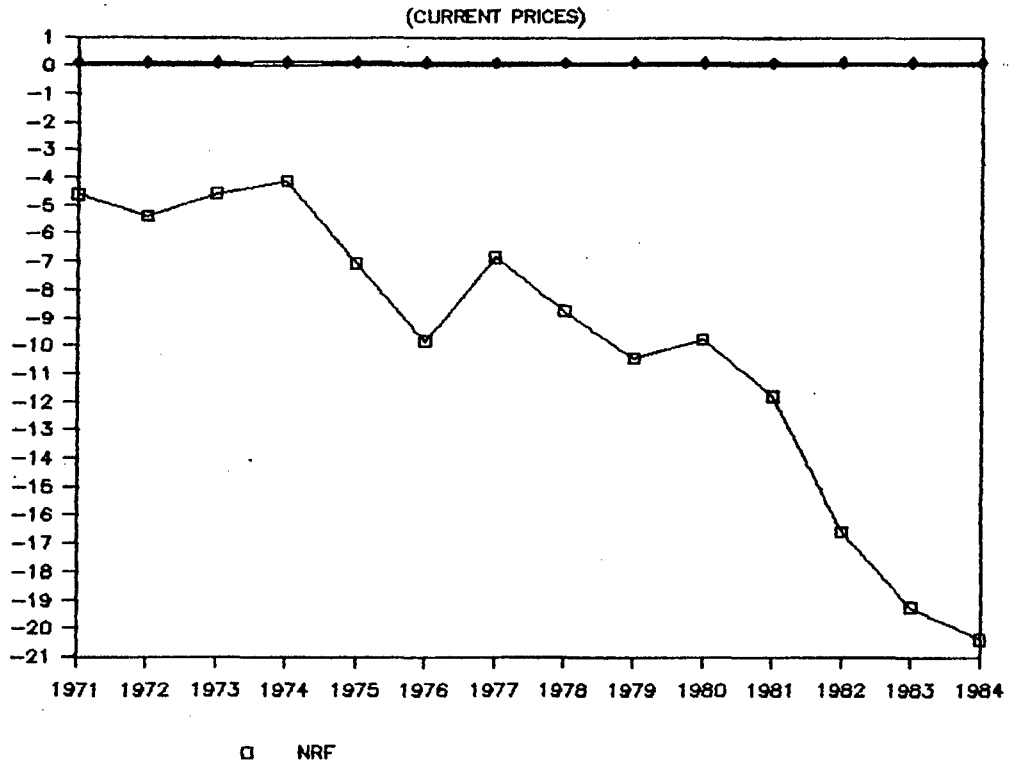

CHART 3.15

NET RESOURCE FLOW

(CONSTANT PRICES)

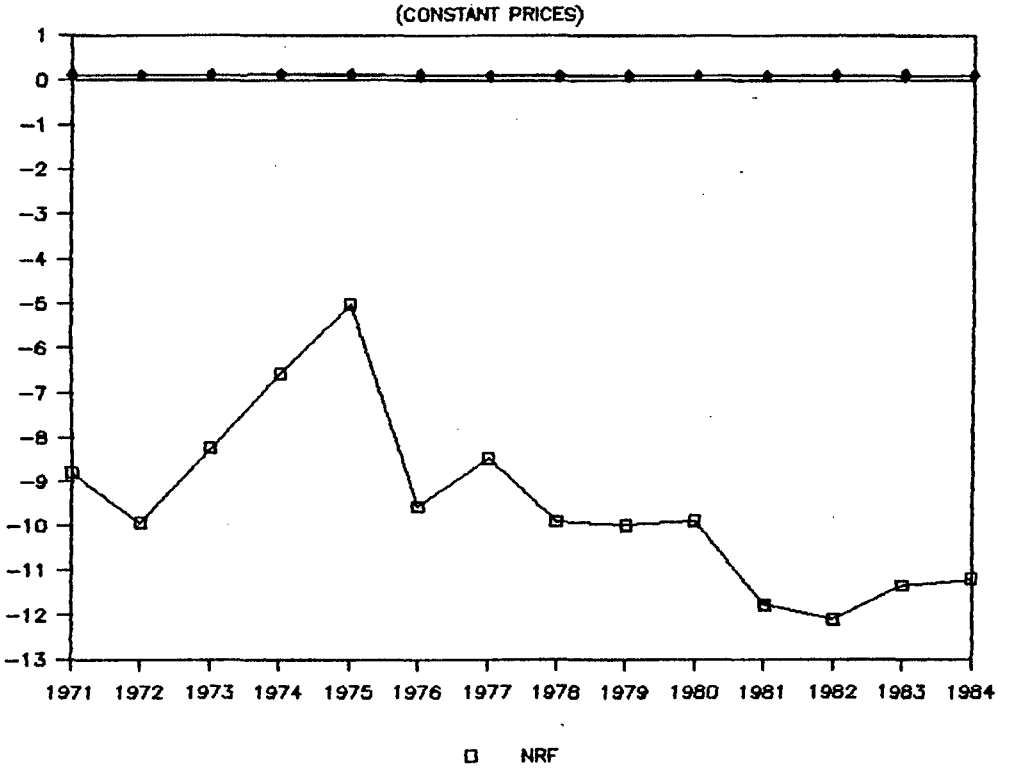

CHART 3.16

NET INTER-SECTORAL RESOURCE FLOW

(CURRENT PRICES)

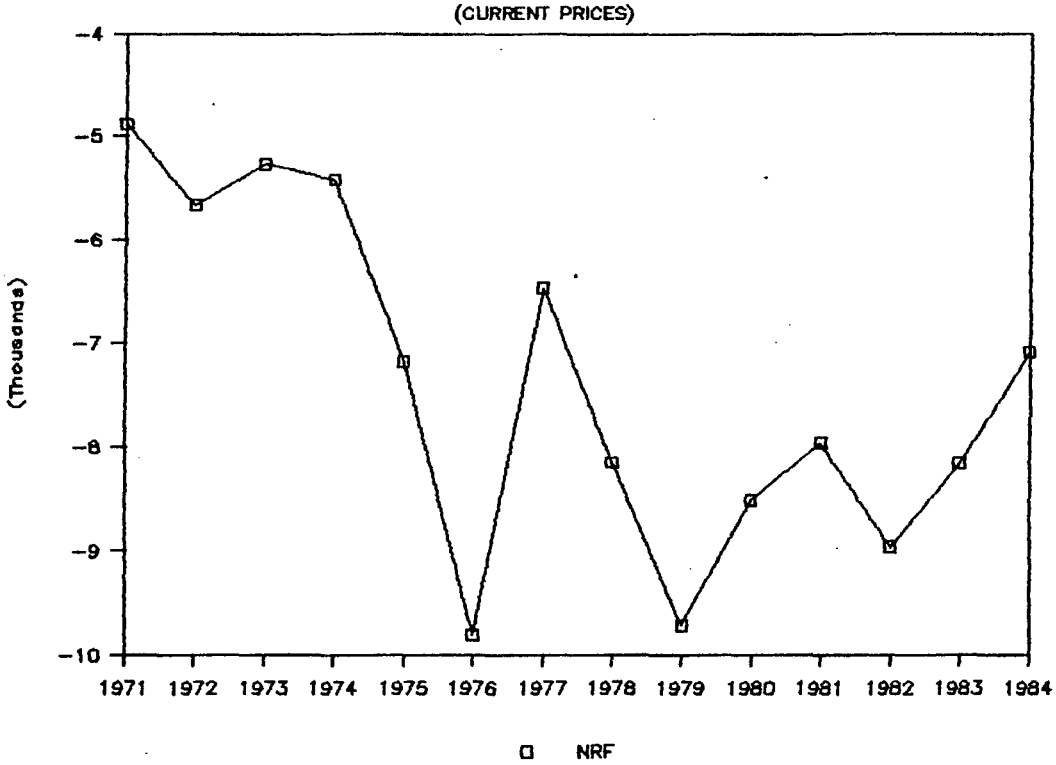

CHART 3.17

NET INTER-SECTORAL RESOURCE FLOW

(CONSTANT PRICES)

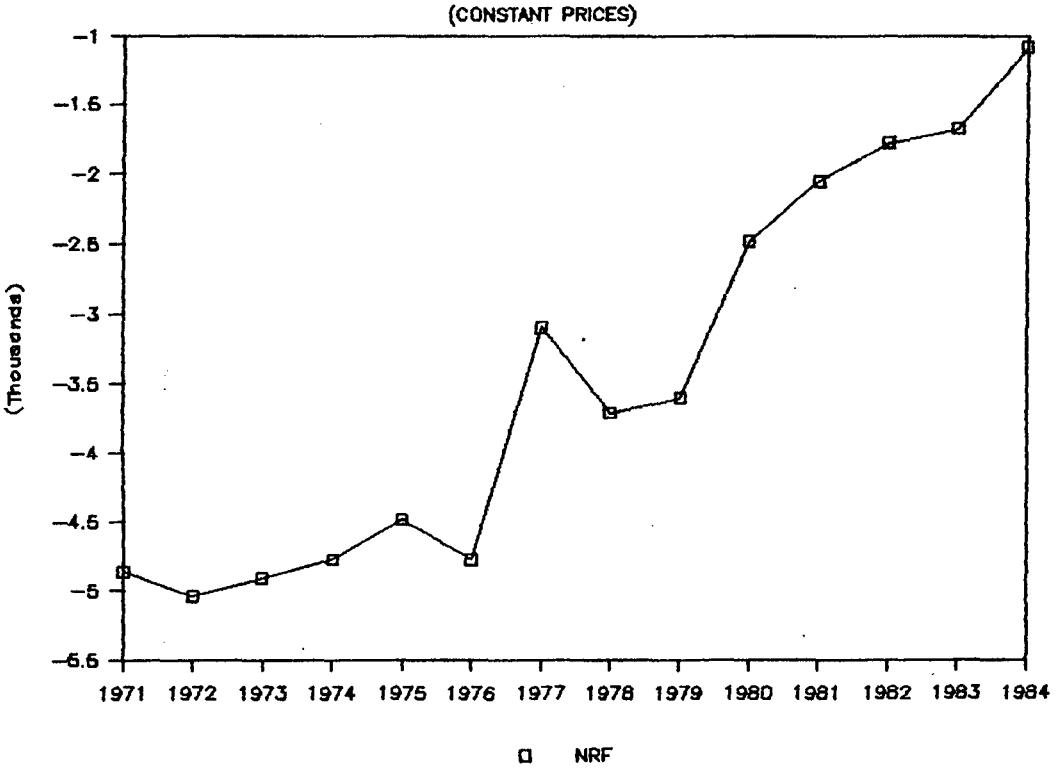

CHART 3.18

NET INTER-SECTORAL RESOURCE FLOW

(CURRENT PRICES)

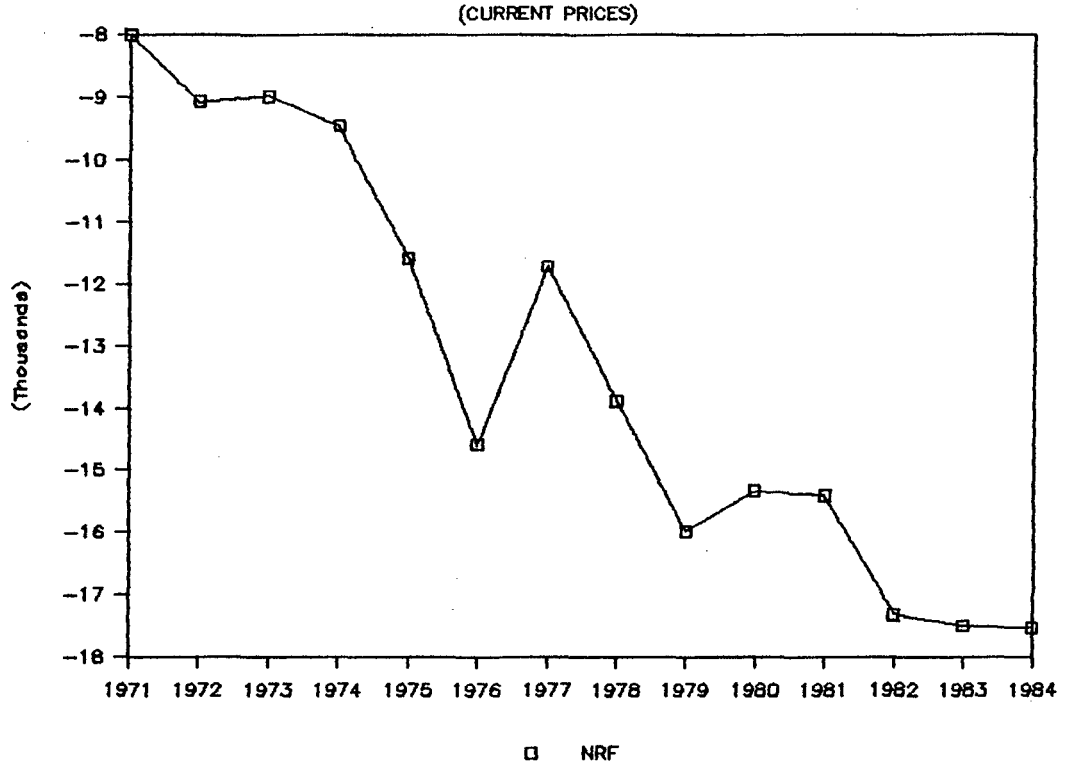

CHART 3.19

NET INTER-SECTORAL RESOURCE FLOW

(CONSTANT PRICES)

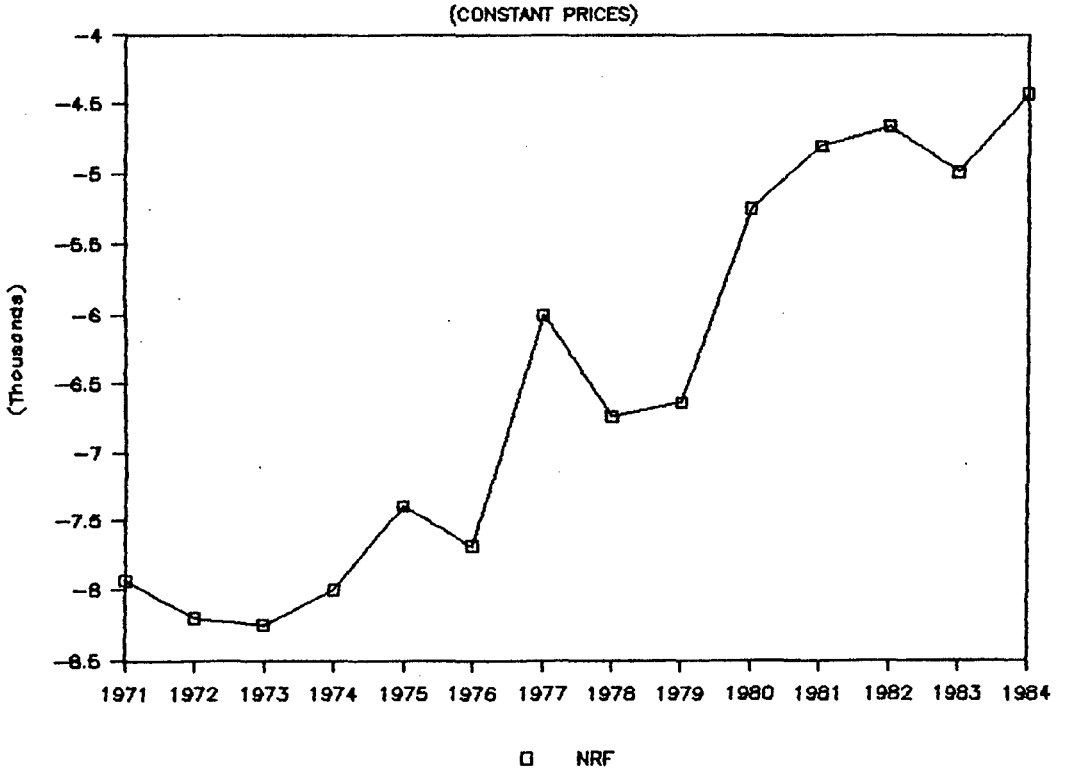

Table 3.18

Net Resource Flow

(CSO based)
(Rs. crores implicit deflators)

	Constant			Current		
Year	ND_1	Imp	NRF	ND_2	Imp	NRF
1970-71	-17166.8	-886.54	-16280.3	-8158.86	-426.43	-7732.43
1971-72	-17734.5	-500.24	-17234.3	-9060.39	-249.32	-8811.07
1972-73	-16647.7	-834.35	-15813.4	-8757.21	-462.40	-8294.81
1973-74	-13460.8	-622.84	-12838.0	-8597.20	-421.66	-8175.58
1974-75	-9426.72	-154.41	-9272.31	-11602.40	-132.39	-11470.10
1975-76	-14323.10	393.79	-14716.9	-14327.5	298.85	-14626.30
1976-77	-21599.1	-2362.28	-19236.9	-13818.4	-1740.97	-12077.4
1977-78	-21742.8	-1815.09	-19927.7	-15920.1	-1432.29	-14487.8
1978-79	-21428.8	-1612.53	-19816.13	-18048.9	-1335.82	-16713.0
1979-80	-21549.6	-1707.52	-19841.8	-18180.5	-1567.61	-16612.8
1980-81	-23945.5	-1831.00	-22114.5	-23945.5	-1831.00	-22114.5
1981-82	-23059.8	-1501.28	-21558.6	-26598.7	-1675.88	-24922.8
1982-83	-22145.7	-1388.94	-20756.7	-30296.9	-1699.37	-28597.6
1983-84	-22779.7	-1736.16	-21043.5	-33180.4	-2361.70	-30818.7

Note: ND_1 = col(4) of Table 3.7 - col(5) of Table 3.14

ND_2 = col(4) of Table 3.8 - col(5) of Table 3.17

at the rate of 8.46 percent per annum in current prices.[14] (See Table 3.21, Charts 3.18, 3.19) Looking at the Mundle estimates one finds the time profile of the surplus drain from agriculture which reached a phenomenal level of Rs.1000 crores in the mid sixties underwent two distinct phases with the mid sixties constituting a turning point. Thus one can conclude that the time profile of our analysis indicates the continuation of the declining outflow which became negative during our reference period.

Mundle (1981) has identified a set of five variables, ie the rates of growth in agriculture and non agriculture, the input output co efficient between the two sectors, and the intersectoral terms of trade as determinants of the magnitude and direction of the net resource flows. According to him, other things remaining the same, the net resource outflow from agriculture tends to increase with an increase in the non agricultural output, and in the co efficient of agricultural input use per unit of non agricultural output. It tends to decrease with an increase in agricultural output a shift in the terms of trade in favour of agriculture and an increase in the coefficient of non agricultural inputs per unit of agricultural output.[15]

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[14] Absolute values of the constant prices series are not very meaningful. These numbers including the signs change with the changes in the base as in evident in the two series. All that the constant price indicates is therefore the direction of the changes in resource flow from agriculture the trend of the real resource flow.

[15] Op cit Bhattacharya and Rao (1985)

Table 3.19

Net Resource Flow

(NSS based Rs. crores implicit deflators)

	(Constant)			(Current)		
Year	ND	Imp	NRF	ND	Imp	NRF
1970-71	-9690.3	-886.54	-8803.76	-5028.41	-426.43	-4601.98
1971-72	-10432.0	-500.24	-9931.79	-5644.00	-249.32	-5394.68
1972-73	-9068.14	-834.35	-8233.79	-5033.79	-462.40	-4571.39
1973-74	-7195.03	-622.84	-6572.19	-4544.21	-421.66	-4122.55
1974-75	-5168.27	-154.41	-5013.86	-7195.83	-132.39	-7063.44
1975-76	-9171.47	393.79	-9565.26	-9541.40	298.85	-9840.25
1976-77	-10832.90	-2362.24	-8470.69	-8574.37	-1740.97	-6833.40
1977-78	-11703.50	-1815.09	-9888.42	-10182.80	-1432.29	-8750.51
1978-79	-11582.50	-1612.53	-9969.97	-11780.20	-1335.82	-10444.30
1979-80	-11584.80	1707.82	-9877.06	-11159.30	-1567.61	-9591.76
1980-81	-13599.40	-1831.00	-11768.40	-13599.40	-1831.00	-11767.40
1981-82	-13596.60	-1501.78	-12095.30	-18244.20	-1675.88	-16568.30
1982-83	-15725.00	-1388.94	-13336.10	-20949.80	-1699.37	-19250.40
1983-84	-15926.10	-1736.16	-13189.90	-22735.00	-2361.70	-20373.30

Note: ND_1 = col(4) of Table 3.10 - col(5) of Table 3.14

ND_2 = col(3) of Table 3.5 - col(5) of Table 3.13

Attempting to explain, the observed trend in net resource flow in terms of the movements in these variables, one finds that the phenomenon of the net resource inflow could be due to the widening of the agriculture industry growth disparities, with non agricultural incomes rising at a faster pace than agricultural incomes. This, coupled with the fact that the elasticity of

employment with respect to output is less than unity in the non agricultural sector[16] has reduced the demand for wage goods and the per capita consumption of food and related items has decreased.

Table 3.20

Intersectoral Resource Flows.

(Rs. crores, NSS based Tyagi's series)

	Constant			Current		
Year	ND_1	IMP	NRF	ND_2	IMP	NRF
1970-71	-4583.32	-431.61	-4151.71	-4599.41	-426.43	-4172.98
1971-72	-4782.72	-242.77	-4539.95	-5367.69	-243.32	-5118.37
1972-73	-4946.71	-401.91	-4544.80	-5297.31	-463.40	-4833.91
1973-74	-4814.13	-290.80	-4523.51	-5491.49	-421.66	-5069.83
1974-75	-4419.47	-74.38	-4345.09	-7095.45	-132.39	-6963.06
1975-76	-4591.29	194.82	-4786.11	-9524.33	298.85	-9823.18
1976-77	-4397.93	-1146.88	-3251.05	-8507.11	-1740.97	-6766.14
1977-78	-4893.98	-873.88	-4020.10	-10168.50	-1432.29	-8736.21
1978-79	-4906.05	-849.76	-4056.29	-11988.50	-1335.82	-10650.70
1979-80	-3953.77	-875.76	-3078.01	-11570.10	-1567.61	-10002.50
1980-81	-3620.00	-905.54	-2714.46	-11907.30	-1831.00	-10076.30
1981-82	-3290.75	-773.72	-2517.03	-13541.20	-1675.88	-11865.30
1982-83	-3361.43	-736.30	-2625.13	-13929.70	-1699.37	-12230.30
1983-84	-8140.88	-942.42	-2169.46	-14362.00	-2361.70	-12000.30

Note: ND_1 = Col(4) of Table 3.11 - Col(5) of Table 3.16
ND_2 = Col(4) of Table 3.5 - Col(5) of Table 3.17

[16] Richard Grabowshi and Bong Joom Yoom carried out an empirical work based on the Mundle data. They found that there is a positive significant relationship between the transfer of resources from non agriculture and the non agricultural growth. But there was no evidence to support the hypothesis as Mundle argued that such a transfer was associated with a reduction in agricultural growth rates. Finally they could find no significant relationship between over all transfers and economic growth.

Rangarajan (1982) in his macro econometric exercise attempts to capture the demand linkages between agriculture and industry. He identifies a positive impact that agricultural output has on the demand for consumption goods. The effect of the food grains terms of trade on industrial products is negative but the elasticity is negligible. Both agricultural output and terms of trade have a positive impact on household saving and investment. Keeping in view such a segmented impact of agriculture on industry. Rangarajan (1982b) drops the idea of explaining the behaviour of industrial production purely in terms of agriculture performance.

Bhattacharya and Rao (1986) emphasize the sluggishness that continued in the performance of industry even after the relative relaxation of the wage goods constraint that occurred during the green revolution period. In their macro econometric frame work the partial elasticity of non agricultural gross domestic product with respect to agricultural output declined from 0.15 for the pre green revolution period to 0.03 for the post green revolution period. Deceleration in public investment in general and accumulation of capital intensive investment in agriculture during the post green revolution period has adverse implications on employment, causing relative decrease in the demand for agricultural products. The decline in the share of the agro based industries coupled with such a phenomenon of slow employment growth has reduced the demand for agricultural products and wage goods. These findings are further emphasised by Chakravarthi (1987) who found that the elasticity of GDP in manufacturing in relation to agriculture was of the order of 2.19 in the fifties, but declined

to 1.77 in the sixties, but lose slightly to 1.88 in the seventies. For the entire period from 1970-71 to 1983-84 the coefficient was 1.76.

Table 3.21

Net Resource Flow

(CSO based estimates Rs. crores Tyagi deflators)

	Constant prices			Current Prices		
Year	ND_1	IMP	NRF	ND_2	IMP	NRF
1970-71	-7652.62	-431.61	-7221.01	-7729.86	-426.43	-7303.43
1971-72	-7943.13	-242.77	-7700.36	-8784.08	-249.32	-8534.76
1972-73	-8282.12	-401.91	-7880.21	-9020.73	-463.40	-8557.33
1973-74	-8034.56	-290.80	-7743.76	-9544.48	-421.66	-9122.82
1974-75	-7324.79	-74.38	-7250.41	-11502.10	-132.39	-11369.70
1975-76	-7499.15	194.82	-7693.97	-14310.40	-298.85	-14609.30
1976-77	-7302.82	-1146.88	-6155.94	-13751.10	-1740.97	-12010.20
1977-78	-7905.92	-873.88	-7032.04	-15905.80	-1432.29	-14473.50
1978-79	-7925.11	-849.76	-7075.35	-18255.20	-1335.82	-16919.40
1979-80	-6724.17	-875.76	-5848.41	-18411.20	-1567.61	-16843.60
1980-81	-6368.01	-905.57	-5462.47	-19365.10	-1831.00	-17534.10
1981-82	-6170.81	-772.72	-5397.09	-21895.70	-1675.88	-20219.80
1982-83	-6667.62	-736.30	-5931.32	-23276.80	-1699.37	-21577.50
1983-84	-6445.92	-942.42	-5503.50	-24807.40	-2361.70	-22445.70

Note: ND^1 = Col(4) of Table 3.9 - Col(5) of Table 3.16
ND_2 = Col(4) of Table 3.7 - Col(5) of Table 3.17

ND_1 - ND_2 in Table 3.18, Table 3.19, Table 3.20 and Table 3.21 represents net resource flow into agriculture.

IMP in the same tables represents net import of agricultural goods from the rest of the world.

NRF represents net resource flow into agriculture from non agriculture which is equal to ND_1/ND_2 net IMP.

Therefore, bearing in mind the weak supply linkages, between agriculture and industry in the Bhattacharya et al study (1986) and the Chakravarthi analysis (1987) and the existence of a narrow demand linkage in the Rangarajan work (1982) between agriculture and the whole the set of industrial consumption goods like clothing, foot wear, sugar and edible oils, it may be plausible to conclude that there would be a net intersectoral inflow into the agriculture in the post green revolution period. This inflow has to some extent been buoyed up by the increasing demand for consumer durables from the agricultural sector as a participant of the all pervasive consumer boom characterising the entire economy.

That the net resource inflow has been declining could be explained tentatively in terms of the declining share of agriculture in the gross national output and workforce along with the possible levelling off of the biotechnological revolution which has been confined to certain pockets only. Further, the phenomenon of shifting terms of trade against agriculture has aggravated the situation. More specifically in terms of the determinants of the intersectoral flows, the causes for the phenomenon of the slow growth in net resource inflows can be identified in terms of the widening agriculture industry growth disparities the declining share of agriculture in the national product and employment and the declining agricultural input use coefficient, alongwith the increasing non agricultural input use (which has remained rather steady in the eighties) coefficient and the adverse terms of trade against agriculture.

3.2 Demand and Supply Linkages Between Agriculture and Industry.

Analysing the entire Balance Trade in terms of the purchase and sale ratios,[17] one finds that the purchase ratio averaged around 80.10 while the sale ratio is around 50.23 for the entire period indicating that while more than three quarters of the agriculture income is spent on the purchase of industrial goods, only about a half of the agricultural income originates from its net deliveries to the non agricultural sector. Here mention must be made of the abnormally high purchase and sale ratios of 106.33 and the sale ratio of 63.22 arrived at by using the CSO data[18]. This figure highlights the methodological discrepancies between the NSS and the CSO data.

For the Tyagi series, one finds that while the purchase ratio was around 76.94 the sale ratio averaged around 54.26. This persistently low sale ratio as against the rather high purchase ratio is the result of, as explained elsewhere, the weakening

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[17] Sale ratio is the total exports to nonagriculture as a percentage of value added in agriculture. While purchase ratio is the total imports from non agriculture expressed as a percentage of value added in agriculture.

[18] Minhas (1988, 1989) in a critique of the CSO estimates of private final consumption expenditure explain that the standard errors of the NSS estimates of consumer expenditure on broad commodity. Group for most of the individual items and all commodity groups taken together are not only small but also quite stable from one round to another. On the other hand, the CSO's estimates (current prices) of private final consumption for the same years in the old and the new series (1980-81 to 1985-86) are vastly different from each other not only for many commodity groups but also for aggregate private consumption. The margin of uncertainty in the NAS estimates uncertainty caused by subjective adjustment, methodological changes in the production data is uncomfortably too large to sustain a healthy degree of confidence in them.

agricultural and industry supply linkages as also the declining importance of the intermediate goods industry with the forward and backward linkages in the industrial production scenario. Moreover the per capita consumption of food has declined with the increasing incomes in the non agricultural sector. The purchase ratio on the other hand is high due to agriculture remaining a net importer of consumer goods and the fact that it has become a net importer of producer goods too of late.

The foregoing analysis of the intersectoral commodity flows or the trade balance, brings to light the fact that agriculture has remained a net importer of consumer goods in the period under review. For the earlier decades of the fifties and sixties too the same phenomenon was witnessed. Turning to the estimates of flow of intermediate goods one finds that the evidence regarding the direction of the flow is rather mixed. Agriculture which remained a net exporter of producer goods in the earlier period has turned a full circle and become a net importer of producer goods in the eighties. As a consequence the trade balance has registered a net inflow of resources into agriculture though the magnitude of this inflow is increasing rather slowly or might even be declining.

Chapter IV

Intersectoral Financial Flows

Having seen the trends in commodity flows between agriculture and non agriculture, we move on to an estimation of the saving flows. This chapter is divided into three sections. Section 1 sets out the conceptional clarifications, the methodology of estimation, and the trends in the saving flows. Section 2 is concerned with trends in private sector investment and flows on the government account.

Section 1: Conceptual Issues and Methodology of estimation of the saving flows

Before proceeding to analyse the saving flows into / from agriculture it is essential to clarify some conceptual and methodological issues. Household sector saving (s_{hh}) is normally defined as a combination of Physical saving (PA_{hh}) and financial saving (FA_{hh}).

$$S_{hh} = FA_{hh} + PA_{hh} \text{----------(1)}$$

The Household sector comprises of individuals, proprietorships, partnerships, farm and non farm business. Household sector's saving can thus be further sub divided into rural (S_{hhr}) and urban saving (S_{hhu})

$$S_{hh} = S_{hhu} + S_{hhr} \text{----------(2)}$$

Disaggregating further, rural saving would comprise of agricultural saving (S_{hhra}) and saving arising out of non-farm business (S_{hhrna})

$$S_{hhr} = S_{hhra} + S_{hhrna} \text{----------(3)}$$

Now, going by the definition of saving in equation (1) agricultural saving can also be expressed in terms of financial (FA_{hhra}) and Physical saving (PA_{hhra})

$$S_{hhra} = FA_{hhra} + PA_{hhra} \quad \text{----------(4)}$$

For the purpose of our analysis it is agricultural saving as defined in equation (4) which is of relevance. Though there is an official time series of household sector saving as given in the NAS and the Report on Currency and Finance (RBI) there are no such series available for the rural and urban categories, let alone agricultural saving. So far as the rural / agricultural saving are concerned the only official sources of data are the surveys conducted by the Reserve Bank of India, namely, the All India Rural Debt and Investment survey of 1961-62, and the All India Debt and Investment Surveys of 1971-72 and 1981-82. Some independent researchers have also attempted to estimate the trends in rural saving and capital formation[1].

The most recent of such an attempt is by Nag and Subba Rao (1991). Our analysis is based on the methodology used by them. For the estimation of rural saving for the year 1971-72, Nag and Subba Rao have used the data of the NSS 24th round (July 1970-June 1971) consumers expenditure survey to arrive at saving in the form of currency. As regards other items under the financial uses, estimates for the rural households as given in AIDIS 1971-72 have been used in conjunction with estimates of aggregate financial

[1] See Mody (1983), NCAER (1965), 1972, 1975), Raj krishna and Raychoudhri (1972), RBI Bulletin March (1965), Sarkar and Murthy (1977)

assets and liabilities as reported sector wise in the National balance sheet compiled by Venkatachalam and Sharma (1977). For saving in the form of Physical assets the shares of the rural and urban households as given in the NCAER survey have been applied to the NAS estimates.

Regarding 1981-82, saving in the form of currency has been split into the rural and urban components on the basis of the distribution of consumer expenditure as reported in the 38th round of the NSS for the reference period 1983-84. The share of the rural households in total consumption works out to be 70 per cent. The AIDIS 1981-82 gives the information on financial assets in terms of shares and other types of financial assets. The shares of the rural household in the two categories works out to 24 per cent and 38 per cent respectively. These percentages have been applied to the corresponding credit instruments enumerated under the uses side of the financial saving of the rural households. Trade debt has been split up into two components on the basis of the value of output of the Directory of Manufacturing establishments the summary results of which were released by the CSO for the reference period 1984-85. On the sources side the following, of the rural and urban households from a) banks (commercial banks and co operatives) b) financial institutions and c) Government were estimated using proportions available from AIDIS 1981-82. The share of the rural sector in each of these categories worked out to 70 per cent, 23 per cent and 47 per cent respectively. The share of the rural sector in fixed capital formation was around 62 per cent, which was used to estimate saving in the form of physical assets.

Using these bench mark estimates of rural saving for the years 1971-72 and 1981-82, a series of rural saving estimates have been built up for the period of our analysis 1970-71 to 1983-84 by interpolating between the intervening years and extrapolating the series so as to get at estimates for the final year of our analysis. (See Table 4.1) Since the requirement for our analysis is saving of the agricultural households rural saving estimates have been further disaggregated into saving by the cultivator households by using the proportions on the above heads as available in AIDIS surveys of 1971-72 and 1981-82[2] (See table 4.2).

1.1: Trends in the Saving Flows:

By definition PA_{hhra} represents the investment of the agricultural sector on its own account or alternatively it represents the private investment in agriculture (PI_{hhra}) plus investment in non residential building construction ($PI_{indew\ hhra}$)

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[2] For the disaggregation of the assets of the cultivator households the following proportions were applied to the estimates of rural saving:

1971-71.

Shares = 0.916139 : assets side
deposits = 0.688402 :
government = 0.937470)
bank = 0.962221) liabilities
others = 0.693901)
physical assets = .924079)

1981-82

Shares = 0.926686)
Other assets = 0.2717071) assets
government = 0.915856)
bank = 0.957221) liabilities.
others = 0.911613)
Physical assets = 0.9116138)

For currency the proportions for the rural households were hold constant

$$PA_{hhra} = PI_{hhra} + PI_{indem\ hhra} \quad \text{----------(5)}$$

Thus $PA_{hhra} > PI_{hhra}$ ----------(6)

Table 4.3

Trends in Agricultural Saving/Physical Investment.

Year	Agricultural Saving	Physical Investment
1970-71	1725	2142
1971-72	2600	3005
1972-73	2879	3326
1973-74	3165	3681
1974-75	3498	4047
1975-76	3867	4508
1976-77	4278	4990
1977-78	4741	5522
1978-79	5269	6112
1979-80	5884	6764
1980-81	6615	7487
1981-82	7722	8286
1982-83	6904	6545
1983-84	10328	10447

This is evident from our series (Table 4.3). Basically the inequality relation serves as a consistency check on the saving series developed so far on the basis of the equations mentioned. Since PA_{hhra} serves as the investment indicator one finds that FA_{hhra} represents the saving surplus of the rural households. Though financial assets form a substantial part of the saving, it is not unusual for the agricultural households to have a negative value

for financial assets (NFA_{hhra}), since the financial assets GFA_{hhra} are adjusted for financial liabilities (FL_{hhra}), and given the heavy indebtedness of the agricultural households to the financial sector. But if the financial assets of the agricultural households are adjusted only for the liabilities owed to the institutional sector there is a possibility of gross under estimation. There is thus a need to correct these assets in terms of the liabilities owed to the external traditional sector which accounted for a substantial part of the liabilities of the agricultural household, though recent evidence seems to point out to a declining importance of this sector[3] (Table 4.4)

ie

$$FA_{hhra} \ (NFA_{hhra}) = GFA_{hhra} - FL_{hhra} \quad \text{----------(7)}$$

Disaggregating financial liabilities (FL_{hhra}) in terms of formal $FL_{hhra\ (ins)}$ and informal sector $FL_{hhra\ (ts)}$ one finds that

$$NFA_{adj} = GFA_{hhra} - FL_{hhra\ (ins)} - FL_{hhra\ (ts)} \quad \text{----(8)}$$

The sign of the right hand side of the equation (8) indicates the saving outflow or inflow into agriculture.

---

[3] The debt owed by agricultural household indicate that the share of institutional sector ie the external modern sector has increased from 31.7 percent in 1971 to 63.2 percent in 1981. The remarkable feature of this increase is the increase in the credit available from commercial banks - which accounted for nearly 28.8 percent of the credit requirements in 1981. Government debt on the other hand has declined from 7.1 percent 1971 to 3.9 percent in 1981. Among the non institutional sources one finds that there has been a visible relief from the usurious money lender (external traditional sector) for the cultivators as the total debt owed to these agencies has declined visibly from 24.1 percent in 1971 to 16.9 percent in 1981.

$NFA_{adj} > 0$ implies a saving flow out of agriculture--(9)

$NFA_{adj} < 0$ indicates a saving flow into agriculture--(10)

Alternately stating the inequality relation (10) one finds that if FA_{hhra} is negative, PA_{hhra} would be greater than S_{hhra} as per equation (4) implying a net inflow into agriculture. Judging the estimated saving flows on the basis of the inequality relationship (10) we find that there has been a net inflow into agriculture. A perusal of Table 4.2 indicates that the total financial assets of the agricultural sector have been increasing at the rate of 19.6 per cent per annum. The most important component of this composite figure of financial assets being bank deposits which recorded a growth rate of 24 per cent per annum. Even though the annual per centage growth appears very phenomenal the increase initially was over a very low base and the levels seem negligible compared with the over all domestic saving in this form of financial assets or in relation to increases in national income originating in agriculture[4]. Turning to the liabilities side one finds that the rate of growth of total institutional liabilities of the agricultural household averaged around 15.8 per cent per annum of which the credit owed to the banks and related financial institutions has increased tremendously over the years at about 16.41 per cent per annum, whereas the liabilities owed to governmental organisations was increasing at 5.16 per cent per

4.Deposits of rural branches of commercial banks increased from 6.4 percent of the aggregate deposits in 1982; thereafter by september 1989, it had remained at 14.9 percent (RBI (BSR), September 1989), Also as per the Reserve Bank ownership survey of Bank deposits the share of the farmers deposits to total increased from 5.4 percent in March 1976 to 7.2 percent in March 1978, and further to 10.5 percent in March 1982; there after, the share fell to 8.3 percent in 1984, and edged up to 10.1 percent in March 1986 (RBI July 1989).

annum. The reduced importance of informal sector is evident from the fact that the liabilities owed to these sector increased at a rate of 7.2 per cent per annum only. As a consequence the net saving inflows increased at the rate of 5.12 per cent per annum. Here mention must be made of the fact that these net inflows turned into a net outflow only for the year 1982-83 and subsequently turned into a net outflow for the final year of the analysis. As a percentage of physical assets one finds that these inflows which averaged around 13 per cent for seventies registered declines in the eighties and for the year 1983-84 stood at a phenomenally low level of (-)1.14 per cent

Section 2: Public and Private Investment in Agriculture

The most worrisome aspect of these inflows into agriculture has been the slowing down in the rate of capital formation in agriculture. Subba Rao (1989) reported that the proportion of rural households reporting capital formation in farm business declined from 14.9 per cent in 1971-72 to 13.1 per cent in 1981-82. Simultaneously the proportion of rural households reporting capital formation in non form business increased from 2.2 per cent to 52 per cent during the decennial period. Further, the share of farm business in total investment of the rural households, declined from 82 per cent to 77 per cent over the decade. After deflating for the rise in prices, the average annual rate of growth of capital formation in non-farm business was found to be about 6 per cent as against 14 per cent for farm business. Thus, these trends were indicative of a slight shift in the investment pattern of the rural households in favour of non farm activities.

These findings have been corroborated by the results of the surveys undertaken by NCAER which conducted a resurvey of about 500 households common to both 1970-71 and 1981-82. The results indicate that the total income per rural household had risen by 15.1 per cent during the period under reference, with uneven rise in major components, viz farm and non farm business. The farm income has remained almost stagnant while non-farm business income increased substantially by 65.5 per cent. The study also revealed that the share of farm income in total household income declined from 77 per cent to 67 per cent over the period.

Another study by Prem Vasishta based on the NCAER Survey results on the structure of investment of rural households indicates that the structural changes in the pattern of income from the farm and non farm business will ipso facto get reflected on the investment side also. According to the study, the growth in physical assets was 19.6 per cent in the period[5]. The relative importance of farm business in total investment declined from 51 per cent to 33.4 per cent. The decline in the share of farm investment was noticed in almost all the items such as land and land improvement, farm machinery and implements, irrigation equipment while the share of the livestock and allied agricultural activities increased during the period. Further, it is stated that the ratio of crop income to land productivity had fallen from 79.1 per cent in 1970-71 to 67.9 per cent in 1981-82 indicating a fall in profitability of crop production. These trends thus indicated

5. The farm and non farm business break up is as 3.9 percent coming from farm business and 15.7 percent from non farm business.

a shift of the investment pattern of the rural households in favour of non-farm sector. Within the farm sector itself there was a growing diversification in favour of live stock and other activities allied to agriculture.

These trends, there is reason to believe, are related to the declining public investment in agriculture. As Rath (1987) has pointed out the greater public sector investment in the flow of irrigation schemes in this manner would have a useful impact on private investment in irrigated and related matters and not other wise.

Moreover, productive private investment in agriculture is contingent upon the spread of public irrigation. This requires a large dose of public outlays, which the government faced with a fiscal crisis will find difficult to undertake as emphasised in Patnaik (1987).

Also a cursory econometric exercise by Shetty (1990) reiterates the above views that agricultural investment is fairly responsive to public sector investment though the elasticity is less than unity (0.66)[6]. Shetty in the same article on declining public sector investment clarifies that while the government's total expenditure on agriculture as a proportion of GDP originating in the sector steadily increased from 3.1 per cent in 1970-71 to 8.6 per cent in 1980-81 and finally stood at 11.9 per cent in 1987-

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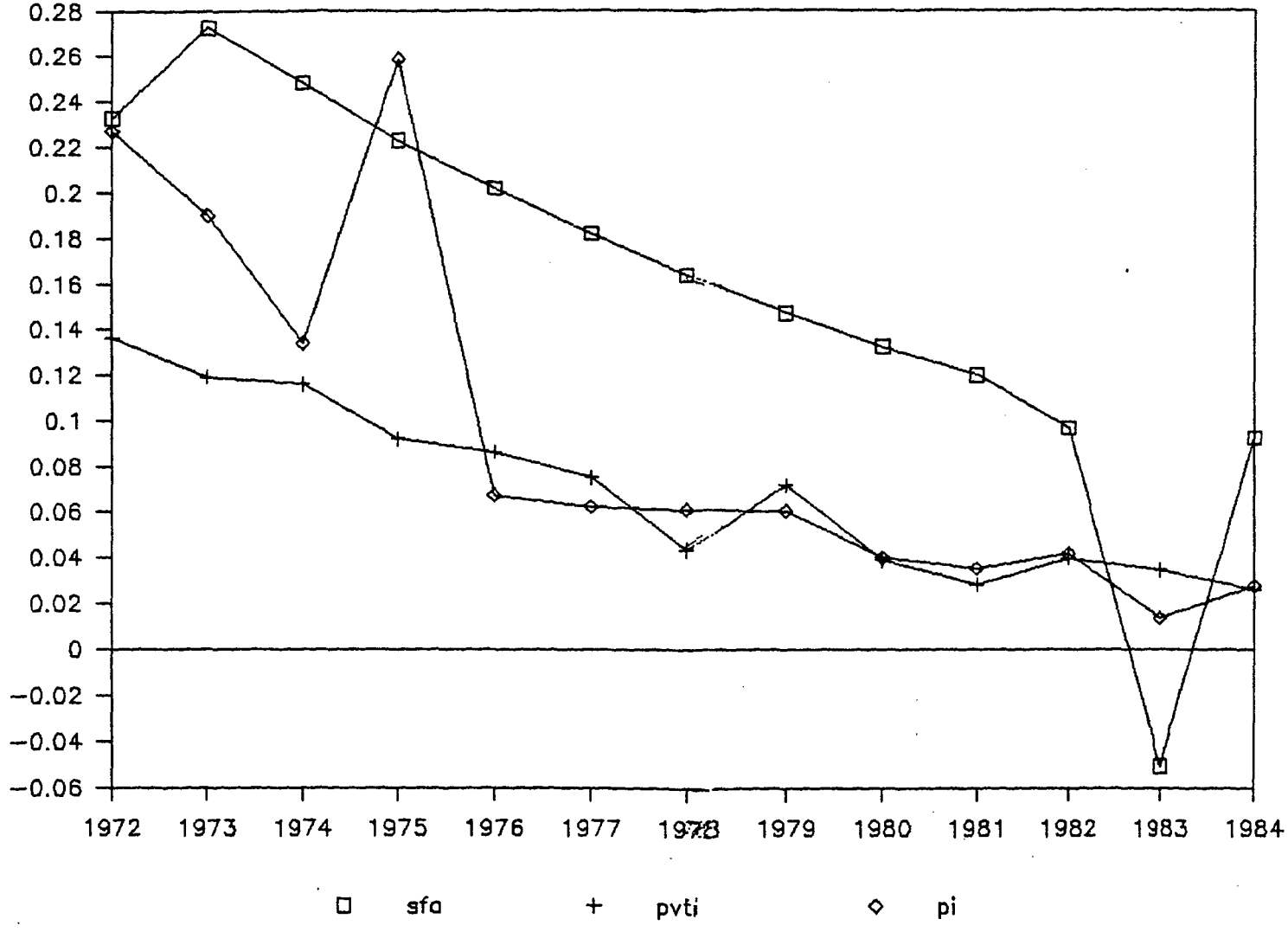
6. The regression in the double log form:

$$(\text{Private investment})_t = \underset{(3.915)}{3.0640+0.6608}\ (\text{Public investment})_{t-1}$$

CHART 4.1

INFLOWS INTO AGRICULTURE

(GROWTH RATES –IN PERCENTAGES)



88, the corresponding public sector investment to GDP fell from 4.3 per cent in 1980-81 to 3 per cent in 1986-87.

The clue to this paradox is the fact that expenditure under revenue account which remained more or less at 44 per cent during the whole of the seventies shot up to 70 per cent in 1988-89. As defined broadly in the central budget documents "Broadly speaking expenditure which does not result in the creation of assets is treated as revenue expenditure, capital payments consist of capital expenditure. On acquisition of assets like machinery land and building as also investment in shares etc. Thus wages and salaries have eaten into the resources intended for capital formation. This has occurred all the more in government expenditure on irrigation which is primarily attributable to rising maintenance costs of existing projects and the initiation of fewer projects.

In essence, the reduced public sector investment in agriculture combined with an unattractive growth horizon, adverse terms of trade, poor per capita income growth, and inadequate growth in saving may have adversely affected both the incentive and ability of the farm households to invest in agriculture.

Thus the burden of evidences garnered from these estimates on saving flows to/from agricultural sector suggests that there has been a net inflow of saving into agriculture for the decade of the seventies and early eighties too, as was evident for the earlier decades. (See chart 4.1). The contributors to this flow being the public credit agencies especially the public sector banks and cooperatives and to some extent the public exchequer.

Table 4.1

Estimates of Rural Saving

(Rs in Crores)

Year	cur	dep	td	s&d	cog	lic	pf	tgs	ba	fi	ga	tfl	nfa*	pa	ghs
1970-71	248	113	28	2		30	70	490	381	15	46	442	48	2231	2278
1971-72	274	159	30	1		34	81	579	393	15	63	471	108	3130	3238
1972-73	300	199	35	2		42	99	700	474	17	63	560	137	3468	3605
1973-74	328	248	40	3		51	121	845	572	20	63	557	174	3842	4016
1974-75	358	310	46	5		62	148	1021	690	23	62	793	220	4257	4477
1975-76	392	388	53	9		76	181	1234	832	26	62	944	279	4716	4995
1976-77	428	485	61	17		93	221	1491	1003	29	62	1123	354	5225	5579
1977-78	468	606	70	29		114	270	1801	1210	34	62	1337	448	5789	6237
1978-79	512	757	82	51		140	330	2186	1459	39	62	1590	568	6413	6982
1979-80	560	946	95	89		171	403	2629	1760	44	61	1892	721	7106	7826
1980-81	612	1183	109	156		210	493	3176	2123	51	61	2252	913	7872	8786
1981-82	669	1478	126	273	432	257	602	3837	2560	58	61	2679	1158	8722	9880
1982-83	1413	1833	102	304	301	303	693	4949	2144	88	51	2283	2665	6889	9554
1983-84	1950	2165	-43	229	486	337	739	5862	3217	117	95	3429	2433	10997	13429

Note:

Note: 1. nfa - unadjusted for the informal sector.
2. 1971-72, 1981-82 estimate based on Nag & Subba Rao (1990).
3. cur - Currency
4. dep - Deposits
5. td - Trade dept
6. s&d - Shares & Deposits
7. Cog - Claims on Government
8. lic - Life insurance
9. pf - Provident fund
10. tgs - Total saving of rural households
11. ba - Bank advances
12. fi - Loans & advances from financial institutions and non banking companies
13. ga - Government loans & advances
14. tfl - Total financial liabilities
15. nfa - Net financial assets
16. pa - Physical assets
17. ghs - Rural saving (net)

Table 4.2

Estimates of Saving of Agricultural Households

(Rs. crores)

Year	cur	dep	td	s&d	cog	lic	tgs	ba	lnbc	lg	tfl	sfa	sfa_{adj}	ets	pa	ahs
1970-71	178	104	16	2		21	321	367	10	43	420	-99	-417	318	2142	1725
1971-72	197	146	17	1		23	384	378	10	59	448	-64	-405	341	3005	2600
1972-73	215	182	18	2		29	446	456	12	59	527	-81	-447	366	3326	2879
1973-74	234	228	18	3		35	519	550	14	58	622	-104	-496	392	3681	3165
1974-75	256	285	19	5		43	608	662	17	58	737	-129	-549	420	4074	3498
1975-76	279	357	19	9		53	717	799	20	58	876	-159	-609	450	4508	3867
1976-77	304	447	19	15		66	853	963	23	57	1043	-192	-675	483	4990	4278
1977-78	331	559	20	27		81	1018	1160	27	57	1245	-227	-745	518	5522	4741
1978-79	361	699	20	47		99	1227	1399	32	57	1488	-261	-816	555	6112	5269
1979-80	394	875	21	82		122	1494	1686	37	56	1780	-286	-881	595	6764	5884
1980-81	430	1095	21	144		150	1840	2033	44	56	2133	-293	-931	638	7487	6615
1981-82	469	1370	22	253	105	184	2402	2450	51	56	2558	-156	-840	684	8286	7722
1982-83	990	1699	18	282	73	217	3278	2052	78	47	2177	1101	359	733	6545	6904
1983-84	1366	2006	-7	212	118	242	3939	3079	104	89	3270	666	-119	785	10447	10328

Note:

1. nfa - unadjusted for the informal sector.
2. As estimated by Nag & Subba Rao (1990).
3. cur - Currency
4. dep - Deposits
5. td - Trade dept
6. s&d - Shares & Deposits
7. Cog - Claims on Government
8. lic - Life insurance
9. pf - Provident fund
10. tgs - Total saving of rural households
11. ba - Bank advances
12. fi - Loans & advances from financial institutions and non banking companies
13. ga - Government loans & advances
14. tfl - Total financial liabilities
15. nfa - Net financial assets
16. pa - Physical assets
17. ahs - Agricultural saving
18. S adj - Adjusted for informal sector
19. ets - external traditional sector - liabilities

Table 4.4

Debt Owed to Different Credit Agencies by Rural Households All India

(percentages)

Credit agencies	Cultivators		Non Cultivators		All Rural HouseHolds	
	1971	1981	1971	1981	1971	1981
1.0 External Modern Sector	31.7	63.2	10.8	36.7	29.2	61.2
1.1 Government	7.1	3.9	3.4	4.5	6.7	4.0
1.2 Coop society /Bank	22.0	29.8	6.0	13.9	20.1	28.6
1.3 Commerical bank	2.4	28.8	0.8	17.3	2.2	28.0
1.4 Insurance	0.1	0.4	0.2	0.0	0.1	0.3
1.5 Provident fund	0.1	0.3	0.4	1.0	0.1	0.3
2.0 External Traditional Sector	24.1	16.1	33.8	29.1	25.3	17.2
2.1 Professional money Lender	13.1	7.8	18.7	13.4	13.8	8.3
2.2 Traders	8.4	3.1	10.9	5.8	8.7	3.4
2.3 Other	2.6	5.2	4.2	9.9	2.8	5.5
3.0 Internal Sources	44.2	20.7	55.4	34.2	45.5	21.6
3.1 Land Lord	8.1	3.7	12.6	8.4	8.6	4.0
3.2 Agricultural Money Lender	23.0	8.3	23.8	11.4	23.1	8.6
3.3 Relatives & friends	13.1	8.7	19.0	14.4	13.8	9.0
4.0 Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: All India Debt and Investment Survey 1981-82.

Chapter V

Summary and Conclusion

As mentioned in the beginning, a fresh look at the inter-sectoral resource flows between agriculture and industry is necessitated by the changing economic conjuncture of the seventies and the early eighties. After a brief outlining of the theoretical underpinnings of the resource flows in chapter I, we provided an overview of the structural changes in terms of the interdependence between agriculture and industry and in the terms of trade in Chapter II.

Here one finds that the share of agriculture in the total gross domestic product has come down sucessively in recent times. Though this is in the nature of development of underdeveloped agrarion economy, the cause for concern is the growing skewness of the sectoral composition towards the tertiary sector. This phenonmenon, among others, has excerbated the widening agriculture industry growth differentials. Further the weakening of linkages between agriculture and industry is illustrated by the closing of the techological scissors due to the fact that the agricultural input use coefficient a21 has declined as a consequence of the decreasing importance of the intermediate industries in general and the agro based industries in particular. The non agricultural input use on the other hand has been increasing due to the increasing and wide spread usage of modern inputs like fertilisers, diesel oil, agricultural machinery etc. consequent upon the spread of the green revolution. But here, it should be mentioned that this coefficient of late has tended to remain rather stable due to the possible

levelling off of the biotechological revolution which has been rather region specific and crop-specific. Though evidence on the movement of the terms of trade is blurred there seems to be a consensus of opinion among researches that for a greater part of period under consideration the terms of trade have been adverse to agriculture.

Thus in the context of the growth differentials, the closing of the techological scissors and the adverse terme of trade, the trade balance in terms of the commodity flows was analysed in Chapter III. For the decade of the seventies and early eighties one finds that there have been commoditity inflows into the agricultural sector, though the magnitude of these inflows is increasing rather slowly. In terms of the commodity composition one finds that agriculture has remained a net importer of consumer goods even in the seventies and early eighties though evidences regarding the flow of producer goods is mixed. There is reason to believe that for the latter half of the reference period agriculture has become a net importer of producer goods. In terms of the sale and purchase ratios indications are that agricultural sales to the non agricultural sector was lesser than its purchases from non agriculture. Analysing the same trends in the form of demand for and supply of goods from the non agricultural sector one finds that deliveries to agriculture accounted for only about a half of the income originating in the non agricultural sector on an average. The break down of this deliveries into consumer and producer goods indicates a higher proportion of the deliveries consisted of consumption goods (35 percent on an average) while goods for intermediate consumption comprised of 15 percent of the

income originating in non agriculture. On the expenditure side one finds that only about 35 percent of the income originating in non agriculture was spent on purchases from agriculture.

Table 5.1

Share of Agriculture in Non-Agricultural Income and Expenditure
(percentages)

	Deliveries to Agriculture			Purchases from Agriculture		
Year	Consumer goods	Producer goods	Total del	Consumer goods	Produce goods	Total del.
1970-71	43	14	58	21	17	38
1975-76	30	16	46	17	20	37
1980-81	34	16	50	17	18	34
1983-84	29	15	44	16	14	30

Note : All figures are expressed as percentage of value added in non agriculture.

The most interesting feature of these purchases, is the fact that in terms of expenditure on consumer and producer goods more or less similar amounts were spent with the purchases averaging at around 18 percent each of the incomes in non agriculture. (Table 5.1). 'Export to agriculture as a proportion of non-agricultural income declined to 469 in 1975 from 589 in 1970-71; it increased only to 50% in 1980-81 but dropped to 449 in 1983-84. On the other hand, 'import' from agriculture as a proportion of non-agricultural income has steadily declined. These trends serve to further pinpoint to the weakening of the supply and demand linkage between agriculture and industry and the limitedness of the home market for industrial goods with implications for the growth of the Indian Industry and its diversification.

An estimation of saving flows, ie the financial counterpart of the commodity flows was attempted in chapter IV. The evidences indicate to an increasing saving inflows to agriculture on the private acccount. Such a net inflow of saving into agriculture was not reflected in any increase rate of private investment in agriculture.

Table 5.2

Agricultural Inflows in India 1971-1984.

Year	Trade Inflows (1)	Private Saving Inflows (2)	Government Inflows (3)	Terms of Trade (1980-81=100) (4)
1970-71	21.89	1.04	0.98	102.87
1971-72	25.17	1.02	1.28	100.69
1972-73	21.97	1.19	1.72	109.45
1973-74	16.36	1.23	1.48	119.64
1974-75	12.67	1.39	3.53	109.95
1975-76	21.42	1.36	3.20	91.91
1976-77	20.13	1.60	3.83	95.47
1977-78	21.35	1.61	4.08	97.50
1978-79	21.04	1.72	5.31	95.37
1979-80	23.90	2.13	7.16	100.13
1980-81	25.32	2.00	7.38	100.00
1981-82	24.61	1.71	10.79	94.95
1982-83	23.44	(-)0.74	8.17	95.24
1983-84	20.93	0.22	8.65	95.62.

Note: Figures in col 1,2,3 are expressed as percentages of the value added in agriculture.

Col 4 is the terms of trade on the basis of the implicit deflators with base 1980-81=100.

Examining these various inflows into agriculture, one finds (table 5.2) that the commodity inflows accounted for about 21.44 percent (on an average) of the value added in agriculture. The private saving flows accounted for merely 1.25 percent of the value added in agriculture on an average while inflows on the government account reprisented about 4.83 percent of the value added in agriculture. Here it is intersting to note that the terms of trade during this period served as an instrument for mobilising surplus outflows from agriculture as it is seen that terms of trade have remained adverse to agriculture for a greater part of the reference period. From the balance of payment identity one knows that the difference between trade balance and financial flows measures the net flow of factor incomes and other transfers on the current account. Differences in the computational methods or sources of data apart, the reconciliation of the negative trade surplus and a negative saving surplus add up to a net inflow of factor incomes and other current transfers into agriculture. In the absence of appropriate data on factor incomes it is difficult to comment on the nature of these factor income transfers.

It is in this context that the questions regarding resource mobilisation in agriculture acquires importance. The recently released data on net fixed capital output ratios for the economy by the CSO (Table 5.3) indicate that while the net capital output ratios averaged around 1.4 for the decade of the seventies, that ratio was comparatively higher for the registered manufacturing at around 3.3. In the light of these evidences there seems to be an increasing rationale for the stepping up of the governmental

Table 5.3

Net Fixed Capital Output Ratio

Year	Agriculture	Registered Manufacture	Total Manufacture	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	3.09	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: - CSO

outlays earmarked for agriculture[1]. In this scenario there seems to be some merit in the Mitra (1963,1977) argument that from the point of view of resource mobilisation the agricultural sector was undertaxed as the share of agriculture in the tax revenue was lower than its share in the national products and the sector had sizeable taxable capacities in terms of considerable income and wealth ineqaulities in the rural sector[2]. But taxation of agriculture remains a political question the analysis of which is beyond the purview of this paper. Here it would not be out of place to outline the role of institutional credit for augmenting the production potential of agriculture. Though there has been sizeable increases in rural credit, the credit structure suffers from several infirmities. The high and growing incidence of over

[1] See Patnaik (1987) Rath (1987) and Rao (1989).

[2] This 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.

dues is progressively eroding the credit structure, since in the absence of cross subisidisation in the case of co-operatives and Regional Rural Banks, the prevailing lending rates are proving to be economically unviable[3]. Lending to the non agricultural activities such as animal husbandary and social forestry and strengthening of the appropriate linkages between production and market centres has not been on the desired lines. Corrective measures in these areas will have to be implemented with great urgency[4]. The allocation of funds within the agricultural sector too needs a closer look.

Turning to the industrial sector, it is evident that from a comparision of the pattern of the industrialisation in the eighties with the early phase of the second and the third plans, the big spurt in industrial production for the earlier period came mainly from the basic and capital goods industries while in the latter phase it was more from consumer durables, consequent upon the rising incentives for their production in terms of demands and the fiscal concessions to them. Such a skewed industrial diversification has wider ramifications in terms of the inter sectoral linkages and also raises question of the equity aspect, as well as the sustainability of such a pattern of growth.

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3 Agricultural credit Review committee (1989) has suggested lending at concessional rate for small farmers and at a general rate for others, so as to improve the financial viability of rural lending institutions.

4 A comprehensive analysis of the issues concerning rural credit was made by the Governer of the Reserve Bank in his inaugural address at the seminar on Rural credit Issues for 1990 organised by the Institute for Development Studies -Jaipur on Aug. 27, 1990.

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