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Capital Goods

The export of capital goods by the agricultural sector may reasonably be assumed to be negligible. The import of capital goods, though a small fraction of the imports of all producer goods, is not insignificant. Mundle has estimated the import of capital goods into the agricultural sector on the basis of disaggregated estimates of capital formation in agriculture.[12] Mundle has assumed that the entire labour component of capital formation is provided by the agricultural households. This may be a good approximation in the case of private capital formation in agriculture. The assumption may, however, not be a valid one in the case of public investment in agriculture. To the extent the labour for public investment projects is drawn from non-agricultural households, Mundle under-estimates the resources being withdrawn from the non-agricultural sector for capital formation in agriculture. The under-estimation would be equivalent to the amount of wage goods that the non-agricultural households working on public investment projects would command as a result of wage payments received.

SOME CONCLUDING OBSERVATIONS

In terms of the discussion in the first section, it appears that Mundle has not accounted for indirect taxation in any systematic fashion and has, therefore, under-estimated the resource flow *from* the agricultural sector.

The empirical exercise, on the other hand, under-estimates the flow *into* the agricultural sector in regard to (*a*) consumer goods and (*b*) public capital formation in agriculture. A further deficiency of the empirical exercise, which was not discussed above, and which also leads to the under-estimation of the resources flow into agriculture is non-consideration of public expenditure on schemes of agricultural improvement and research, co-operation, community development, etc., and the various subsidies.

INTER-SECTORAL TERMS OF TRADE IN INDIA, 1947-78

M. S. Rathore, A. L. Nadda and V. K. Singh*

One way of attaining higher and faster rate of growth and development of the economy is that the agricultural sector supports the industrial sector, *i.e.*, net resources flow out of the agricultural sector into industry. In support of it, a prime example of economic development of Japan and Soviet Union is cited.[1] However, in a general sense, it is being argued that the State's ability

12. R. N. Lal and Anjani, "Gross Capital Formation in Indian Agriculture: 1950-51 to 1970-71", *Indian Economic Review*, Vol. IX (New Series), No. 1, April 1974, p. 61.

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1. See Ranjit Sau, "Some Aspects of Inter-Sectoral Resource Flow", *Economic and Political Weekly*, Vol. IX, Nos. 32-34, Special Number, August 1974, pp. 1277-1292 and Sudipto Mundle "Intersectoral Flow of Consumer Goods: Some Preliminary Results", *Economic and Political Weekly*, Vol. X, Nos. 5, 6 & 7, Annual Number, February 1975, pp. 165-174.

to mobilize supplies of wage goods[2] either via explicit land tax or implicit taxation via terms of trade seems to be central in increasing investment in a large developing economy.[3] In this process the domestic terms of trade play a significant role by providing a measure of shifting incomes from one sector to another. Particularly when the Government finds it inconvenient for socio-political reasons to impose a direct fiscal burden such as an agricultural income-tax or higher rates of land revenue—for mobilizing the agricultural surpluses necessary for the growth of the industrial sector—, a less painful tool available to it might be to make the terms of trade for agriculture adverse. On the other hand, it can be argued that if relative farm prices decline and if farm incomes decline, land may be eroded, equipment may go out of repair, cattle may starve and men may go hungry.[4] Mellor argues that the inter-relationships among price, supply of wage goods, pattern of production, and income distribution are complex in nature and price policy adopted will have multi-dimensional effect on employment, income, distribution, consumption, production, adoption of technology, etc.[5] He further argues that "the extent to which a change in terms of trade between agriculture and industry benefits the poor depends very much on the extent of the structural adjustments it encourages. A turn against industry will redress itself if it induces accelerated technological change in agriculture and consequent linkage effects with industry through relaxed wage goods constraint and increased consumer demand. Conversely, a turn against agriculture will redress itself if it encourages accelerated industrial employment growth, consequent greater demand for agricultural wage goods, and increased efficiency of industrial production".

In the above-discussed context an attempt has been made in this paper to study the inter-sectoral terms of trade and resource flow in India by using new series of wholesale price indices.

New Series of Wholesale Price Indices and Inter-Sectoral Terms of Trade

The past studies on inter-sectoral terms of trade took wholesale price indices series either with the base period 1952-53 or 1961-62 and debated that the terms of trade are in favour of the agricultural sector. Since the planning era there have been three series of wholesale price indices with base 1952-53, 1961-62 and the recently added 1970-71. The new series, *i.e.*, 1970-71 = 100 introduced in the first week of January 1977 is a definite improvement over the earlier two series. It has a wider coverage specially in the case of manufactured products, new classification system based on 'Standard Industrial Classification' (SIC) instead of 'Standard International Trade

2. The wage goods in the Indian context are essentially agricultural commodities, *e.g.*, cereals, pulses, fats and oils, or agro-based commodities, for example, sugar, textiles, etc.

3. See V. L. Kelkar, "Growth Possibilities in the Indian Economy", *Economic and Political Weekly*, Vol. XII, No. 52, December 24, 1977, pp. 2133-2140 and S. L. Shetty, "Recent Trends in Inter-Sectoral Terms of Trade", *Economic and Political Weekly*, Vol. VI, No. 25, June 19, 1971, pp. 1235-1240.

4. See V. M. Dandekar, "Prices, Production and Marketed Surplus of Foodgrains", *Indian Journal of Agricultural Economics*, Vol. XIX, Nos. 3 & 4, July-December 1964, p. 194.

5. For detailed discussion, see John W. Mellor, "Food Price Policy and Income Distribution in Low-income Countries", *Economic Development and Cultural Change*, Vol. 27, No. 1, October 1978, pp. 1-26.

Classification' (SITC) adopted in the earlier series, improved weighting system[6] and lastly, treatment of many identifiable items as a separate commodity.[7]

As the new series of wholesale price index number is better in classification, coverage, etc., it has been used here for studying the inter-sectoral terms of trade and the results are totally different from the findings of the past studies on the subject. It is discovered that the terms of trade have not been favourable but have rather been against the agricultural sector since 1947-48 to 1977-78. For comparison of results, the index number of wholesale prices in India, a linked series with different base is reported in Table I for food articles and manufactured articles along with the terms of trade.

Table I reveals that if the earlier two series, *i.e.*, with base 1952-53 and 1961-62, are taken for calculating inter-sectoral terms of trade, it is found that the terms of trade are in favour of agriculture since 1947-48 to 1977-78. On the other hand, if the new series with 1970-71 as the base is taken for the purpose, the results are just the reverse to the above, *i.e.*, the terms of trade moved against agriculture. It is not intended to suggest here that as a consequence of the new series, all previous empirical and policy-oriented research has been misleading. Rather the intention is to analyse the terms of trade with the new series.

Composite Price Indices and Terms of Trade

The wholesale price index series for the period 1947-48 to 1977-78 with base 1970-71 are taken from Chandhok[8] for commodities bartered between agriculture and non-agriculture/industrial sector. Then the following composite price indices are reported in Table II: (*i*) Prices received by agriculture, *i.e.*, prices of agricultural products purchased by non-agriculture for (*a*) intermediate use, (*b*) final use and (*c*) all uses.[9] (*ii*) Prices paid by agriculture, *i.e.*, prices of non-agricultural products purchased by agriculture for (*a*) intermediate use, (*b*) final use and (*c*) all uses.[10]

Using these indices, the net barter terms of trade of products for (*i*) intermediate use, (*ii*) final use and (*iii*) all uses have been estimated and are reported in Table III along with the percentage and compound rate of change in prices over different Plan periods.

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6. The weights in the revised series are based on the value of transactions, which consists of (*a*) marketable surplus in the case of agricultural commodities and value of products for sale in the case of manufactured products, (*b*) total value of imports including import duties, if any, and (*c*) total value of excise duty, if applicable.

7. For details regarding the scope and coverage of revised series of index number of wholesale prices in India with base 1970-71=100, see H. L. Chandhok: Wholesale Price Statistics—India, 1947-1978, Vols. I and II, Economic and Scientific Research Foundation, New Delhi, 1978, pp. xvii-xxi or Report on Currency and Finance, 1976-77, Reserve Bank of India, Bombay, 1977, pp. 206-209.

8. Wholesale Price Statistics—India, 1947-1978, *ibid.*

9. Sales by agriculture to non-agriculture for (*i*) intermediate use are non-food articles which include fibres, oilseeds and other food articles, (*ii*) for final use are food articles which include foodgrains, fruits and vegetables, milk and milk products, etc. For details, see Chandhok: *ibid*, pp. 341-351.

10. Purchases by agriculture from non-agriculture for (*i*) intermediate use are fertilizers, insecticides, tractors, agricultural powrah and agricultural sprayers, (*ii*) for final use are manufactured products which include food products, textiles, leather and leather products, etc., as listed under new classifications.

TABLE I—INDICES OF WHOLESALE PRICES IN INDIA—LINKED SERIES WITH DIFFERENT BASES AND TERMS OF TRADE, PERCENTAGE CHANGE AND COMPOUND RATE OF GROWTH

Year	Food articles			Manufactured articles			Terms of trade		
	1952-53 = 100	1961-62 = 100	1970-71 = 100	1952-53 = 100	1961-62 = 100	1970-71 = 100	1952-53 = 100	1961-62 = 100	1970-71 = 100
Pre-Plan									
1947-48	80·7	69·6	33·8	80·5	62·4	37·5	100·25	111·54	90·13
1948-49	103·7	89·5	43·4	97·1	75·2	45·2	106·59	119·02	96·02
1949-50	105·1	90·7	44·0	99·0	76·7	46·1	106·16	118·25	95·55
1950-51	112·6	97·2	47·2	102·4	79·3	47·7	109·96	122·57	98·95
							9·69*	9·89	9·79
							(3·0)†	(3·1)	(3·1)
First Plan									
1951-52	110·3	95·2	46·2	110·3	85·4	51·4	100·00	111·47	89·88
1952-53	100·0	86·3	41·9	100·0	77·5	46·6	100·00	111·35	89·91
1953-54	102·9	88·8	43·1	104·8	81·2	48·9	98·19	109·35	88·14
1954-55	92·3	79·6	38·6	101·5	78·6	47·3	90·96	101·27	81·61
1955-56	86·2	74·4	36·1	96·5	74·7	44·9	89·33	99·60	80·40
							—10·67	—10·65	—10·55
							(—2·79)	(—2·8)	(—2·75)
Second Plan									
1956-57	100·2	86·5	42·0	107·4	83·2	50·1	93·30	103·97	83·83
1957-58	103·9	89·6	43·5	110·3	85·4	51·4	94·20	104·92	84·63
1958-59	112·7	97·2	47·2	112·3	87·0	52·3	100·35	111·72	90·25
1959-60	114·4	98·7	47·9	118·0	91·4	55·0	96·35	107·99	87·09
1960-61	114·9	99·1	48·1	127·7	98·9	59·5	89·99	100·20	80·84
							—3·55	—3·63	—3·57
							(—0·90)	(—0·90)	(—0·90)
Third Plan									
1961-62	115·9	100·0	48·5	129·1	100·0	60·2	89·77	100·00	80·56
1962-63	120·6	106·0	51·4	133.6	104·3	62·8	90·27	101·63	81·85
1963-64	129·2	112·2	54·4	140·6	110·3	66·4	91·89	101·72	81·93
1964-65	152·1	135·2	65·6	151·0	116·4	70·0	100·73	116·15	93·71
1965-66	162·7	146·5	71·1	160·3	123·6	74·4	101·50	118·53	95·56
							13·07	18·53	18·62
							(3·1)	(4·3)	(4·3)
Annual Plan									
1966-67	189·0	170·5	82·7	183·5	138·6	83·4	102·99	123·02	99·16
1967-68	224·4	201·6	97·8	203·3	154·1	92·7	110·38	130·82	105·50
1968-69	217·0	190·6	92·5	199·3	154·2	92·8	108·88	123·60	99·68
							5·72	0·47	0·52
							(2·9)	(0·2)	(0·2)
Fourth Plan									
1969-70	232·8	200·9	97·5	199·7	154·7	93·1	116·57	129·86	104·73
1970-71	238·9	206·1	100·0	214·6	166·2	100·0	111·32	124·00	100.00
1971-72	243·6	210·2	101·1	230·2	178·3	109·5	105·82	117·89	92·33
1972-73	269·6	232·6	111·3	253·8	196·6	121·9	106·23	118·31	91·30
1973-74	333·9	288·1	136·6	296·5	229·7	139·5	112·61	125·42	97·92
							—3·40	—3·42	—6·50
							(0·87)	(—1·7)	(—1·67)
Fifth Plan									
1974-75	429·2	370·3	172·1	357·3	276·8	168·8	120·12	133·78	101·95
1975-76	417·2	360·0	163·6	353·1	273·5	171·2	118·15	131·63	95·56
1976-77	398·9	344·2	155·3	365·5	283·1	175·2	109·14	121·58	88·64
1977-78	414·7	357·8	173·6	384·5	297·8	179·2	107·85	120·15	96·88
							—10·21	—10·19	— 4·97
							(—3·5)	(—1·67)	(—1·65)
Overall compound rate of change							0·2	0·2	0·2

* Figures are percentage changes observed over the period.

† Figures in parentheses are compound rates of change over the period.

TABLE II—COMPOSITE PRICE INDICES IN INDIA

(*1970-71=100*)

Year	Agricultural products purchased by non-agriculture for intermediate consumption	Agricultural products purchased by non-agriculture for final consumption	All agricultural products purchased by non-agriculture	Non-agricultural products purchased by agriculture for intermediate consumption	Non-agricultural products purchased by agriculture for final consumption†	All non-agricultural products purchased by agriculture
Pre-Plan						
1947-48 ..	32·3	33·8	33·2	—	37·5	37·5
1948-49 ..	38·0	43·4	41·0	—	45·2	45·2
1949-50 ..	40·1	44·0	42·4	—	46·1	46·1
1950-51 ..	45·6	47·2	45·2	—	47·7	47·7
	41·18*	39·64	40·96	—	27·20	27·20
	(12·10)‡	(11·8)	(12·2)	—	(8·3)	(8·3)
First Plan						
1951-52 ..	50·9	46·2	48·8	—	51·4	51·4
1952-53 ..	36·9	41·9	40·4	77·9	46·6	46·6
1953-54 ..	40·2	43·1	42·3	71·5	48·9	48·9
1954-55 ..	37·3	38·6	38·3	67·0	47·3	47·3
1955-56 ..	35·9	36·1	36·1	67·0	44·9	44·9
	—29·47	—21·86	—26·03	—13·99	—12·65	—12·65
	(—8·36)	(—5·98)	(—7·26)	(—4·9)	(—3·32)	(—3·32)
Second Plan						
1956-57 ..	41·7	42·0	41·9	67·2	50·1	50·1
1957-58 ..	42·2	43·5	43·2	74·9	51·4	51·4
1958-59 ..	41·9	47·2	45·6	74·8	52·3	52·3
1959-60 ..	44·9	47·9	47·0	74·8	55·0	55·0
1960-61 ..	52·7	48·1	49·6	74·8	59·5	59·5
	26·38	14·52	18·38	11·31	18·76	18·76
	(6·0)	(3·5)	(4·3)	(2·7)	(4·4)	(4·4)
Third Plan						
1961-62 ..	51·3	48·5	49·5	74·12	60·2	60·2
1962-63 ..	49·9	51·4	51·1	73·01	62·8	62·8
1963-64 ..	53·0	54·4	53·8	71·81	66·4	66·4
1964-65 ..	60·4	65·6	64·1	69·91	70·0	70·0
1965-66 ..	68·6	71·1	70·4	72·55	74·4	74·4
	33·72	46·60	42·22	—2·12	23·59	23·59
	(7·5)	(10·1)	(9·4)	(—0·53)	(5·4)	(5·4)
Annual Plan						
1966-67 ..	80·2	82·7	82·0	77·01	83·4	83·4
1967-68 ..	79·5	97·8	92·4	91·23	92·7	92·7
1968-69 ..	83·0	92·5	89·7	92·53	92·8	92·8
	3·49	11·85	9·39	20·15	11·27	11·27
	(1·7)	(5·8)	(4·6)	(9·6)	(5·4)	(5·4)
Fourth Plan						
1969-70 ..	92·9	97·5	96·2	97·55	93·1	93·1
1970-71 ..	100·0	100·0	100·0	100·00	100·0	100·0
1971-72 ..	98·6	101·1	100·9	102·58	109·5	109·5
1972-73 ..	107·5	111·3	110·7	109·20	121·9	121·9
1973-74 ..	146·6	136·6	141·8	117·69	139·5	139·5
	57·8	40·10	47·40	20·65	49·84	49·84
	(12·0)	(8·7)	(10·2)	(4·8)	(10·6)	(10·6)
Fifth Plan						
1974-75 ..	163·7	172·1	177·5	195·91	168·8	168·8
1975-76 ..	139·9	163·6	165·8	212·77	171·2	171·2
1976-77 ..	167·4	155·3	167·2	192·21	175·2	175·2
1977-78 ..	178·0	173·6	183·8	185·10	179·2	179·2
	8·74	0·87	3·55	5·52	6·16	6·16
	(2·8)	(0·02)	(1·2)	(1·87)	(2·1)	(2·1)
Overall compound rate of change ..	5·9	5·6	5·9	3·4	5·3	5·3

* Figures are percentage changes observed over the period.

‡ Figures in parentheses are compound rates of change over the period.

† The indices under this column are of manufactured products under the new classification, which include articles such as fertilizer, tractor, insecticides, etc., which are used as intermediate products in agriculture; their weight is 1·649 in the total weight of 49·874 for manufactured products used for construction of the index. Also the items listed are large and considering the goods of intermediate use as of negligible weight, the same index is reported under this column as in the last column.

TABLE III—INDICES OF NET BARTER TERMS OF TRADE

Year	Net barter terms of trade			Per cent change		
	Of inputs	Of output	Of all products	Of inputs	Of output	Of all products
Pre-Plan						
1947-48		90·13	88·53			
1948-49		96·02	90·71			
1949-50		95·44	91·97			
1950-51		98·95	98·11	—	9·79	10·82
					(3·10)	(3·5)
First Plan						
1951-52	—	89·88	94·94			
1952-53	47·37	89·91	86·69			
1953-54	56·22	88·14	86·50			
1954-55	55·67	81·61	80·97			
1955-56	53·58	80·40	80·40	13·11	—10·55	—15·31
				(4·2)	(—2·75)	(—4·08)
Second Plan						
1956-57	62·05	83·83	83·63			
1957-58	56·34	84·63	84·05			
1958-59	56·02	90·25	87·19			
1959-60	60·03	87·09	85·45			
1960-61	70·45	80·84	83·36	13·54	—3·57	—0·32
				(3·2)	(—0·90)	(—0·09)
Third Plan						
1961-62	69·21	80·56	82·23			
1962-63	68·35	81·85	81·37			
1963-64	73·81	81·93	81·02			
1964-65	86·40	93·71	91·57			
1965-66	94·56	95·56	94·62	36·63	18·62	15·07
				(8·1)	(4·30)	(3·5)
Annual Plan						
1966-67	104·14	99·16	98·32			
1967-68	87·14	105·50	99·68			
1968-69	89·70	99·68	96·66	—13·87	0·52	—1·69
				(—7·17)	(0·20)	(—0·85)
Fourth Plan						
1969-70	95·23	104·73	103·33			
1970-71	100·00	100·00	100·00			
1971-72	96·12	92·33	92·15			
1972-73	98·44	91·30	90·81			
1973-74	124·56	97·92	101·65	30·80	—6·50	—1·63
				(6·9)	(—1·67)	(—0·39)
Fifth Plan						
1974-75	83·56	101·95	105·15			
1975-76	65·70	95·56	96·85			
1976-77	87·09	88·64	95·43			
1977-78	96·16	96·88	102·57	15·08	—4·97	—2·45
				(4·7)	(—1·65)	(—0·83)
Overall compound rate of change ..				(2·8)	(0·2)	(0·5)

Note:— Figures in parentheses are compound rates of change.

Behaviour of Prices: Agricultural and Non-agricultural

Besides the movement of prices of products between the two sectors, Table II also gives the percentage change and compound rate of change in wholesale prices over different Plan periods. It is interesting to note that there was an increasing trend in prices received and paid by the agricultural sector. The overall compound rates of change of prices received by agriculture for intermediate use, final use and all uses have, on the whole, moved faster than the prices of non-agricultural products purchased by agriculture.

Fluctuations in Prices

The objectives of all the Plans emphasized that the prices during the Plan period should be stable so as to have a balance between aggregate demand and supply among different sectors.[11] Therefore, the series of wholesale price indices have been analysed Planwise. It may be observed that it is only in the First Plan that there was a decreasing trend in the wholesale prices of all commodities of the agricultural and non-agricultural sectors and in the rest of all the Plans, *i.e.*, Second to Fifth, an increasing trend in the prices is observed. During the Fourth Plan, the most inflationary trend was observed as compared to the other Plan periods. This is supported by Table II, where the percentage change and compound rate of change over different Plan periods have been presented.

Inter-sectoral Terms of Trade

Since the interest is to see the relative price changes, the net barter terms of trade calculated from Table II are reported in Table III. It reveals that the net barter terms of trade in the products of intermediate use, final use and all uses have been unfavourable to agriculture.[12]

On analysing the figures of percentage change and compound rate of change, a slight improvement in the terms of trade is observed in favour of the agricultural sector in the case of products for intermediate use in 1977-78 over 1947-48. But in the case of products for final and all uses, it has been deteriorating except in the Third Plan. Price policy in the past mainly emphasized on the improvement in the terms of trade in favour of the industrial sector. Keeping in view the findings of the studies that the terms of trade are favourable to agriculture and should not improve further, this was not a right step from the development point of view because adverse terms of trade or relatively low prices for agricultural products may have a multi-dimensional effects on distribution, production, employment and adoption of new technology for development. On the other hand, it is also important to develop the industrial sector by supplying intermediate products at a low rate.

11. For details, see Draft Five Year Plan 1978-83, Government of India, Planning Commission, 1978, pp. 15-17.

12. R. Thamarajakshi, "Intersectoral Terms of Trade and the Marketed Surplus of Agricultural Produce, 1951-52 to 1965-66", *Economic and Political Weekly*, Vol. IV, No. 26, June 28, 1969, pp. A-91-A-102 in a similar analysis finds that net barter terms of trade in products of intermediate use have been deteriorating against agriculture, those with respect to products for final use and all uses have been improving but the results were based on 1960-61 = 100 series and the above results are contradictory to it.

Therefore, there is a need for a fully integrated price policy such that all the output targets are simultaneously approximated over the Plan period.[13] Further, it will not be unfair to plead that better price be paid to the agricultural sector and the policy of support prices and input subsidisation be further strengthened and continued.

Inter-sectoral Resource Flow

The NSS gives the pattern of per capita consumer expenditure in rupees for a period of 30 days separately for the rural and urban areas. For the purpose of this study, foodgrains (cereal and cereal substitutes), milk and milk products, meat, eggs and fish and other food items are included under agricultural products and clothing, fuel and light, edible oil, sugar, salt and miscellaneous constitute the non-agricultural products. The per capita consumer expenditure on agricultural and non-agricultural products in the rural and urban areas in the various Rounds of the NSS covering the period 1956-57 to 1973-74 is presented in Table IV.

Table IV reveals that (*a*) the total per capita expenditure in the rural sector is lower than in the urban sector and the gap has increased over the years 1956-57 to 1973-74. (*b*) The consumption pattern of the rural and urban population is similar in that that a greater proportion of total expenditure is incurred on agricultural products than on non-agricultural products/industrial goods. The per capita expenditure incurred by the rural population on agricultural products and non-agricultural products is more than 62 per cent and 32 per cent respectively while the corresponding figures reported by the urban population is more than 50 per cent and 36 per cent. (*c*) An increasing trend has been observed in the per capita consumer expenditure on agricultural products in both the rural and urban sectors. Though the increase in the rural sector was small by 2.22 per cent, it was 32.86 per cent in the urban sector. The yearwise analysis shows that the rural consumption expenditure on agricultural goods declined from 1956-57 to 1960-61 but after that it showed a marked increase. On the other hand, the consumer expenditure on agricultural products in the urban sector showed a continuous increase. (*d*) The percentage per capita consumer expenditure on non-agricultural goods has been declining over the years rather sharply in urban India. It declined by —6.17 and —14.74 per cent in the rural and urban sectors respectively over the period 1956-57 to

13. For discussions on the price policy, its impact on economic development and the price policy in India: past and future, see the first five Draft Five-Year Plans, Planning Commission Government of India; M. L. Dantwala, "Principles and Problems of Agricultural Price Determination", *Journal of the Indian Society of Agricultural Statistics*, Vol. XVIII, No. 1, June 1966; Raj Krishna, "Agricultural Price Policy and Economic Development", in Herman M. Southworth and Bruce F. Johnston (Eds.): Agricultural Development and Economic Growth, Cornell University Press, Ithaca, New York, U.S.A., 1968; V. M. Dandekar, "Agricultural Price Policy: A Critique of Dantwala", *Economic and Political Weekly*, Vol. III, No. 11, March 16, 1968, pp. 454-459; J. R. Behrman: Supply Response in Underdeveloped Agriculture, North-Holland Publishing Co., Amsterdam, 1968; G. M. Desai, "Growth of Fertilizer Use in Indian Agriculture: Past Trends and Future Demand", Bulletin No. 18, Cornell International Agricultural Development Programme, Cornell University, Ithaca, New York, U.S.A., 1971; Uma J. Lele and John W. Mellor, "Growth Linkages of the New Foodgrains Technologies," *Indian Journal of Agricultural Economics*, Vol. XXVIII, No. 1, January-March 1973, pp. 35-55; and Mellor, *Economic Development and Cultural Change*, October 1978, *op. cit.*

TABLE IV—PER CAPITA EXPENDITURE ON AGRICULTURAL AND NON-AGRICULTURAL PRODUCTS FOR FINAL USE, RURAL AND URBAN AREAS ACCORDING TO THE VARIOUS ROUNDS OF THE NATIONAL SAMPLE SURVEY: ALL-INDIA

(*Rs.*)

Round of NSS	Rural expenditure on			Urban expenditure on		
	Agricultural products	Non-agricultural products	Total expenditure	Agricultural products	Non-agricultural products	Total expenditure
11th Round (1956-57) ..	11·11 (65·74)	5·80 (34·18)	16·97	11·15 (44·49)	10·95 (43·70)	25·06
12th Round (1957) ..	11·14 (64·36)	6·13 (35·41)	17·31	13·77 (51·96)	11·70 (44·15)	26·50
13th Round (1957-58) ..	11·65 (62·67)	6·85 (36·85)	18·59	13·76 (53·58)	10·82 (42·13)	25·68
14th Round (1958-59) ..	12·77 (63·44)	7·31 (36·31)	20·13	14·26 (50·82)	12·59 (44·87)	28·06
15th Round (1959-60) ..	12·55 (62·34)	7·51 (37·31)	20·13	15·15 (54·38)	11·53 (41·39)	27·86
16th Round (1960-61) ..	13·33 (62·09)	8·08 (37·63)	21·47	15·91 (53·90)	12·38 (41·94)	29·52
17th Round (1961-62) ..	14·00 (64·72)	7·63 (35·28)	21·63	16·83 (53·94)	13·37 (42·85)	31·20
18th Round (1963-64) ..	14·67 (65·78)	7·55 (33·84)	22·31	17·65 (53·55)	12·76 (38·71)	32·96
19th Round (1964-65) ..	17·84 (67·47)	8·55 (32·34)	26·44	20·52 (56·95)	13·04 (36·19)	36·03
20th Round (1965-66) ..	18·46 (65·00)	9·85 (34·68)	28·40	19·66 (53·64)	15·34 (41·86)	36·65
21st Round (1966-67) ..	20·55 (66·50)	10·29 (33·30)	30·90	22·84 (54·98)	16·92 (40·73)	41·54
22nd Round (1967-68) ..	22·65 (67·81)	10·69 (32·01)	33·40	25·29 (56·43)	17·64 (39·36)	44·82
23rd Round (1968-69) ..	22·26 (66·87)	10·94 (32·86)	33·29	26·85 (58·32)	17·08 (37·10)	46·04
24th Round (1969-70) ..	23·33 (67·23)	11·29 (32·54)	34·70	29·28 (58·11)	18·95 (37·61)	50·39
25th Round (1970-71) ..	23·52 (66·61)	11·72 (33·19)	35·31	30·01 (56·78)	20·26 (38·33)	52·85
28th Round (1973-74) ..	35·95 (67·82)	17·00 (32·07)	53·01	41·83 (59·11)	26·37 (37·26)	70·77
Per cent change ..	2·22	—6·17	212·37	32·86	—14·74	182·40

Note:— Figures in parentheses indicate percentages to total expenditure.

1973-74. The proportion of expenditure incurred by the rural population on non-agricultural products increased upto 1960-61 and thereafter it showed a declining trend till 1973-74. On the other hand, in urban India it depicted a declining trend.

The results of this study confirm Sau's[14] contention that "the market for industrial consumption goods in India is, in a sense, shrinking" and further confirms the findings of Mundle[15] that the share of non-agricultural goods in total consumption expenditure has declined. It further supports the argument given by Sau that foodgrains being the first charge on a consumer's budget, the relative rise in food articles prices is eating into the market for industrial goods.[16] Also it can be argued that as a result of rise in foodgrains prices, the absolute decline in expenditure for almost all non-foodgrain commodities is greater[17] and hence the observed trend. The arguments given for the reasons of slow development of the industrial sector are mainly (*i*) low demand for industrial goods in the home market, (*ii*) adverse terms of trade and (*iii*) unutilized manufacturing capacity.[18] Now at least, the new wholesale price index series (base 1970-71) tell us that the low demand for industrial goods is because of the terms of trade being adverse to agriculture. With all the drawbacks of NSS data and the classification adopted for the analysis as discussed by Sau and Mundle, it can be finally concluded that there is a need to improve the technical efficiency of industrial production in India.

INTER-SECTORAL LINKAGES OF CAPITAL INVESTMENT AND HUMAN LABOUR UNDER MECHANIZED ENERGY SYSTEM ON FARMS

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With a view to finding out the proportions in which resources are combined on farms and measures taken to utilize their idle capacity that is in excess over the requirements in agriculture, alternatives are searched out to involve the resources for additional benefits which make the inter-sectoral linkages to take place. Inter-sectoral linkage virtually differs much from a simple relationship between an industry (manufacturing agricultural machines, fertilizers, etc.) and agriculture. Real linkages of two sectors are those

14. *Economic and Political Weekly*, Special Number, August 1974, *op. cit.*
15. *Economic and Political Weekly*, Annual Number, February 1975, *op. cit.*
16. In support of this argument see Table I where it is shown that prices of food articles rose faster than those of manufactured articles, *i.e.*, at a compound rate of 5·6 and 5·3 per cent respectively.
17. For detailed discussion, see Mellor, *Economic Development and Cultural Change*, October 1978, *op. cit.*, pp. 3-11.
18. See K. N. Raj, "Growth and Stagnation in Indian Industrial Development", *Economic and Political Weekly*, Vol. XI, Nos. 5, 6 & 7, Annual Number, February 1976, pp. 223-236.

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