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LONG TERM FACTORS INFLUENCING TERMS OF TRADE OF AGRICULTURE WITH SPECIAL REFERENCE TO INDIA

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Terms of trade of agriculture can be defined as the ratios at which agricultural products are exchanged for non-agricultural products. Terms of trade of agriculture perform the following useful functions:-(a) allocate resources between agricultural and non-agricultural sectors of the economy; (b) influence the extent and pattern of resource use in agriculture as between agricultural products and resources employed in agricultural production; (c) influence the level of real income of the agriculturist, arising out of terms of trade between agricultural products and non-agricultural products.

In a 'free' economy or in a 'mixed economy' like that of India, terms of trade perform the above functions through their impact on decisions of the farm family as a production unit as well as a consumption unit. Hence, an attempt is made in this paper to consider various long-term factors influencing terms of trade of the farm family operating in a poor peasant economy.

The efficacy of terms of trade of agriculture to influence sector-wise resource allocation, extent and pattern of resource-use within agriculture, and level of real income of the agriculturist is closely related to the stage of development of an economy. In under-developed economies, division of labour between agricultural and industrial sectors has progressed only to a limited extent; a major part of agricultural production is meant for subsistence and not for sale: similarly, a greater part of the effective demand of the agriculturist is directed towards the goods which he himself produces. Obviously, such an economy is little affected by changes in terms of trade. But as subsistence-oriented production is substituted by production for the market and also as the agriculturist begins to rely more and more on the market for satisfaction of his wants, terms of trade begin to acquire greater significance in the economy.

The important long-term factors influencing terms of trade of agriculture are changes in population, per capita real income, capital accumulation, market perfection and aggregate demand.

CHANGES IN POPULATION

An increase in population will increase demand for agricultural as well as non-agricultural products, and will act as a price-raising factor. This, however, will improve the terms of trade of agriculture only if the demand for agricultural products increases more than that for non-agricultural products. It can be expected that at the low level of *per capita* income prevailing at present in India, a rise in population would tend to increase demand for agricultural products like foodgrains more than that for non-agricultural products and as a consequence, improve the terms of trade of agriculture.

An increase in population will normally be accompanied by an increase in agricultural population as well. In India, where a majority of population consists of agriculturists, a greater part of any increase in population would take place in the agricultural sector. This will result in an increase in agricultural labour supply, and other things remaining the same, it would reduce labour earnings in agriculture. In a peasant economy where the supply of labour to the typical firm engaged in agricultural production comes to a great extent from the farm family itself, any reduction in labour earnings will reduce net returns to the agricultural firm as well. Reduction in net returns to the firm in these circumstances takes the form of adverse terms of trade in factor markets, *i.e.*, rents and interest rates tend to move up in terms of the products sold by the firm.

Thus, on the one hand, in an economy with low *per capita* income a rise in population tends to improve the terms of trade of agricultural products as against industrial goods;on the other hand, in a peasant economy, such a rise tends to reduce the earnings of the farm family consequent on a reduction in labour earnings in agriculture; and the net effect on the real income of the farm family would tend to be adverse, if the productivity of labour in agriculture does not rise. In such a situation, the most fundamental measure to improve the terms of trade of the farm family would be to induce labour to move out of agricultural sector to non-agricultural sector. However, even when alternative avenues of employment are available to the agricultural population on an adequate scale, the process of occupational change-over creates many acute problems. By and large, human beings do not like to give up their traditional occupations and residence; hence even in economically advanced countries like the U.S.A. and U.K. there exist 'depressed areas'. In India, where alternative avenues of employment are not always available, and where social institutions like the joint family and equal inheritance exist the problem of transfer of labour out of agriculture bristles with great difficulties. Here, agriculture becomes a 'sponge' for excess population, exhibiting the familiar features of chronic under-employment.

One of the most important ways in which the Government of an under-developed country can help in improving the terms of trade of agricultural firm is to encourage the movement of labour resource out of agriculture by spread of education, subsidisation of migration, opening of labour exhanges, etc. The experience of those countries where sector-wise resource allocation over time involving human beings has taken place on a considerable scale indicates that its rate is usually accelerated during periods of prosperity, when employment opportunities in non-agricultural sector increase. Another important consideration in this respect should also be noted. In an economy, in which the alternative of centralised compulsory direction of labour is not be to considered, the desired sector-wise reallocation of labour resource can be brought about through price mechanism only, *i.e.*, as a result of differences in labour earnings in alternative occupations. Hence, if labour is to be induced to move out of agricultural occupations in favour of non-agricultural pursuits, the earnings in the latter should be perceptibly higher than in the former for similar types of labour. The fulfilment of this condition would, in its turn, necessitate adverse terms of trade for agricultural products.

CHANGES IN PER CAPITA REAL INCOME

Though the income elasticity of demand for agricultural products as a group is low, there are certain important exceptions to this generally valid proposition. Firstly, the income elasticity of demand for agricultural products is likely to be high in an economy where the level of per capita income is very low, say as in India. Secondly, the income elasticity for certain individual products may be high, for example, a rise in low per capita incomes may increase the demand for superior grains like rice and wheat at the expense of coarser grains like millets. At higher levels of per capita incomes, this is likely to be true for protective foods like milk and milk products, fruits and vegetables, livestock products, etc.

What would be the probable effects of a rise in per capita real income on the terms of trade of agriculture? In an economy where the per capita income is 'high' any rise in it is likely to raise demand for non-agricultural products more than that for agricultural products; consequently terms of trade for agricultural products are likely to become adverse. On the other hand, in an economy with low per capita incomes, relationship between a rise in income and the terms of trade of agriculture depends to a certain extent on the 'culture contacts' between the low income and high income groups in the economy. If the culture contacts are well developed so that 'demonstration effect' on demand is significant, then a rise in income even at low levels may raise demand not only for agricultural products but also for non-agricultural products. Obviously, it is difficult to say any thing precisely about the change in terms of trade of agriculture in these circumstances without a knowledge of preference schedules of those whose incomes have increased. However, it can be said with greater confidence that even in an initially poor economy with gradual stepping up of per capita income, the terms of trade of agriculture may tend to become less and less favourable.

CHANGES IN CAPITAL ACCUMULATION

In the factor market capital accumulation tends to increase productivity of labour and consequently the real wage-rate. In the product market, it tends to reduce cost of production, and consequently the prices of products as well, provided the market is sufficiently competitive. When effects of capital accumulation are examined separately for agriculture and industry it is found that capital tends to be invested in greater proportion in industry than in agriculture. In the ultimate analysis, accumulated funds tend to be divided between industry and agriculture according to expected returns to capital. Hence, greater productivity in industry on account of ease of large scale organisation can partly explain why capital is attracted more by industry than by agriculture. However, many times, inspite of high *average* returns to specific forms of investments in agriculture, it is found that capital does not easily flow into agriculture. The reason for this apparent sector-wise immobility of capital is mostly found in wide variations in input-output relationships in agriculture which give rise to high risks in agricultural production and consequently expected returns to capital in agriculture are discounted by high risk 'premia'. This disparity between capital investments in agriculture and in industry results in comparatively lower labour earnings in the former. In India returns to the farm family consist mainly of the labour earnings of its members; hence restricted capital investment

in agriculture ultimately results in adverse terms of trade for the farm family in these circumstances.

Higher rate of capital investment can be expected to lower the price of industrial products through lower costs of production. Other things remaining the same, this should improve the terms of trade of agricultural products. There are however two factors which appear to work in the opposite direction, especially for the agriculturist of over-populated and under-developed countries. In the first place, analogous to additions to capital stocks in industry we have in agriculture additions to cultivated land. When area under cultivation increases, supply of agricultural products increases and hence tendency towards inprovement in terms of trade of agricultural products is checked. (In an over-populated country additions to cultivated land are effected usually under pressure of increasing population; therefore, even after such additions labour earnings in agriculture tend to remain low). Secondly, level of capital investment in agriculture of an economically developed country is found to be much higher than that in an under-developed country. Hence, the price at which the farmer of a developed country can profitably supply agricultural products may be found to be extremely low for the peasant of an under-developed country. To the extent that the world market for agricultural products functions effectively this competition between agriculturists of different regions tends to result in adverse terms of trade for the agricultural firm in an under-developed country.[1]

CHANGES IN DEGREE OF MARKET PERFECTION

The degree of 'market perfection' of space, time and form changes with the progress of an economy. It is clear that as the degree of perfection of both product market and factor market increases, terms of trade of the agricultural family improve. A time-series analysis of margins in cotton prices in India shows that market perfection over space increased during the inter-war period. However, this improvement may not have been fully reflected in terms of trade of the cotton producer because of the monopsonic conditions prevailing in village markets.[2] Market perfection over time is closely linked with storage facilities and intensity of competition. The few studies of seasonal variations in prices of agricultural products that have been made in India show that an increase in storage facilities can help in improving the prices of agricultural products, received by the agriculturist, and consequently the terms of trade of the agricultural firm. Market perfection in respect of form is due to unsatisfactory quality assessment in producers' markets and also due to imperfect competition amongst processing firms. It seems that co-operatives can remove these imperfections and contribute in improving the terms of trade of the agriculturist. Terms of trade of the farm family can also be improved by removing monopolistic or oligopolistic conditions prevailing amongst firms supplying resources like fertilizers and seeds and consumption goods needed by the agriculturist. Here also, co-operatives can play a very useful role.

1 The contention that the cost of production of the marginal firm is an important determinant of the price of a product is valid only when the resources employed by the marginal firm have alternative opportunities. This condition is usually not fulfilled for the resources engaged in agriculture of an under-developed economy.

2 Dutia B. P. : Economic Aspects of Consumption, Production and Marketing of Cotton, pp. 313-21 and 328-31 (unpublished Ph. D. Thesis).

CHANGES IN AGGREGATE DEMAND

When saving and investment are not reasonably matched, aggregate demand and supply are also not balanced. In case of under-investment, aggregate demand falls short of aggregate supply; conversely in case of over-investment aggregate demand outstrips aggregate supply. If these imbalances are not corrected by suitable fiscal measures the general price level tends to exhibit great cyclical ups and downs.

When, however, a sector-wise break-up of the changes in general price-level is made, fluctuations in agricultural prices are found to be much wider than those in industrial prices. This is so, mainly because the supply of agricultural products is less elastic than that of industrial products. Thus when demand for industrial products falls it usually brings about a reduction in supply, so that price fall is narrowed down. On the other hand, a fall in demand for agricultural products is almost wholly reflected in the price-fall. This tendency of the agricultural production to continue almost at the same level inspite of a reduction in demand can be attributed to two factors. In the first place, a single firm in agriculture cannot influence the price level by its action individually; hence the practical way to keep the real returns nearmost to the desired level is not to reduce production. At the same time, as the number of agricultural firms is very large and as they are scattered over a wide area a spontaneous concerted action on their part is almost ruled out. Secondly, the input-output relationship in agriculture is highly variable as compared to that in industry so that it is not always possible for the farmer to respond rationally to price variations.

Thus, the relatively inelastic supply of agricultural commodities results in adverse terms of trade of agricultural products during a period of depression. Along with other prices labour earnings in agriculture also tend to fall. A period of depression is usually marked by a sharp fall in the normal rate of migration from rural to urban areas, so that supply of agricultural labour tends to increase the sponge-like nature of agriculture with respect to labour is clearly shown in periods of depression, especially in over-populated and under-developed countries. As a result, in a country like India where the earnings of the farm family consist mostly of labour earnings its terms of trade also tend to be adverse in a period of depression. On the other hand, in a period of rising prices, owing to relative inelasticity of supply of agricultural products, the rise in prices of agricultural products is more marked than in case of industrial products. Hence, generally, a period of prosperity or inflation is associated with an improvement in the terms of trade of agricultural products.

When cyclical fluctuations in agricultural prices tend to be wide and violent, regulation of prices by the Government is often advocated as necessary and desirable. In a period of falling prices, price stabilisation programmes, with 'price parity' as the goal have been adopted in the past, the most notable example of which is the agricultural price policy of the U.S.A. during and after the 'thirties. The economic limitations of a parity price programme have been clearly pointed out by many economists. In addition to these, there are two special considerations which need to be borne in mind when such a programme is being considered with reference to India. Firstly, the cost of such a programme has been found to be so high that its prolonged continuation

appears to be very nearly impossible in a country where agriculture constitutes the most important source of livelihood. It is clear that when a parity price programme means an indirect subsidisation of a much bigger group by a smaller one, it cannot be continued for a long time. Secondly, a programme of agricultural development in India would involve gradual transfer of rural population to urban occupations; and as pointed out earlier if this process is to be brought about indirectly through the price mechanism, a parity price programme aiming at certain fixed terms of trade of agricultural products will be found to be unsuitable. In order that labour moves out of agricultural sector a 'disparity' between labour earnings in agriculture and industry appears to be necessary. Also as the level of per capita real income rises, this disparity may have to be wider in order that labour is drawn to non-agricultural occupations.

When the general price is rising, control of agricultural price level is advocated with the familiar plea that a rise in agricultural prices strengthens inflationary pressures in the economy. It is pointed out that this is especially true of an under-developed economy in which food prices have a heavy weightage in the cost of living index. Against this argument, there are two considerations. Firstly, it can be argued that if in an under-developed country a price support programme during a period of depression is not implemented on account of financial considerations, it is 'morally' unjustified to curb the price rise during inflation, *i.e.*, if the government could not do anything to improve the terms of trade of agriculture during depression, at least it should refrain from checking the automatic improvement during inflation. Secondly, if the inflationary rise in prices is due to development investment as in India at present, an agricultural price control may jeopardise the successful achievement of planned targets of agricultural production.

Thus, it appears that terms of trade of agriculture during cyclical fluctuations in the general price level cannot be effectively changed in desired manner by price policy measures alone. A more fundamental approach of suitable variations in investment programmes is called for. The problem of terms of trade of agriculture during periods of large fluctuations in the general price level is closely linked with abrupt changes in levels of real incomes of different sections of the community. Hence, more often than not, the government policies adopted to solve this problem are coloured with emotionalism at the expense of rationalism. Past experience indicates that if government efforts of price supports or price controls work against the underlying economic forces operating in the economy they can at the best be only partially effective; and even to the extent that they are effective, they create many formidable problems for the community. The best course that a community can adopt in these circumstances is to avoid the occurrence of cyclical ups and downs in the general price level as far as possible; if, however, deflationary or inflationary pressures in the economy do develop then the investment programmes both private and public, must be suitably modified.

AGRICULTURAL TERMS OF TRADE AND ECONOMIC GROWTH

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Let us start by assuming that in a society the production of investment goods just covers the depreciation. We will also suppose that production-goods and consumption-goods are the two types of goods produced in that society. It is commonsense to think that each of these two industry-sections will set aside a sum of money for depreciation. If they do so, under our opening assumption, the total of their depreciation allocations should equal the value of production-goods. Diagrammatically the position may be as shown below:-

Consumption-goods		Production-goods	
Others	Depreciation	Depreciation	Others
60	40	10	40

The values of consumption-goods and production-goods are respectively 100 and 50. The total of depreciations is 50, *i.e.*, equal to the value of production goods. In the circumstances, we shall continue to replace production-goods to the extent we use them up, and the society shall not grow.

For growth more production goods should be produced. In other words, the amount, 100 (=60+40) should not be wholly spent on consumption goods, but a part should be saved and diverted towards the production goods. Let us suppose that 10% of 100 is saved and diverted to production goods. The output in the production goods section is therefore expected to go up by 20%. On the other hand, only 90 shall be paid for consumption-goods produced at a cost of 100. The price of consumption-goods shall depress to 90% of costs while that of production-goods shall tend to increase, though it may not increase up to 120% of costs. A knowledge of higher prices and unsatisfied demand provide an incentive to greater output of production-goods. Will the receipt of lower prices by the producers of consumption-goods have any effect on the production of such goods?

Let us assume that consumption goods are produced as a way of life. If in the society agricultural production predominates, this would not be wrong assumption. In that case the producers of consumption goods, who are residual claimants, shall get less in physical terms, but they shall continue to produce as before in physical terms.

What shall happen next year? The payments made by producers of consumption-goods will be 90: that by producers of production-goods, 60. The position may well be as follows now:—

Consumption goods		Production goods	
Others	Depreciation	Depreciation	Others
50	40	15	45

The total demand for production-goods shall now be equal to 10+40+15, *i.e.*, 65, while, if again a part of 90 (=50+45)—say, 10%—is saved and diverted towards production-goods, there shall now be left 84.5 for payment for consumption-goods. The residual claimants among the producers of consumption-goods shall get still less than before.

This circular tendency should continue and during the period of growth the residual claimants among producers of consumption-goods shall lose increasingly. In our analysis we ignore that portion of consumption-goods which is retained by the producers themselves for own consumption. The above analysis is in an elementary way in terms of money-flows. When the residual claimants among producers of consumption-goods get less payment, they shall tend to reduce their consumption. Thus, producers of food-crops will particularly find that the food which they could retain formerly for own consumption has to be decreased to meet the fixed money-commitments.

We should therefore find that during periods of boom for production-goods-industries as against consumption-goods-industries, the terms of trade should be in favour of the former. Where agriculture predominates, we should expect that during (industrial) booms, the terms of trade would be against agriculture. Where foreign trade is important and where exports are mainly industrial goods and imports are agricultural goods,we should find during booms the terms of trade should be against imports.

Professor Robertson was perhaps the first to point out that Bowley's table of the price in successive years of British imports (which were mainly agricultural) in terms of British exports (which were mainly industrial) showed minima in the boom years of 1890 and 1900 and a marked increase in the depression of 1874-7 Keynes had continued Bowley's table and again there was a fall in the boom of 1905-7 and a rise in the period of hesitation 1908-10. There was minima again in 1921.

Coming to India, we took the annual average of index numbers of wholesale prices in Calcutta (Base, July 1914) and calculated the ratio of the indices of cotton manufactures to those for cereals. A four-item moving average followed by a six-item moving average was taken. The figures in Table I show that the ratio shows a continuous tendency to fall except during 1919-20 and 1928-33.

For the post-independence period the figures of Economic Adviser's index number of wholesale prices (Base, August 1939) of manufactured articles and food articles were taken and the ratios of the former to the latter calculated (Table II). These are only 10 values and proceeding to take moving average as before we got two figures for 1954-55 and 1955-56. Adjusting them on the basis of cereals and cotton manufactures indices for 1939 in Table I, these figures came out to be 1.19 and 1.23 approximately, showing thereby that during this period, which may well be said to be a period of development and growth for India, the trend is for an adverse terms of trade for food articles. This is as it should be according to the deductive conclusion reached by us. During a period of growth producers of consumption goods, agricultural goods, particularly food-articles must take a smaller parity price.

This can be done, say in the following ways:—

(a) Prices of (say) food articles may be kept low.

(b) Money supply may be increased and prices of non-food articles may be allowed to go up to a greater extent.

(c) A greater proportion of food articles may be compulsorily procured from the producers.

(d) More taxes may be levied and be recoverable immediately after the harvest.

Of these four methods the first seems to be the best. Achieving the object through greater money-supply is inflationary. Compulsory procurement at low prices may be resented violently by the people. The levying of more taxes is likely to mean more taxes generally for those persons only who have bigger holdings. In an under-developed country there is always a cry for exempting smaller (uneconomic) holdings. Keeping prices of food articles low is the best solution. Only it should be accompanied by facilities for increased production.

Incidentally, the F.A.O. has revealed in its last annual report (*vide* press summary September 20, 1957) that although the volume of agricultural production has increased, the prices to (*i.e.*, money proceeds received by) farmers from sales in the domestic and international markets increased slightly or to a smaller extent during 1954-57. This was noticed particularly in Europe where growth in respect of production and industrial goods has been greatest in the post-war period.

TABLE I

Year	Index No. Wholesale Cereals	Calcutta Prices (July, 1914 100) Cotton Manufactures	Ratio of (3) to (2)	Moving Average of 4-item of Col. (4)	Moving Average of 6-item of Col. (5)
1	2	3	4	5	6
1915 ..	116	97	0·877		
1916 ..	106	134	1·264	1·79	
1917 ..	91	203	2·250	2·03	
1918 ..	108	298	2·76	2·24	
1919 ..	161	295	1·83	2·16	1·01
1920 ..	153	325	2·12	1·91	1·01
1921 ..	144	280	1·92	1·95	1·00
1922 ..	136	239	1·76	1·89	0·96
1923 ..	112	221	1·99	1·80	0·89
1924 ..	121	228	1·88	1·67	0·84
1925 ..	135	210	1·56	1·46	0·78
1926 ..	139	173	1·25	1·31	0·73
1927 ..	139	159	1·15	1·24	0·69
1928 ..	133	159	1·27	1·27	0·68
1929 ..	125	160	1·28	1·39	0·69
1930 ..	100	139	1·39	1·51	0·76
1931 ..	78	123	1·62	1·62	0·76
1932 ..	68	119	1·75	1·69	0·79
1933 ..	66	113	1·71	1·67	0·80
1934 ..	69	115	1·66	1·59	0·80
1935 ..	75	117	1·56	1·54	0·78
1936 ..	79	111	1·41	1·49	0·76
1937 ..	77	117	1·52	1·41	
1938 ..	72	106	1·47	1·39	
1939 ..	86	106	1·23		
1940 ..	86	122	1·32		

TABLE II

Year	Index No. of Wholesale Prices in India (Aug. 1939=100)				
	Food Articles	Manufactures	Col (3) / Col. (2)	Moving Average of Col. 4 4-Item	Moving Average of Col. 5 6-Item
1	2	3	4	5	6
1947-48 ..	306·1	286 4	0·936		
1948-49 ..	382·9	346·1	0·904	0·889	
1949-50 ..	391·3	347·2	0·867	0·913	
1950-51 ..	416·4	354·2	0·851	0·941	0·969
1951-52 ..	398·6	401·5	1·031	0·963	0·999
1952-53 ..	357·8	371·2	1·014	1·034	
1953-54 ..	384·4	367·4	0·956	1·074	
1954-55 ..	339·8	377·4	1·136	1·068	
1955-56 ..	313·2	372·9	1·190		
1956-57 ..	388·5	384·6	0·990		

Source :—The Economic Adviser to the Government of India.

AGRICULTURE AND ITS TERMS OF TRADE WITH SPECIAL REFERENCE TO INDIA

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The terms of trade of agriculture imply the rates of exchange between farm products and non-farm products. The terms are indicated by the relative prices of farm and non-farm products. If the same amount of farm products commands in exchange in a particular period more of non-farm products than previoulsy, the terms are favourable to farmers. The reverse is the case if it commands less. The real incomes of farmers depend on two factors, *viz.*, (1) the total quantity of farm-products produced and (2) the rates of exchange between farm products and non-farm products. A fall in terms of trade if it is accompanied by a proportionately higher quantity of production and marketed surplus may not lead to a fall in the real income of farmers. The farmers are more interested in the real incomes. They fight for favourable terms of trade in order to get higher real incomes.

Farmers as a class have demanded and received special treatment from the government in many countries. Agriculture in most of the countries has been a depressed industry. In most of the countries, it is organised in small scale and the farmers are at a disadvantage in bargaining with large scale middle men. Gradually agricultural prices and profits fluctuate more violently than non-agricultural prices and profits, as supply does not adjust quickly to demand. Finally various social and political factors have led to the special treatment of farmers in many countries. Experiences during the world wars have led many governments to safeguard and develop food producing industries in their countries. They have adopted various measures to improve the conditions of the farmers and protect their incomes during the periods of falling prices.

As is said above, the real incomes of farmers depend upon their total production and relative prices of farm and non-farm products. The farmer requires non-farm products for two purposes. He requires firstly some materials which form his cost of production and secondly, some products for his consumption. His terms of trade will be higher if the prices of his products are higher in relation to those of his cost materials and of his commodities of consumption. But experience shows that due to peculiar supply and demand conditions the prices that the farmers receive are more unstable than the prices which they pay. This is one of the reasons why the farmers are often in trouble during the periods of falling prices and the State steps in to protect them.

To maintain the incomes of farmers, governments have tried to support the prices of major farm products. Complicated procedures have been followed to guarantee prices to farmers and maintain relationships between prices of agricultural and non-agricultural commodities and between those of different agricultural commodities. In many countries also the governments have tried to raise farm prices and incomes by restricting imports of agricultural commodities.

Another method of assisting the farmers has been the subsidisation of the prices of materials forming the cost of production of farmers. Under this category fall all measures such as subsidized sale of fertilizers, seeds and agricultural implements, cheap credit and marketing facilities, reduction of rent and reduction of taxes and transport charges on materials forming the cost of production. Farmers can also be helped by subsidization of prices of articles consumed mainly by rural population. Promotion of schemes of rural education, housing and sanitation, and provision of cheap medical facilities and entertainment centres through government expenditure also increase the real incomes of the farm population.

In Western industrialised countries all the above methods have been adopted to raise incomes of farmers for different purposes. One of the purposes has been to maintain equity between the incomes of urban and rural population. Secondly, encouragement of food production under stable agricultural conditions has been one of the main objects. The growth of healthy and stable society in the rural areas has been considered also as a desirable object. The maintenance of favourable terms of trade through government efforts means transfer of incomes from the non-agricultural sector. In countries like England and the U. S. A. where the non-agricultural sector contains more than 80% of the population of the country and contributes the major part of the national income, a substantial increase in farm income is possible through transfer of income from non-agricultural sectors. But for many under-developed countries such possibilities are remote.

In countries like India where the agricultural sector contains more than 70% of the population and contributes more than 50% of the national income, a substantial increase in the incomes of the farmers is not expected by mere transfer of incomes from the non-agricultural sector. Some agricultural countries export mainly agricultural commodities and import mainly manufactured commodities. The demand for manufactured articles is generally elastic and that for agricultural commodities inelastic. In such cases the relative increase in the prices of agricultural commodities may lead to the transfer of incomes from the manufacturing country to the agricultural country. After the Second World War and partition of the country, the nature of Indian exports has completely changed and we import now a great deal of food and agricultural raw materials every year. Thus higher terms of trade for agriculture in the country can be achieved at the cost of the non-agricultural sector inside the country and not at the cost of foreigners. The questions whether the terms of trade of agriculture should be increased or decreased or stabilized at the present level and the methods through which the objects are to be achieved need attention.

The population pressure and economic conditions in India have led the Indian farmers to concentrate on the production of foodgrains. More than 80% of the land is devoted to the production of foodgrains. The history of Indian agriculture shows that foodgrain prices generally rose in the 'twenties and went down in the 'thirties and rapidly rose in the 'forties along with the general prices.

Chart I shows that the fluctuations in cereal prices have been more violent than those in general prices or in the prices of manufactured articles.

Chart II shows the purchasing powers of cereals and manufactured articles from 1920 to 1955. (The purchasing powers have been calculated by dividing the index numbers of wholesale prices at Calcutta). It shows that the rates of fluctuations in the purchasing power of cereals have been greater than those of the manufactured articles. The fluctuations in the purchasing powers of cereals indicate the instability of the incomes of the farmers during the last three decades. During the depression the prices of agricultural exports of the country fell much more rapidly and to a much lower point than those of imported manufactured articles. From 1930 to 1933 there was a fall of about 51 per cent in the prices of exported articles while the fall in the prices of imported manufactured articles was about 27 per cent. It indicates that the terms of trade went very much against the farmers during the depression period. Chart II indicates that the terms have been generally favourable to farmers during the Second World War and the post-war period. But even in that period fluctuations in the purchasing powers of the farmers have been great. The government in this country adopted a policy of *laissez faire* in agriculture during the inter-war period. It is generally known that our farm population which is more than 70% of our total population was in dire distress during the depression period. They were heavily in debt and had to sell their household assets and land. A large percentage of land passed from the ownership of agriculturists to that of non-agriculturists. But no steps were taken to protect the incomes of agriculturists. Foreign manufacturing countries gained at the cost of the Indian farmers.

During the Second World War, food prices rose very rapidly and throughout the war and post-war period they have remained high. The terms of trade have been favourable to agriculturists though their margin of profit has not been very great due to rise in the costs of production. During the period the main policy of the government has been to increase the food supply in the country and lower food prices. After the abolition of price controls after the War, reserve stocks of food imported and procured in the country have been built up to supply food at fair prices and reduce general food prices. Efforts have also been made to increase the production in the country by the provision of facilities for irrigation, cheaper fertilizers, cheaper credit and better marketing facilities. Attempts have been made to induce farmers to adopt better methods of cultivation. The main purpose of the policy has been the solution of the food problem in the country and to maintain general price equilibrium and not to protect the incomes of the farmers. Food prices being the basis of our price structure, higher food prices have always exerted an inflationary pressure on the general prices. The farmer's terms of trade have directly or indirectly improved by the prevalence of high food prices and government efforts for greater production.

In a country like India factors of agricultural production being rigid total agricultural production is not expected to respond quickly to price incentives. In case of commercial crops like jute, cotton and sugarcane higher relative prices may lead to larger acreage of production at the cost of crops with lower relative prices. But the same is not true in the case of total agricultural production or foodgrains production. The scope for an increase in the total cultivated area due to higher prices is limited in India. As most of the farmers are subsistance farmers and cultivate mainly foodgrains for family consumption and other family expenses, the area under foodgrains does not increase or decrease very greatly with the rise and fall in prices of foodgrains.

Charts III and IV show the purchasing powers, acreages and production of rice and wheat in India from 1920 to 1940. They show that the acreages and production of foodgrains respond very little to changes in purchasing powers of the grains. Thus it appears that for higher production of foodgrains specially, offering of price incentives is not the method. Higher production has to be induced by other methods. Secondly, as other prices are greatly influenced by food prices, high prices for food would tend to raise other prices and the terms of trade of the farmers may not improve. Moreover, at present the country is at the beginning stage of an industrial revolution with programmes for shifting surplus farm population to the industrial sector. High prices for food and raw materials will retard the progress of industrial growth. Thus gradual reduction of the present high food prices should be the aim of agricultural policy. But the reduction of high food prices should not lead to lower and unstable incomes of the farmers who constitute more than 70% of our population and are at the margin of absolute poverty. Maintenance of a stable income for the farm population means prevention of distress in the country. Again the majority of our population being agricultural population, demand for industrial goods mainly arises from them. Unstable and low farm incomes mean unstable and low demand for industrial goods. Moreover, investment in the agricultural sector is necessary for agricultural development and it will not be possible if the real incomes of farmers are unstable and low. Thus the policy should aim for the reduction of food prices to a particular level and to maintain stable prices in the short period of at least a harvest year.

On the other hand, efforts should be made to improve the incomes of farmers by greater amount of production and reduction in the cost of production of the farmers. Items of cost of production of the farmer, which would lead to the adoption of better techniques and methods of production and better crop patterns should be subsidized. In a country like India where the farmers need direction and guidance the above methods are useful. For adjustment of land revenue and water rates there is very little scope but there is great scope for improving farmer's incomes by improving marketing and credit facilities and by improving land tenure systems. Besides the real incomes of the farmers may be increased by reduction of prices of certain essential articles of consumption of farmers. Instead of placing more general purchasing power in the hands of the farmers their consumption might be directed to suitable channels through price policies. Government expenditure for rural housing schemes by the provision of cheap building materials, for better schools and hospitals in the rural areas would lead to higher real incomes of the farmers and better spending of the incomes. Subsidising the costs and consumption of the farmers will lead to lower terms of trade for agriculture in the long run because greater agricultural production will make farm products cheaper in relation to non-farm products. But it will raise income of the farmers and total income of the country. There is very little chance of increasing the total income of the country by mere transfer of income from the non-agricultural sector by relative high prices for agricultural commodities.

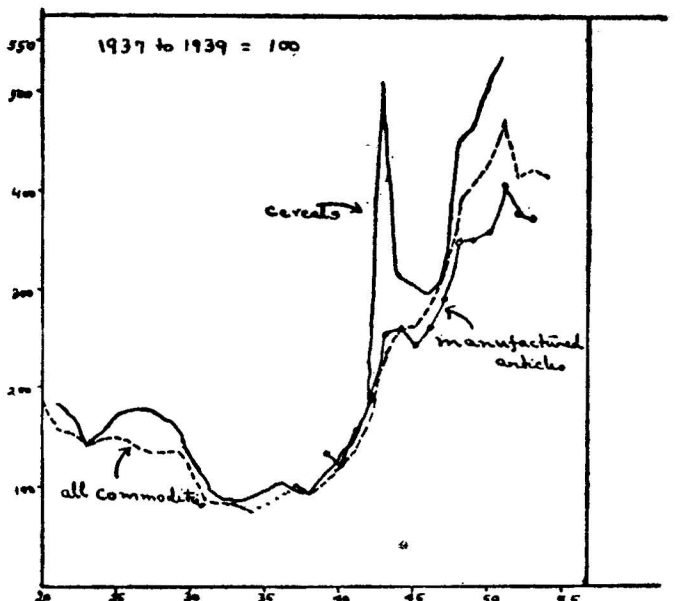

Chart I Index numbers of whole sale prices in India (calculated on base) of all Commodities & cereals (1920-54) and of manufactured articles (1939 to 1954).

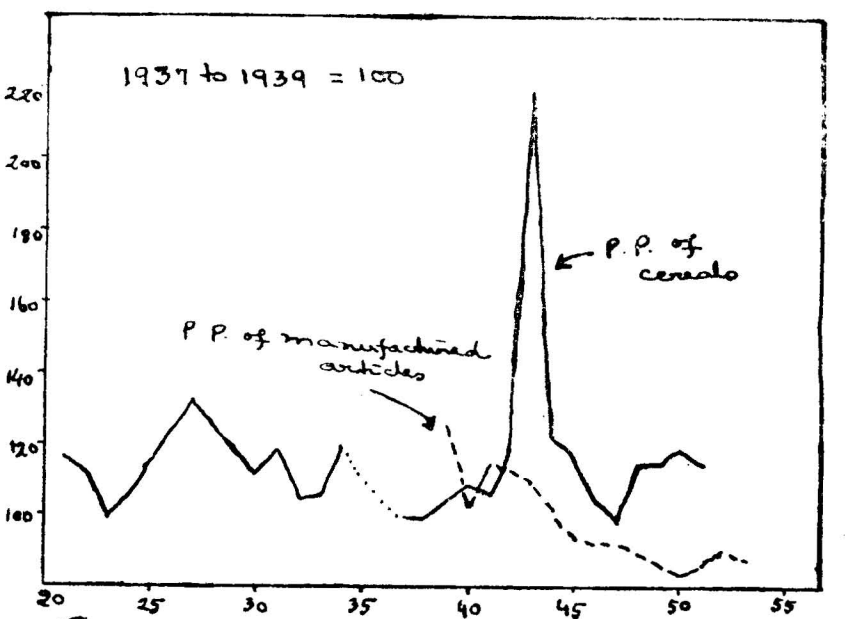

Chart II. Purchasing power of cereals based on the index number of whole sale prices (1920-54) & purchasing power of manufactured articles based on the index number of wholesale prices (1939-1954)

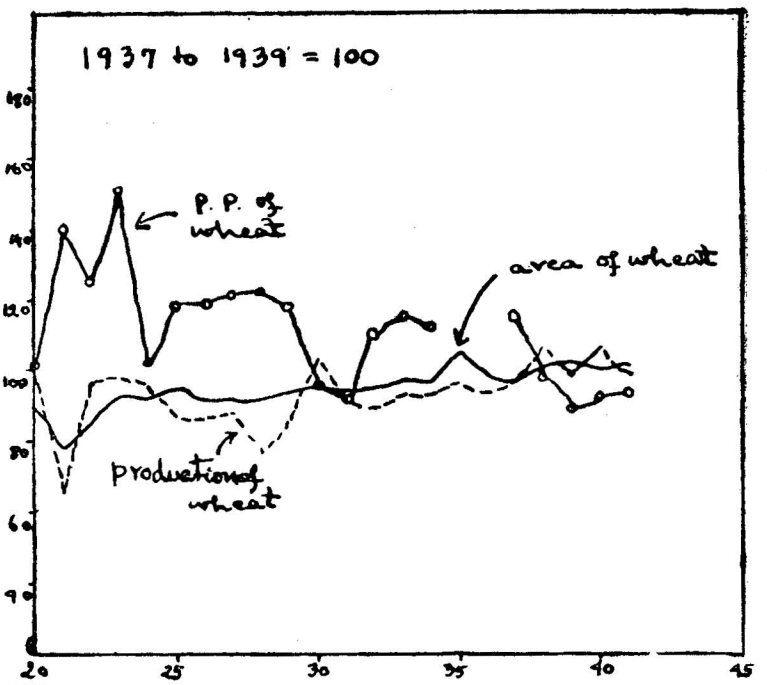

chart — III. Purchasing Power of wheat based on the index number of retail prices of foodgrains (1920-41). Total cropped area under wheat & trends of production (1920-41) in India.

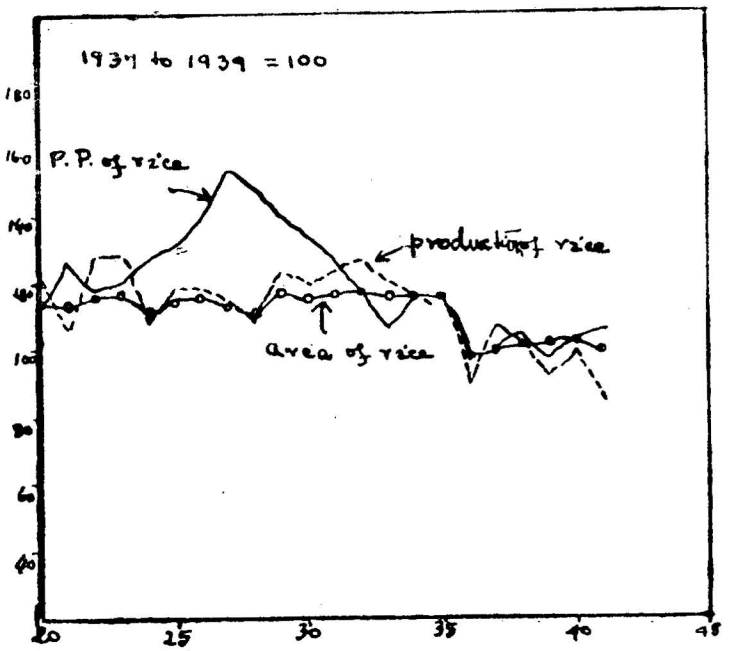

chart IV. Purchasing Power of rice based on the index numbers of retail prices of foodgrains (1920-41). Total cropped area under rice & trends of production (1920-41) in India.

AGRICULTURE AND ITS TERMS OF TRADE WITH SPECIAL REFERENCE TO INDIA

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The terms of trade of under-developed countries have received a good deal of attention in recent years in connection with the problem of economic development.[1] While recognising that favourable terms of trade are not the only factors determining economic development, it is admitted that in the absence of foreign investment these are the most important ones. Recent investigations indicate that from the latter part of the 19th century to the eve of the Second World War there was secular downward trend in the prices of primary goods relatively to the prices of manufactured goods. As the exports of the under-developed countries consist entirely of primary commodities and their imports mainly of manufactured articles, it is argued that the terms of trade have moved against the under-developed countries in general.

The terms of trade of agriculture of a particular under-developed country may however differ from the general terms of trade of under-developed countries as a group. They would depend on the nature, range and composition of its imports and exports. These in their turn depend on the economic structure, level of economic development and relative factor supply in a country.

In the case of India, we find that her economy is undergoing a slow transformation on account of the recent industrial development. The composition of her exports and imports has been changing significantly since World War II. Before the War, manufactured goods accounted for more than half of the total imports. Food and raw materials accounted for more than sixty per cent of the exports. After the war while the manufactured goods still predominate in the imports, in the case of exports manufactured articles now acount for more than half of the total.

For finding out the secular trend in the terms of trade of agriculture in India, it was not possible to get a fairly long series showing the relation between the indices of prices of agricultural commodities exported and the manufactured articles imported. But a rough indication of the trend in the terms of trade of agriculture can be obtained from the relation between the index of prices of exported articles and the index of prices of imported articles. These indices are of the wholesale prices of these commodities. Table I shows that from 1903 to 1936, there had been a secular downward trend in the terms of trade. The statistical analysis with the trend equation is given at the foot of Table I. Secular downward trend in the terms of trade has been observed also in the case of the under-developed countries as a group. This deterioration in the terms of trade had been on account of certain forces operating both on the demand side and supply side.

On the supply side, the general cause of the deterioration in the secular terms of trade was the rapid expansion in the supply of primary products on account of

1 U.N.: "Relative Prices of Exports and Imports of Under-developed Countries", Commodity Trade and Economic Development.

the vast amount of international investment in the primary goods producing countries upto the end of the first quarter of this century. On the demand side, the fall in the rate of population growth in Western Europe and the low income elasticity of demand for many primary products were responsible for slowing down the rate of demand. In India, during the period under review there was considerable expansion of the supply of some primary commodities on account of extension of irrigation facilities and the development of road and railway transport. Secondly, during this period some of the primary commodities exported from India faced an ever increasing measure of competition from newer primary goods producing countries. This had the effect of pulling down the prices of Indian exports of primary goods to the world price level of these products. At the same time, on account of growth of monopolistic competition with product differentiation and selling costs, the benefit from the higher productivity of manufactured articles of industrialised countries could not be transmitted to the under-developed countries like India in the form of lower prices. All these factors, operating on the supply and demand side might have been responsible for the deterioration in the secular terms of trade of India.

Table I also reveals that during the first World War and the world depression of the 'thirties, the terms of international trade definitely went against agriculture. During the first World War the prices of both exported and imported articles increased very much but the increase was relatively greater in case of imported articles than exported articles. This is on account of the fact that an under-developed country which depended largely on foreign countries for imports of manufactured articles faced an acute shortage of these products when imports were cut off during the war. During the last world depression the terms of trade were unfavourable to agriculture on account of the fact that prices of exported articles fell more heavily than the prices of imported articles. Price index of exported articles fell from 216 in 1929 to 118 in 1933 while the price index of imported articles fell from 170 in 1929 to 128 in 1933. The relatively greater fall in the price of agricultural products could be explained by the fact that the production remained more or less constant during this period. Assuming the average yield per acre remained constant during this period, the net area sown each year showed that agricultural production might have remained constant or might have even increased.

The effect of this inelasticity in agricultural production in the face of reduced demand was a violent fall in agricultural prices. The fluctuation in the prices was greater in the case of commodities, a larger percentage of production of which was exported. This is revealed by the following figures.

Commodity	Percentage of decline in price on the basis of September 1929 on March, 1933.[2]	Percentage of exports to total production: 1933-34.[3]
Rice	58	6
Wheat	34	0·02
Tea	46	33
Oilseeds	63	—
Jute (raw)	58	52
Cotton (raw)	46	54

2 S. G. Beri: "Price Trends during the Last Decade, *Indian Journal of Economics*, Jan. 1941.
3 Review of Trade of India, 1934-35.

The causes which produce these fluctuations in prices were mainly external. The fluctuations in prices occurred on account of fluctuation in business activity in countries which were the markets for Indian exports of raw materials and food. In the beginning of the downswing, the demand for raw materials fell off. This led to a great fall in the prices of these commodities as in most cases the supply was inelastic. The fall in the prices of exported agricultural products reduced the income of the producers of the exported agricultural products. This further led to a decrease in demand for food crops and affected the income of the growers of food crops. These farmers attempted to compensate the fall in prices by selling more in (or withdrawing less from) the market to meet the fixed cash obligations. The increase in the market supply further helped to depress the prices.

The overall terms of trade of India deteriorated in the beginning of the World War II. But they improved later on. Since 1949-50 the terms of trade have been less favourable (except the year 1951-52) and have become adverse since 1952-53 as shown in Table II. The 'net' terms of trade, however, do not reveal whether the country is really benefited or not. For if favourable terms of trade are accompanied by a fall in the quantity of exports, the total purchasing capacity of exports may decline while the net terms of trade may be favourable. The figures in Table II indicate that from 1943-44 to 1948-49, though the net terms of trade have been favourable the purchasing capacity of exports has been below the 1938-39 level. It improved after that date but showed a decrease from the year 1951-52.

On account of changes in the composition of exports in the post-war years, it is no longer valid to assume that the agricultural products (both raw material and food)still dominate the exports. So it is no longer safe to assume that the overall terms of trade also reflect the terms of trade of agriculture. It is, therefore, necessary to discover the relationship between the overall terms of trade and the terms of trade of agriculture. Tables III to VI show the overall terms of trade (Reserve Bank Series) and the terms of trade of various classes of goods. Table IV shows the ratios between the price index of food, drink and tobacco exported and the price index of each of the three sub-groups of imports, such as food, drink and tobacco, raw materials and manufactured articles. These ratios reveal that whichever base is taken the terms of trade between food, drink and tobacco exported and each of the three sub-groups of imports are favourable. The terms of trade between food, drink and tobacco exported and imported are more favourable than the other two terms of trade Table V shows the relation between the index number of prices of exported raw materials and that of each of the three sub-groups of imports. Here the terms of trade seem to be favourable between raw material exports and food imports; and between raw material exports and raw material imports but adverse in the last two years between raw material exports and imports of manufactured articles. Table VI gives us the terms of trade between manufactured articles exported and each of the three sub-groups of imports. In case of the terms of trade between manufactured articles exported and raw materials imported, and between manufactured articles exported and manufactured articles imported the downward trend is clearly visible. But the terms of trade between manufactured articles exported and food, etc., imported have not been very much unfavourable.

The adverse terms of trade as noticed above are neutralised by the favourable terms of trade of the other two classes of exports (mainly agricultural). It is only

when the downward trend in the terms of trade between exports of manufactured articles and the various classes of imports becomes reinforced by downward trends in the terms of trade of the other groups of exports that the overall terms of trade become adverse as in the years 1954-55 and 1955-56. In exports of manufactured articles, cotton and jute manufactures occupy a predominant position. The adverse terms of trade show that these commodities are gradually losing their post-war privileged position on account of increasing competition in the foreign markets in case of cotton goods and on account of substitutes in case of jute goods.

The above analysis only gives us the long-run and short-run national terms of trade of agriculture of India. It tells us nothing about how the farmers have been affected or in other words, about the producer's terms of trade of agriculture. No indices of prices received by the farmers to prices paid by the farmers are available to indicate this. Figures for post-war years are not available for the whole of India. They are only available for Orissa and Madras. The Orissa figures are given below:

PROSPERITY INDEX OF FARMERS [4]

Base : August 1939

Period	Index of prices received by the farmers	Index of prices paid by the farmers	Parity index
1950	533	470	113
1951	561	525	106
1952	507	460	110
1953	444	430	103
1954	444	391	113
1955	450	357	126

The figures show that compared to the relation between prices received and prices paid by the farmer in 1939, he was better off in the period 1950 to 1955. How the farmers in other regions have fared depends on the kinds of the commodity/commodities sold and purchased by them and their relative prices.

To sum up, a down-ward trend in the secular terms of trade of agriculture has been observed. The terms of trade of agriculture have also been observed to have been definitely against it during the first world war and the world depression of the 'thirties. The same is true of the earlier years of the second world war. However, in the post-war years the over-all terms of trade as well as the terms of trade of agriculture have been favourable. But an analysis of the terms of trade between the various sub-groups of imports and exports reveals that the exports of manufactured articles have been mainly responsible for the overall adverse terms of trade whenever they have occurred. The internal terms of trade of agriculture seem to be favourable as indicated by the indices of prices received and prices paid by the farmer in Orissa. But how farmers in other areas have really fared depends on the kinds of commodities purchased and sold by them and their relative prices. As no all India figures are available, it is not possible to generalise from the case of Orissa. But the general trend seems to have been in the direction of a favourable terms of trade to the agriculturist (for the period 1950 to 1955).

4 Government of Orissa: Bureau of Statistics and Economics, *Quarterly Bulletin of Statistics*, p. 63.

STATISTICAL APPENDIX

TABLE I*—TERMS OF TRADE: INDIA, 1903-1936

(*Base:* Price in 1803=100)

Year	Pie (1)	Pii (2)	T (3)	Year	Pie (1)	Pii (2)	T (3)
1903 ..	103	88	117	1920 ..	281	280	100
1904 ..	104	93	112	1921 ..	239	228	105
1905 ..	116	96	120	1922 ..	245	201	122
1906 ..	139	105	132	1923 ..	224	193	116
1907 ..	135	116	125	1924 ..	222	217	102
1908 ..	151	106	142	1925 ..	233	211	110
1909 ..	133	99	134	1926 ..	225	195	115
1910 ..	127	109	116	1927 ..	209	185	113
1911 ..	136	113	120	1928 ..	212	171	124
1912 ..	145	117	129	1929 ..	216	170	127
1913 ..	154	117	132	1930 ..	177	157	112
1914 ..	160	114	140	1931 ..	125	134	93
1915 ..	155	146	106	1932 ..	120	139	86
1916 ..	163	236	69	1933 ..	118	128	92
1917 ..	170	262	65	1934 ..	117	122	95
1918 ..	199	289	69	1935 ..	128	122	105
1919 ..	277	274	101	1936 ..	127	122	105

Source :—Statistical Abstract for British India.

* In this as well as the following Tables Pie, Pii and Qie mean the price index of exported articles, price index of imported articles and the quantity index of exported articles respectively.

T in this table stands for the net term of trade and is obtained by dividing column 1 by column 2 (the result being multiplied by 100).

Statistical Note

In order to determine whether the term of trade follows a trend it is necessary to fit a polynomial regression line of the form $Y=A'+B'\xi'_1+C'\xi'_2$ or of the form $Y=A'+B'\xi'_1+C'\xi'_2+D'\xi'_3$ depending upon the tests of goodness of fit of the term of trade on time. Following the accepted notation used in Fisher and Yates' tables, ξ'_1, ξ'_2 and ξ'_3 stand for orthogonal polynomials of degree one, two and three respectively in t, where t is the number of years measured from the centre point of the series. Applying 't' test for testing the significance of these regression coefficients we obtain the regression equation of the term of trade on time as

$$Y=110.78—0.72t.$$

It is evident from the regression that the term of trade exhibits a linear downward trend.

TABLE II—INDEX OF PURCHASING POWER OF EXPORTS: 1942-43 to 1953-54, INDIA

(*Base:* Price in 1938-39=100, subsequently changed to price in 1948-49=100).

Year 1		Pie 2	Pii 3	Pie/Pii 4	Qie 5	(Pie/Pii x Qie 6
1942-43	..	184·6	192·8	0·9575	62·5	59·8
1943-44	..	227·4	195·5	1·1632	54·0	62·8
1944-45	..	244·3	188·3	1·2974	52·9	68·6
1945-46	..	240·8	205·0	1·1746	61·7	72·5
1946-47	..	284·9	262·2	1·0866	64·2	69·7
1947-48	..	372·2	301·5	1·2345	65·2	80·4
1948-49	..	421·4	355·8	1·1844	60·6	71·8
1949-50	..	103·4	97·3	1·0627	108·7	115·5
1950-51	..	114·3	108·6	1·0525	122·6	129·0
1951-52	..	168·9	130·2	1·2972	98·1	127·3
1952-53	..	118·9	128·7	0·9239	109·0	100·7
1953-54	..	111·2	114·3	0·9729	109·0	106·0

TABLE III—TERMS OF TRADE, RESERVE BANK OF INDIA SERIES

(*Base:* Price in 1948-49=100, subsequently changed in 1952-53=100).

Year 1		Pie of food, drink and tobacco 2	Pie of raw materials 3	Pie of manufactured articles 4	Fii of food, drink and tobacco 5	Pii of raw materials 6	Pii of manufactured articles 7	Pie General 8	Pii General 9	T 10
1950-51	..	130	143	122	97	106	113	129	106	122
1951-52	..	151	191	185	118	173	145	178	147	121
1952-53	..	134	120	108	132	116	137	116	128	91
1953-54	..	107	99	84	91	93	98	94	93	101
1954-55	..	130	98	84	78	94	101	100	91	110
1955-56	..	114	92	81	84	98	98	93	94	99

Report on Currency and Finance, 1955-56.

		TABLE IV*			TABLE V*			TABLE VI*		
Year		T14	T15	T15	T24	T25	T26	T34	T35	T36
1950-51	..	134	123	115	147	135	127	126	115	108
1951-52	..	128	87	104	162	110	132	157	107	128
1952-53	..	102	116	98	91	103	88	82	93	79
1953-54	..	118	115	109	109	107	101	92	90	86
1954-55	..	167	138	129	126	104	97	108	89	83
1955-56	..	136	116	116	110	94	94	96	82	83

T_{ij} in these tables stands for the term of trade between the items in i th and jth columns of Table III.

It is given by $\frac{100 \times \text{col. i}}{\text{col. j}} = T_{ij}$