

CRFD
MACHU
CERREDA
D
6

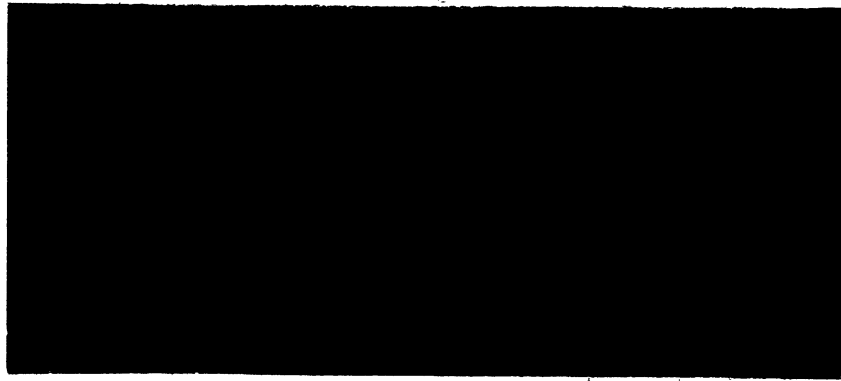


**LIBRARY
CENTER FOR RESEARCH ON ECONOMIC DEVELOPMENT
THE UNIVERSITY OF MICHIGAN**



Center for Research on Economic Development

**University of Michigan
Ann Arbor, Michigan 48104**



Some Implications
of
Post-War Primary Product Trends

by
Richard C. Porter

4

February 1969
Center for Research on Economic Development
University of Michigan
Ann Arbor, Michigan 48104

Discussion Paper No. 6

Some Implications of Post-War Primary Product Trends*

While studies of primary product price movements are notoriously sensitive to the choice of time period, the two decades since the end of World War II now comprise a coherent and convenient period for analysis. Indeed such analyses have already been conducted, and the fact that primary product prices have generally fallen during the period is well-known. In this paper are examined the shapes and shifts of the supply and demand curves implied by the observed unit value and trade volume trends for 46 primary products, from the late 1940's through the early 1960's. Three interesting conclusions are suggested. One, demand for primary products typically may be very price inelastic or very income-inelastic but the common belief that it is both price-inelastic and income-inelastic is not supported by the data. Two, not only do the more advanced countries (i.e., those of North America and Western Europe) tend to dominate the export of the highly income-elastic primary products, but this domination has tended to increase since the late 1930's. And three, the rate of downward-and-outward shift of supply curves appears to have been smaller for the primary products which the poorer countries dominate. While this supply finding cannot be confidently interpreted, it suggests that the greater ability of the advanced countries to raise productivity in primary products is part of the explanation of their increasing domination of the more income-elastic products. These three implications are each developed in the subsequent sections of the paper.

I. Implicit Price and Income Elasticities of Demand

There are of course no direct observations of price elasticities and income

elasticities. Nevertheless, price and quantity observations at different points of time for a product can be used to measure the extent of the demand curve shift during those years if values for the own-price and cross-price elasticities of demand are assumed. If the change in the income of those who demand the product is known, any shift in the demand curve can then be converted into an estimate of the income elasticity of demand over those years.

Since our interest is not in pairs of years but in a period of more than a decade--and in the hope of washing out year-to-year "noise" in the data--it is convenient to assume that these underlying demand curves are divisible into two parts, a long-term component and a collection of cyclical and year-to-year components. Then the trend level of quantity demanded can be written as a function of the trend levels of various income and price variables. The trend level of quantity demanded of the i^{th} primary product (Q_i) is:

$$(1) \quad Q_i = f_i (Y, P_i, P_s, P)$$

where the variables in the function (f_i) represent trend levels of real income (Y), price of the i^{th} primary product (P_i), price of its close substitutes in demand (P_s), and a general index of prices paid by demanders (P). From equation (1), a relationship can be derived for the i^{th} product between the trend growth rates of Q_i , Y , P_i , P_s and P , and the long-run income, own-price, and cross-price elasticities.¹ Solving this relationship for the long-run elasticity:

$$(2) \quad \eta_y = \frac{q_i + \eta_p (p_i - p) - \eta_s (p_s - p)}{y}$$

where η means the elasticity with respect to the subscript variable² and the lower-case letters (q_i , y , p_i , p_s and p) represent trend growth rates of the

variables with corresponding capital letters. Equation (2) defines a relationship between η_y , η_p and η_s for any product, given values of q_i , y , p_i , p_s and p .

Since primary products are largely imported by the more developed countries,³ the real income trend (y) is put at 3.7% per annum and the general price index (p) at 3.0% per annum; these are the figures, for the OECD countries over 1950-1961, for the rates of real GNP and price change (OECD, 1964, p. 13). The assumption is made (and will be discussed later) that for all products either the cross-price elasticity (η_s) is zero or the price trend of substitute products in demand (p_s) is equal to 3.0% (i.e., to p). Equation (2) then reduces to:

$$(3) \quad \eta_y = \frac{q_i + \eta_p (p_i - .030)}{.037}$$

The price and quantity trends of each primary product are then inserted in equation (3) to yield a relation between η_p and η_y for each. The results are presented in Table 1.⁴ This use of equation (3) of course yields no more than an estimate of the relation between price elasticity and real income elasticity, since the inserted parameters (i.e., y , p , p_i and q_i) are in turn only estimates,⁵ and an arbitrary assumption about cross-elasticities is being made. Columns (5), (6) and (7) of Table 1 give the implied long-run income elasticity (η_y) of each primary product for three different assumed values of the long-run price elasticity (i.e., equal to one, one half and zero).⁶

It should be noted that the above procedure forces into the estimate of "the implied long-run income elasticity" any influence of neglected variables in the demand function (1). Specifically, the income-elasticity estimate will be biased upward (downward) if there has occurred a favorable (unfavorable)

once-and-for-all shift in consumer tastes. This source of bias is neglected, partly because of the difficulty of estimating its exact influence on each of the 46 products, but principally because it seems unlikely to provide a systematic bias over the large number of commodities being studied.

More serious is the arbitrary cross-price elasticity assumption being made. Plausibility requires that the cross-elasticity be non-negative and less than the own-price elasticity (defined positive), but zero is extreme. The alternative assumption, that the price of demand substitutes rose at 3.0%, is equally extreme since few primary products --which are the more likely substitutes--experienced such favorable price trends.⁷ If one wished accurate η_y estimates of any particular product, there would be no escape from careful examination of the cross-elasticities; for present purposes, however, a briefer look at the directions and magnitudes of the cross-elasticity effects is sufficient. Since primary product prices generally fell during the period studied, it is clear that the income elasticities of Table 1, which neglect cross-elasticity effects, are generally underestimated. There can be no bias when η_p is assumed zero since η_s must also be zero in that case; but when η_p is assumed one, if values of η_s as high as three fourths and of p_s as low as $-.04$ ⁸ are considered possible, the implied estimate of η_y (in column (5) in Table 1) may be below its true value by as much as 1.419. Thus, consideration of cross elasticity suggests that the income elasticity estimates of Table 1 are without bias if own-price elasticity is low and are increasingly underestimated as η_p rises, reaching an under-estimate of the order of one if a η_p of unity is assumed.

This means that estimates of income elasticities will not decline as rapidly, when higher own-price elasticities are assumed, as Table 1 indicates; as a result, income-elasticity estimates which correctly consider cross-elasticity

effects are probably not so sensitive to the own-price elasticities assumed. When η_p is assumed zero, the median estimated η_y is around unity;⁹ when η_p is assumed unity, the median estimate of η_y is negative when cross-elasticity effects are ignored but are surely higher and may be close to unity if cross-elasticity effects could be correctly treated. In short, the evidence of this period suggests that median income elasticities of primary products are not too far below unity for any zero-to-one price-elasticity assumption.

Also, it is easy to question whether the actual least-squares regressions of prices (in logs) on time correctly estimate the secular forces behind primary product prices during this period. Certainly the abnormally high prices around the Korean boom (early in the period) and the primary product doldrums of the early 1960's (late in the period) combine to produce overly pessimistic estimates of the trends in commodity prices since World War II. How pessimistic is not easily ascertained, but if rates of price change would typically have been two percentage points higher than in the least-squares estimates, then the implied income-elasticity estimates of columns (5) through (7) would be higher by about $0.54 \eta_p$.

Thus, consideration of the biases introduced by the extreme cross-elasticity assumption and the choice of time period would raise the income-elasticity estimates of Table 1. But even without these considerations, the post-World War II evidence suggests that the sum of the (absolute value of the) long-run price elasticity and the long-run income elasticity is above unity for the typical primary product. The shapes and shifts of the demand schedules for primary products have not generally been very favorable over the post-World War II years, but neither have they been as unfavorable as some "elasticity pessimists" would have us believe.

II. Advanced Country Domination of Income-Elastic Products

It is not hard to see the extent to which the countries of North America and Western Europe have dominated the export of those primary products with high income elasticities and (somehow) avoided those with low income elasticities. Compare, in Table 2, the implied income elasticities at an assumed η_p of one half with the percentage of total world exports made by these more advanced regions in 1959-61. As Table 2 shows, these regions dominated (i.e., made over half the world exports of) only 2 of the 14 commodities¹⁰ with negative long-run income elasticities. At the other extreme, the underdeveloped countries dominated only 5 of the 13 commodities¹¹ with long-run income elasticities greater than unity. Viewed in another way, Table 2 shows that over half of the advanced-country-dominated primary products had long-run income elasticities greater than unity, while less than one fourth of the less-advanced-country-dominated commodities were so favored. The results are not much different at assumed η_p values of zero or unity. Of course, this result assumes that the own-price elasticities of the primary products of underdeveloped countries are not systematically lower than those of the advanced countries. But if the income elasticities of the advanced countries' primary products are not generally higher, then the own-price elasticities must be generally higher, and in a world where quantities are rising secularly (as with all but six of the products studied), high price elasticity is also a desirable attribute. It is hard to escape the conclusion that the advanced countries somehow dominate the more desirable primary products.

Not only did they dominate the income-elastic (or price-elastic) primary products in 1959-61, but they also increased their domination over the preceding quarter century. As Table 3 shows, for 6 of the 8 products¹² with implied income

elasticities greater than unity (at η_p equal to one half), the nations of North America and Western Europe increased their share of world exports by more than 10 percentage points between 1934-38 and 1959-61. On the other hand, for 9 of the 11 products in which these advanced countries lost their relative position, the implied long-run income elasticity was less than 0.7 (at η_p equal to one half) during the post-World War II period. The underdeveloped countries lost relatively in only one product with a negative income elasticity (i.e., linseed), and gained relatively in only one product with an income elasticity greater than one (i.e., oranges and tangerines).

Several caveats ought to be offered about the interpretation of these findings. One, these changes in the trade shares since the late 1930's are not always between the "developed" and the "underdeveloped" countries. The changes shown in Table 3 represent shifts to or from such countries as Australia, Argentina, Israel or Eastern Europe as well as shifts to or from "underdeveloped" countries more narrowly defined. Two, it is quite impossible to discover specific explanations for many, and perhaps all, of the shifts shown in Table 3. That this search is not undertaken here on a product-by-product basis does not imply that such explanations are uninteresting, but rather reflects a belief that the overall pattern is too consistent to be passed off as merely the sum of several unique and unrelated phenomena. Three, much of the explanation of these shares and shifts of shares might rest in the distinction between tropical and temperate products. Such research might prove interesting but is not sought here because there would in any case remain the question why tropical products should so consistently succumb to lower income (or price) elasticities. And four, it is possible that the generally downward bias introduced into the income-elasticity estimates of Table 1 by the extreme assumption about cross-elasticities might be systematically greater for the less developed countries.

Such a systematic bias would require--implausibly I feel--that the cross-price elasticities of demand for the products of North America and Western Europe be systematically lower than those of the poorer countries' products, or that the prices of the demand substitutes for the products of North America and Western Europe have systematically fallen less rapidly than those of the poorer countries' products.

The conclusions from Tables 2 and 3 seem inescapable and noteworthy. One, the advanced countries dominate the export of the more desirable primary products. And two, during the past quarter century, the less developed countries have lost their relative export position in over half the primary products and, even more critically, have lost most heavily in the most desirable products.

III. Rate of Shift of Supply of Primary Products

The same technique which was used to derive relations between the various elasticities of the demand function can be applied to the supply function. It is again assumed that the function is divisible into two parts, a long-term component and a shorter-period component. Then the trend level of quantity supplied (Q_i) is:

$$(4) \quad Q_i = g_i (t, P_i, P_s)$$

where the variables in the function (g_i) represent time (t) and the trend levels of its own price (P_i) and the price of its close supply substitutes (P_s). Time is included so that a rate of secular shift of the supply curve (for given prices) can be calculated (rather than an income elasticity as with the demand curve). No general index of prices is included here on the grounds that its relevance is less clear on the supply side. Derivatives of equation (4) with respect to time yield a relation between the long-run rate of shift of the

supply curve (α) and the long-run own-price elasticity of supply (ϵ):¹³

$$(5) \quad \alpha = q_i - \epsilon (p_i - p_s)$$

where, as before, q_i , p_i and p_s are estimated trend rates of change of the quantity of the i^{th} product, of its own price, and of the price of its supply substitutes, respectively.

The estimates of α for assumed ϵ values of zero, one and two¹⁴ are shown in columns (4),¹⁵ (8), and (9) of Table 1, all calculated on the assumption that p_s is $-.016$ (i.e., the median price change of the 46 primary products¹⁶). The use of this median price change of course cannot be defended for any particular product; where the price trends of the relevant substitutes are in fact greater (less) than $-.016$, the estimate of α will be biased downward (upward). Nevertheless, the use of the median hopefully prevents consistent bias over the 46 products.¹⁷ Under these assumptions, the estimates of α center around 4%, regardless of the supply-price elasticity (ϵ) assumed.¹⁸ Thus, for over half the products studied, the rate of outward shift of the supply curves has exceeded 4% per year. When ϵ is assumed equal to one, the rate of shift has exceeded 8% for 9 commodities, and the shift has been negative for 9.

What is more interesting than the levels of the α 's is the fact that the distribution of these α 's is not the same for North America and Western Europe as for the other countries. As Table 4 shows, for 11 of the 14 commodities whose exports were dominated by North America and Western Europe, the rate of supply shift has exceeded 5% per year, while the same was true for only 8 of the 32 products dominated by other regions. This phenomenon can also be seen by direct inspection of Table 1; despite the generally more rapid rates of price decline for the products of North America and Western Europe, the quantities supplied generally rose more rapidly,¹⁹ which for any supply price elasticity

implies a greater rate of supply-curve shift.

There are two obvious ways of viewing these differences in the rates of shift of supply curves. One, to the extent that primary product demand is generally price-inelastic, the countries of North America and Western Europe have been less successful than others in enlarging (or preventing declines in) the foreign exchange earnings of the products they dominate.²⁰ Or two, the countries of North America and Western Europe have been more successful than others in reducing the costs of production of their primary products.²¹ Either of the above views will explain the fact that the prices of the primary products dominated by North America and Western Europe have tended to fall more rapidly than the others, despite their generally higher income elasticities. But by the first view, the poorer countries are seen as clever or lucky, while by the second, misguided or unfortunate. While the above analysis is insufficient to permit a confident choice between these (or other) hypotheses, it is difficult to resist the speculation that it is at least partly through a mechanism of cost-cutting that North America and Western Europe have managed to become ever more dominant in the more desirable primary products.

REFERENCES

F.A.O., The State of Food and Agriculture, Rome, 1965.

F.A.O., Trade Yearbook, Rome, various years.

O.E.C.D., Statistics of National Accounts, 1950-61, Paris, 1964.

United Nations, Commodity Survey, 1962, New York, 1963.

FOOTNOTES

* I am indebted to several people, especially Elliot Berg, Peter Eckstein, Robert Stern and a dedicated referee, for comments.

¹ A derivative of equation (1) is taken with respect to time, and elasticities are substituted on the right side to eliminate the partial derivatives of f_i . The assumption is made that, if all prices change in the same proportion (with real income held constant) Q_i is not affected.

² I.e., real income (η_y), own-price (η_p), or cross-price (η_s) elasticities. η_p is defined positive.

³ For only 8 of the 46 commodities studied here did over 25% of the imports go, in 1959-61, to areas other than North America, Western Europe, Japan and the Soviet Bloc (UN, 1963, p. 13).

⁴ In Table 1, the commodities are separated into three groups (food, beverages, and tobacco; oils and oil seeds; and industrial materials); the years over which the trends were calculated are given in column (2); the price and quantity trend rates of change are shown in columns (3) and (4), respectively. The underlying annual price and quantity data are those given in (UN, 1963, Table A, pp. 42-57), except that additional years have been used where comparable data could be found in (FAO, State of Food and Agriculture, 1965 and Trade Yearbook, various years); each oilseed and its derived oil have been combined into a single ("oil-equivalent") product.

⁵ The estimates of p_i and q_i are the slopes of the regressions of the natural logs of P_i and Q_i , respectively, on time (in years).

- ⁶ The implications of any other assumed price elasticity may be easily calculated since the relation is linear.
- ⁷ Only 4 of the 46 studied. See column (3) of Table 1.
- ⁸ Nearly one fourth of the 46 products studied had price trends this low. See column (3) of Table 1.
- ⁹ Medians are reported in Table 1 for each group and for all commodities. The different commodities are not weighted by any measure of their importance to overall primary product trade, because it is felt that a product should be treated as an observation for present purposes regardless of the size of its trade. Examination of the more important products (i.e., those with an asterisk in column (1) of Table 1) suggests in any case that the use of weights would not much alter the conclusion.
- ¹⁰ Zinc metal and solid fuels.
- ¹¹ Beef and veal, oranges and tangerines, crude petroleum, bauxite, and copper metal.
- ¹² Of those products for which there are data in column (10) of Table 1.
- ¹³ α is $(\delta g_i / \delta t) / Q_i$ where δ represents the partial derivative of the function, g_i . It is also being assumed that, at a moment of time, an equi-proportional increase in P_i and P_s causes no change in supply.
- ¹⁴ It can easily be argued that, in the very long run, primary product supply elasticities tend to be very high. Clearly, this analysis refers to a more intermediate long run.
- ¹⁵ If ϵ is assumed equal to zero, then the estimate of α is simply the trend rate of change of quantity.

¹⁶ See column (3) of Table 1.

¹⁷ Since the prices of the primary products of North America and Western Europe generally fell more rapidly in the period, it could be argued that the use of the same p_s for both groups of countries gives an upward bias to the estimates of the α 's of North America and Western Europe (and a downward bias to the estimates of other regions). But the relevant p_s for North America and Western Europe would have to have been 4.4 percentage points lower than the relevant p_s for the other countries to have brought the medians of the α estimates of the two groups into equality. Such a difference seems unlikely. On the other hand, if one were to assume for the underdeveloped countries lower rates of price changes of alternative products (p_s) on the grounds of their inferior access to (or knowledge of) promising new productive areas, then the difference between the α estimates of the two groups would be even more pronounced than in Table 4.

¹⁸ If means were used in place of medians, and the mean value of the 46 p_i 's inserted for p_s in each α estimate, then the mean of the 46 estimated α 's would equal the mean of the 46 q_i 's for any ϵ . So the above noted proximity for medians is not surprising.

¹⁹ The median rate of price and quantity change of the 14 products whose export was dominated by North America and Western Europe was $-.025$ and $+.064$, respectively, while the medians for the other 32 products were $-.006$ and $+.032$, for price and quantity respectively.

²⁰ This result could follow from the anti-export and pro-industrialization biases of most development plans as well as from conscious policy.

²¹The rate of outward shift of the supply curve (α) is proportional, at any given price elasticity, to the rate of downward shift of the curve. Thus α is related to the rate of growth of productivity.

Table 1

Commodity (1)	Years (2)	Trend Rates of		η_y if			α if		Percent of World Exports Made by No. Amer. & W. Eur.	
		Price (3)	Quantity (4)	$\eta_p=1$	$\eta_p=1/2$	$\eta_p=0$	$\epsilon=1$	$\epsilon=2$	1934-38	1959-61
				(5)	(6)	(7)	(8)	(9)	(10)	(11)
I. Food, Beverages and Tobacco										
Coffee*	1947-63	.001	.029	-.011	.380	.771	.011	-.006	-	-
Cocoa*	1947-63	-.006	.029	-.194	.293	.780	.019	.009	-	-
Tea*	1947-62	.012	.028	.259	.506	.753	.000	-.028	-	-
Bananas*	1947-63	-.014	.048	.122	.715	1.307	.046	.044	5	4
Mutton & Lamb	1947-62	.030	.014	.383	.378	.373	-.033	-.080	3	4
Sugar	1947-62	-.019	.048	-.022	.636	1.295	.051	.053	10	9
Rice*	1947-62	-.026	.050	-.162	.601	1.364	.061	.071	3	17
Beef & Veal*	1947-62	.041	.054	1.766	1.611	1.457	-.004	-.061	4	28
Tobacco*	1947-62	.011	.030	.288	.551	.814	.004	-.023	51	42
Oranges & Tang.*	1948-62	.004	.051	.671	1.019	1.367	.030	.010	60	48
Maize*	1947-63	-.029	.088	.781	1.582	2.382	.101	.115	9	56
Wheat*	1947-62	-.026	.052	-.113	.649	1.411	.063	.073	41	67
Barley*	1947-63	-.041	.061	-.247	.707	1.661	.086	.111	20	72
Pork	1950-61	.016	.058	1.205	1.390	1.575	.026	-.006	33	86
Median (Group I)		-.002	.049	.190	.642	1.330	.028	.009	7	22
II. Oils and Oilseeds										
Sesame Seed	1950-61	.013	.041	.641	.873	1.105	.012	-.017	a	-
Palm Oil	1947-62	-.005	.030	.143	.336	.816	.020	.009	3	3
Copra, Coconut Oil*	1947-62	-.017	.009	-1.042	-.405	.233	.010	.011	5	4
Groundnuts, Oil*	1947-62	-.013	.047	.098	.681	1.264	.044	.041	13	5
Palm Kernals, Oil	1947-63	.005	.008	-.468	-.132	.204	-.014	-.035	11	7
Butter*	1950-62	-.016	.033	-.349	.278	.904	.034	.034	44	39
Linseed, Oil	1947-62	-.049	.035	-1.188	-.127	.934	.067	.100	15	45
Cotton Seed, Oil	1950-62	-.016	.066	.550	1.172	1.795	.067	.067	13	68
Olive Oil	1947-63	-.022	.080	.762	1.466	2.169	.086	.092	61	68
Rapeseed, Oil	1950-61	-.038	.062	-.155	.762	1.679	.084	.106	x	75
Soya Beans, Oil*	1947-62	-.024	.188	3.621	4.357	5.093	.197	.205	11	82
Tallow	1950-60	-.024	.099	1.197	1.931	2.665	.107	.115	41	86
Lard	1950-62	-.041	.041	-.801	.155	1.111	.066	.091	74	89
Median (Group II)		-.017	.041	-.143	.681	1.111	.066	.067	13	42

III. Industrial Materials

Natural Rubber*	1947-62	.020	.025	.409	.538	.668	-.012	-.048	-	-
Tin Concentrates	1950-62	-.002	-.045	-2.081	-1.650	-1.218	-.059	-.073	-	-
Abaca	1950-62	-.002	-.026	-1.576	-1.143	-.711	-.040	-.054	a	a
Jute	1947-62	-.032	-.044	-2.855	-2.021	-1.187	-.028	-.012	4	-
Crude Petroleum*	1950-62	.004	.100	2.007	2.352	2.697	.079	.059	x	2
Sisal and Other										
Agaves	1950-61	-.071	.044	-1.523	-.160	1.203	.099	.154	5	9
Bauxite	1950-61	.041	.095	2.862	2.714	2.566	.038	-.019	x	9
Wool*	1950-63	-.031	.026	-.930	-.109	.712	.041	.056	21	9
Tungston Ore,										
Concentrates	1950-61	-.086	-.027	-3.872	-2.304	-.736	.043	.113	x	22
Lead Ore	1950-62	-.068	.057	-1.116	.211	1.538	.109	.161	x	26
Tin Metal*	1950-62	.000	-.009	-1.063	-.657	-.250	-.025	-.041	x	35
Lead Metal	1950-62	-.057	.007	-2.163	-.989	.185	.048	.089	x	36
Copper Metal*	1950-62	.007	.064	1.090	1.406	1.721	.041	.018	x	37
Zinc Ore	1950-62	-.045	.036	-1.053	-.043	.966	.064	.093	x	40
Cotton*	1947-63	-.036	.034	-.869	.026	.920	.054	.074	41	40
Solid Fuels*	1950-62	.005	-.001	-.709	-.368	-.027	-.022	-.043	x	66
Zinc Metal	1950-62	-.046	.038	-1.042	-.011	1.019	.068	.098	x	73
Aluminum*	1950-62	.030	.079	2.146	2.142	2.137	.033	.014	x	95
Synthetic Rubber*	1950-62	-.037	.246	4.832	5.742	6.652	.267	.289	x	100
Median (Group III)		-.031	.034	-1.042	-.043	.920	.041	.056	4	-
Median (All Commodities)		-.016	.041	-.128	.522	1.108	.042	.042	10	9

Notes:

- means zero.

x means not available.

a means not known but approximately zero.

* means that the value of the total world trade of the product exceeded U.S.\$200 million in 1960.

Medians in column (10) and (11) refer only to those products for which data exist in both columns.

Column (4) is also the estimate of α if ϵ is assumed zero.

Source: (UN, 1963, pp. 11,42-57) "North America" consists of the U.S.A. and Canada; "Western Europe" consists of all countries of Europe outside the present Soviet Bloc.

Table 2

Percent of Total Exports Made by North America & Western Europe in 1959-61	Estimated Income Elasticity (at $\eta_p = 1/2$)			
	Less than Zero	0 to 0.7	0.7 to 1.0	Over 1.0
Less than 20%	7	9	2	2
20% to 50%	5	4	0	3
More than 50%	2	2	2	8

Source: Table 1, Columns (6) and (11)

Table 3

Change between 1934-38 and 1959-61 in Percent of Total Exports by N. Amer. & W. Eur.	Estimated Income Elasticity (at $\eta_p = 1/2$)			
	Less than Zero	0 to 0.7	0.7 to 1.0	Over 1.0
Rose by more than 10%	1	3	1	6
Change between 0 and 10%	3	6	1	1
Fell	4	5	1	1

Source: Table 1, Columns (6), (10) and (11)

Note: 10% means 10 percentage points.

Table 4

Percent of Total Exports Made by N. America & W. Europe in 1959-61	Estimated Supply Shift Rate (at $\epsilon = 1$)		
	Less than Zero	Zero to .05	More than .05
Less than 20%	6	11	4
20% to 50%	2	5	4
More than 50%	1	2	11

Source: Table 1, Columns (8) and (11)



