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The Terms of Trade and Development Aid

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Theoretical discussions on the terms of trade have resulted in the conclusion that a decline of this indicator between two given points in time for a given country does not necessarily mean, without exception, economic deterioration and a decline of the living standard of this country.¹ Should it then, in spite of this insight, still be permissible to base economic demands on this indicator and its fluctuations? May the developing countries be justified when they require the more developed, industrialised nations to increase the volume of their aid just because it is alleged that the terms of trade have moved "against" the underdeveloped areas?

Statistical Problems

The terms of trade can be measured in different ways, and each method of doing so has its advantages and disadvantages. No method of expressing the terms of trade satisfactorily for all concerned has as yet been developed.

□ "Relations in Exchanging Goods" have been defined as that volume of imports which Country A receives from Country B in exchange for each unit of its exports. To measure this exchange relationship in "real" terms, which is also known as "commodity terms of trade", Frank W. Taussig has developed different sets of price index figures described by him as "net" and "gross" barter terms of trade. Net barter terms of trade express the relation between the price index of all the exports of a given country and the price index applicable to all its imports, weighing the impacts made by different types of goods according to their volume that is changing hands. Gross barter terms of trade include, apart from commodities and manufactured goods, also all the so-called invisible transactions, e.g. exports of capital, remittances, etc.

□ "Income terms of trade". "ECLA", the United Nations Economic Commission for Latin America, published an "Economic Survey of Latin America 1949", which contained the following definition of measuring "Overall Gains from Foreign Trade": Divide the Index of total export values (i.e. the product of the price index, P_{Ex} , and the quantity index, Q_{Ex}), by the Import Price Index, P_{Im} , thus obtaining $P_{Ex} \times Q_{Ex} \div P_{Im}$. (This index is called "income terms of trade").

□ "Single Factorial Terms of Trade" are the mathematical expression of the volume of imports available to a given country, by way of purchase, against one of the units of its production factors, e.g. the volume of imports purchasable for the product of one of its standard working hours.

□ "Double Factorial Terms of Trade" are the number of units of production or capital goods located in Country A, whose products will be available, by way of purchase, to one unit of capital goods used for production in Country A. Country A's standard of life, under the rules of calculating this index, has increased if, at point t_1 in time, one standardised working hour, or its products, in Country A will buy more than the product of one standardised working hour in Country B, when at an earlier time, t_0 , one hour in A, or the value of its products, equalled one hour worked in B, and the ratio was 1:1.

As between the four different indices, there are contradictory relations of mutual exclusion — thus, e.g., should productivity in Country A rise more rapidly in a given period than in Country B, and should commodity prices react correspondingly, then "commodity terms of trade" will decline, whereas "double factorial terms of trade" of Country A will rise.

"Income terms of trade" must be used with the caution that they lose their indicative capacities in cases like the following: Let in the equation,

$$T = \frac{P_{Ex} \times Q_{Ex}}{P_{Im}}$$

the relation between prices, $P_{Ex} \div P_{Im}$ increase, say, by ten per cent, but let, at the same time, the quantity exported, Q_{Ex} , decline by ten per cent — then T, the overall index, remains unchanged, although the same quantity of imported commodities can now be bought for fewer exported commodities.

If terms of trade are merely seen as the ratio between two price indices (index of export prices, divided by the index of import prices), then it will not be immaterial whether the individual indices are computed by the Paasche or Laspeyres methods. Let us assume that the level of export prices remains constant over the period of time under review ($P_{Ex} = 100$), and let us analyse the quantities of two import commodities only, X and Y, at the two points in time, t_0 and t_1 .

¹ cf., among other treatments of the subject, in this context also A. Kruse, Terms of Trade and Developing Countries, in *Inter-economics*, No. 9, Sept., 1966, pp. 16/17.

T, the terms of trade, equal the price index of all exported goods \cdot the price index of all imported goods, or $T = P_{Ex} \cdot P_{Im}$. Under our assumption, P_{Ex} equals 100. Then the following relations will obtain:

$$P_{Im}(\text{Laspeyres method}): P_{Im}^L = \frac{\sum p_1 m_0}{\sum p_0 m_0} \times 100 = \frac{80}{70} \\ \times 100 = 114.3$$

$$P_{Im}(\text{Paasche method}): P_{Im}^P = \frac{\sum p_1 m_1}{\sum p_0 m_1} \times 100 = \frac{60}{65} \\ \times 100 = 92.3$$

$$T(\text{Laspeyres method}): T_L = \frac{P_{Ex}}{P_{Im}^L} \times 100 = \frac{100}{114.3} \\ \times 100 = 87.5$$

$$T(\text{Paasche method}): T_P = \frac{P_{Ex}}{P_{Im}^P} \times 100 = \frac{100}{92.3} \\ \times 100 = 108.3$$

This example demonstrates how, by a simple change in computing technique, not only do the differences between terms of trade at different points in time assume different orders of magnitude but even the direction in which change occurs may be reversed: in one case (T_L), the terms of trade decline by about 12 per cent, and in another (T_P), they increase by about eight per cent, without the basis figures of calculation being changed at all.

But apart from different methods of calculation, fluctuations in the rates of currency exchange and changes in the size of foreign trade volumes also affect price indices. It is highly pertinent to know the size of the representative samples of commodities and manufactures used for compounding the index figures, and their composition and structure, as the quantities of goods entering foreign trade will determine the weighting of their price components, and as any change in composition and structure of such samples will impede a comparison of the index figures over long periods.²

What Terms of Trade Can Prove?

Terms of Trade are supposed to give a true statistical representation of changes in the profitability or loss-making quality of foreign trade for a given country in relation to the welfare of its population, over regular time intervals. The welfare situation of a given national economy is said to have deteriorated if, as against a previous period of time, a given quantity of exported commodities will buy only fewer imported goods, or if an unchanged volume of imports has to be paid for by selling more goods for export (which means that the terms of trade are declining).

² cf. Bemerkungen zu den Austauschrelationen im Außenhandel (Observations on International Terms of Trade), by H. S t a e h l e , in Zeitschrift für Nationalökonomie (Periodical for National Economy), Vienna, 1952, Vol. XIII, pp. 384 et seq.

In general, it has to be emphasised that meaningful observations on the rise and/or decline in welfare of a given population can be made only on the basis of changes in real income.³ In following this principle, we shall find that terms of trade which have "deteriorated" by 10 per cent for a given country whose export trade absorbs 20 per cent of its output, will cause a decline in real income of not more than 2 per cent.

What the effect of the terms of trade on income is depends, of course, on the share of exports in total output and on the share which exports contribute to the national income of the country involved.

Changes in the terms of trade, by themselves, do not permit any observations about improving or deteriorating conditions in the economic situation of any given country. It will in every case be necessary to search for the causes behind rising or declining indices — they may be changes in import demand or in export supply, changes in costs and production methods, fluctuations in requirements and in income, etc. Terms of trade of Country A will rise when, for example, Country A displays diminishing demand for imports, which depresses the prices of foreign goods. The reasons underlying the contraction of demand may be highly varied — changes in home requirements, cheaper production of domestic substitute products, a drop in real income through higher prices of basic goods, or a general decline of incomes. This goes to show that rising terms of trade are not to be welcomed in every case.

On the other hand, terms of trade of any given country will "deteriorate" when export prices of this country decline. But such price cuts may be caused by reduced costs, brought on by improved productivity (technological progress) — a change usually accepted in every country as an economic "improvement".

The activities of the service trade, especially transport costs, do not enter the terms of trade. This is a grave shortcoming of the indices in question, because in valuing exports at fob prices and imports at cif quotations, declining freight charges, by themselves, are able to improve the terms of trade, without affecting the prices of the goods involved. Terms of trade are therefore in this context really useless in assessing the advantages and disadvantages of foreign trade.

³ Given unchanging population figures, real national income in absolute terms can be used as the yardstick for comparison, but in rising population, real income per head of population has to be analysed.

Imported Commodities	Prices in constant currency values		Imported quantities		Prices \times quantities (values)							
	p_0	p_1	m_0	m_1	p_0	m_0	p_1	m_0	p_0	m_1	p_0	m_1
X	2	3	20	10	40		60		20		30	
Y	3	2	10	15	30		20		45		30	
Totals:					70		80		65		60	

It would not be at all difficult to measure and evaluate the exchange relations between countries in real terms provided exports and imports of any given country consisted only of one homogeneous type of commodity, i.e. of one, and only one, quality and kind (e.g. woven cloth and wine).⁴ Naturally, such exchange relations do not exist anywhere in the world, but they have been used widely as theoretical models in foreign trade theory. The completely unrealistic "case" of hypothetical "two-countries-cum-two-types-of-goods" has strongly contributed to making confusion worse confounded. Actual countries, in most cases, display a highly composite and diversified trade, which deals with many different goods. This leads to two sets of difficulties:

On the one hand, new products are perpetually being developed, especially in highly developed countries. Known products are being progressively improved by enhancing their quality, and their economic life until they become obsolete grows longer. Old-established manufactured products tend to disappear, new products—e.g. data processing machines, numerous plastic materials, synthetic textile fibres, etc.—enter the scene.

The gamut of highly diverse manufactures supplied by industrialised countries steadily widens and grows: Cars of to-day and car tyres required by contemporary motor-cars, for example, are not at all strictly comparable with the products that were carrying the same names fifty years ago.

Most commodities produced by developing countries have remained largely unchanged in their quality — for the quality of a ton of copper, of a bag of coffee, or of a bushel of wheat has not notably increased over the past decades.

Not only kinds and types of goods entering foreign trade have undergone widespread change, but their share in total import and export volumes has fluctuated greatly. Traditional and seemingly securely established export products of a given country tend to fade into the background—British cotton goods are a case in point—whilst others gain in significance. Before the first world war, North American exports consisted mainly of farm products, whilst nowadays finished manufactures feature predominantly in them.

Structural changes of this kind, improvements of product quality, and technological advances, all virtually prevent any meaningful comparison between the terms of trade applying to sets of given countries over lengthy periods of economic evolution.

Developing Countries Using Terms of Trade as Support in Argument

The foregoing should be sufficient warning against using and interpreting terms of trade incautiously, since changes in the index figures called by this name do not disclose information about the underlying causes bringing on such fluctuations. To pronounce

meaningfully on the pros and cons, the profits and losses of an observed development in time, it is indispensable to search for the factual background behind the index: changes in demand, variations in productivity, in the structure and in the volume of foreign trade, etc. But after all these facts have been discovered, the terms of trade will have become useless and meaningless to the researcher.

And yet, they play a surprisingly great part in any discussion gyrating round the problems of developing countries and development policies. It has been stated that the terms of trade have moved, from 1870, steadily to the disadvantage of developing nations and in favour of industrial countries.⁵ Developing countries usually argue that industrialised countries use "monopolistic" pricing policies which are the cause for this state of affairs, as is alleged. In addition, they maintain that long-term change in the terms of trade—the so-called "secular" trend—generally operates against the underdeveloped areas. This assertion serves them to infer justification for demanding increased assistance⁶ of the industrial nations.

Messrs Prebisch's and Singer's "Theory"

A "theory" conceived by Messrs Prebisch⁷ and Singer⁸ was based mainly on the assertion that the terms of trade had grown worse for the totality of developing areas because rising productivity through technological progress had never been regularly passed on to the users of industrial goods in the form of price cuts. Technological advances, it is claimed by them, have always moved faster in the "industrial centre" of the modern world than in "the underdeveloped periphery". Therefore, all the goods which developing countries import, viz. mainly manufactured products of industry, ought, by rights, to have grown cheaper relatively to their own commodities which they export, and the terms of trade ought to have become more favourable to the "periphery". However, what really happened indicated a movement in the opposite direction: prices for industrial products have not gone down. Instead, wages and private incomes in the "centre" have increased to an extent that they rose even faster than industrial productivity. Contrariwise, relatively modest productivity gains made by devel-

⁴ cf. *Das reale Austauschverhältnis (Exchange Relations in Real Terms)*, by F. B e n h a m. Translated and published in *Theorie der internationalen Wirtschaftsbeziehungen (Theory of International Trade Relations)*, Second Edition, Cologne and Berlin, 1966, pp. 144 et seq.

⁵ cf., *inter alia*, "Relative Prices of Exports and Imports of Underdeveloped Countries", United Nations, Department of Economic Affairs, New York, 1949.

⁶ There were many pertinent publications of the United Nations on the occasion of its First World Trade Conference (UNCTAD, UN Conference on Trade and Development) which was convened to Geneva in 1964, of which the following should be consulted: *Towards a New Trade Policy for Development*. Report by the Secretary-General of UNCTAD, New York, 1964.

⁷ cf. *The Economic Development of Latin America and its Principal Problems*, by R. P r e b i s c h, United Nations, Department for Economic Affairs, New York, 1950.

⁸ cf. *The Distribution of Gains between Investing and Borrowing Countries*, by H. S i n g e r. In *The American Economic Review*, Vol. 40, 1950, p. 473.

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oping countries had caused a cut in the prices charged for their products, especially for their export commodities, which meant that they had passed on part of the results of their technological advances to the industrialised countries, whereas the "centre" had pocketed its whole gain.⁹

Leaving aside emotions and prejudices, I cannot see that a true case has ever been made out for the developments alleged to have taken place by Messrs Prebisch and Singer, as these gentlemen constantly mix up with, and mistake for, each other absolute and relative price comparisons between industrial manufactures and raw material production. Differences in price in absolute terms between the two groups of products are meaningless for our discussion — what does matter are shifts in the price relationship between the two categories during the periods under review.

Prebisch also attempts to prove his case, moreover, by using inadmissible simplifications: it is highly questionable whether the terms of trade averaged for all the developing countries can be usefully compared with those applying to all the industrial countries. After all, to blind oneself to the fact that foreign trade structures of different developing countries are often vastly different, and that, moreover, every individual commodity displays a highly individual history, different from that of every other commodity, in its price development, is laying oneself open to the charge of wilful imprecision. The same charge can be levelled against economists treating all industrialised nations as one big, undifferentiated mass. "Overall indices", such as are used by Señor R. Prebisch, must be looked at askance very severely.¹⁰ Results of such comparisons that are to make some sense can only be obtained by comparing individual countries in regard to their terms of trade, or individual groups of products.

And again — the products supplied to developing countries as equivalents for their exports have not remained unchanged. As stated above, products supplied by developed nations, in particular, have been improved in quality in the case of old-established products, and now goods have been created which are "more valuable" and have a longer lifetime, all as an effect of technological progress. The prices of these manufactured goods only partly contain the monies spent on research and development, on improvements, and the costs caused by brainwork.

⁹ cf. Commercial Policy in the Underdeveloped Countries, by R. Prebisch, in *The American Economic Review*, Papers and Proceedings, Vol. 49, 1959, pp. 215 et seq.

¹⁰ "Der säkuläre Verlauf der Terms of Trade zwischen den Entwicklungsländern und den Industriestaaten — Versuch einer empirischen Verifizierung der These Prebischs. (Long-Term History of the Terms of Trade as between Developing and Industrialised Nations — an Attempt to Verify Prebisch's Assertion Empirically), by H. Sieber; in: *Außenwirtschaft, Periodical for International Economic Relations*, Zurich and St. Gall, Vol. II, 1967, p. 186.

Though prices charged for the products of industrialised countries may not decline in line with the rise of industrial productivity, and though they often group under the impact of increasing labour costs and personal incomes, it is simply not true that this should redound to the disadvantage of developing countries, their farmers and commodity producers. It might be much more logical to describe the people in developed countries receiving stable incomes as "victims of the system".¹¹

Incidentally, the question appears justified why the "industrial centre" should be in duty bound "to share the fruits of technological progress with the periphery".¹² If the "centre" observed this duty by making price cuts immediately, this might possibly take away an important part of the incentive for enterprises in industrialised countries to make industrial use of new technological inventions. And this would also do positive harm to the developing countries by their becoming decidedly slack in their economically important efforts to rationalise production, to build up modern production organisations, to carry on research, etc., as all the results of research would be supplied to them for next to nothing. The effects would be a grave reduction in social welfare, a reduced growth rate of world income, and a shrinking volume of international trade.

But should the accusations made by developing countries prove to be justified that rising productivity in industrialised countries also led to rises in the average personal incomes of their inhabitants, this would again contribute to growing imports of the developed countries. More goods would be bought from developing countries. If the supply of these goods is inelastic, their prices would rise, and the terms of trade would move in favour of underdeveloped countries, or they would at least not show the same adverse trend which would have persisted, had the industrial nations' rise in income not come about.

All this goes to show that different rates of growth in productivity, by themselves, are not a sufficient cause for the changing terms of trade, and those who believe that they are cannot prove their assertions unless they will look at each country and each type of product separately. It is clear from all that has been said that the state of supply and demand, at any given time, is of major importance, and so are the possibilities for substituting goods for each other, technological change, alterations in the rate and structure of growth, the influences of changes in price levels and incomes, if anybody intends to explain the fluctuations and movements of international trade.

¹¹ cf. Das reale internationale Austauschverhältnis (Terms of Trade) und die wirtschaftliche Entwicklung (Real International Terms of Trade and Economic Development), by G. Haberler, in *Zeitschrift für Nationalökonomie (Periodical for National Economy)*, Vol. XVIII, Vienna, 1958, p. 265.

¹² "Die Theorie der peripheren Wirtschaft nach R. Prebisch und ihre Stellung in der allgemeinen Außenhandelslehre" (The Theory of Peripheral Economics and its Position in Relation to the General Theory on Foreign Trade), by D. Beier, Berlin, 1956, p. 63.