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Some Implications of Postwar Primary-Product Trends

by

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Some Implications of Postwar Primary-Product Trends

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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 I examine the shapes and shifts of the supply and demand curves implied by the observed unit value and trade volume trends for forty-six primary products, from the late 1940s through the early 1960s. Three interesting conclusions are suggested. (1) 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. (2) Not only do the more advanced countries (that is, 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 1930s. And (3) 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

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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 ith primary product (Q_i) is

$$Q_i = f_i(Y, P_i, P_s, P), \tag{1}$$

where the variables in the function (f_i) represent trend levels of real income (Y), price of the ith 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 ith 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 income elasticity

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

where η means the elasticity with respect to the subscript variable[2] 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 percent per annum and the general price index (p) at 3.0 percent per annum; these are the figures, for the OECD countries over 1959–60, for the rates of real GNP and price change (Organization for Economic Cooperation and Development

[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] That is, real-income (η_y), own-price (η_p), or cross-price (η_s) elasticities; η_p is defined as positive.

[3] For only eight of the forty-six commodities studied here did over 25 percent of the imports go, in 1959–61, to areas other than North America, Western Europe, Japan, and the Soviet bloc (United Nations 1963, p. 13).

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 percent (that is, to p). Equation (2) then reduces to:

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

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 (that is, y, p, p_i, and q_i) are in turn only estimates,[5] and an arbitrary assumption about cross-elasticities is being made. Columns (4), (5), and (6) 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 (that is, 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 forty-six 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 nonnegative and less than the own-price elasticity (defined as positive), but zero is extreme. The alternative assumption, that the price of demand substitutes rose at 3.0 percent, 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

[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 (1); the price and quantity trend rates of change are shown in columns (2) and (3), respectively. The underlying annual price and quantity data are those given in the *Commodity Survey* of the United Nations (1963, table A, pp. 42–57), except that additional years have been used where comparable data could be found in Food and Agriculture Organization, *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 four of the forty-six studied. See col. (2) of table 1.

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 to be zero, since η_s must also be zero in that case; but when η_p is assumed to be one, if values of η_s as high as three-fourths and of p_s as low as -0.04[8] are considered possible, the implied estimate of η_y (in col. (4) 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 underestimate 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 to be zero, the median estimated η_y is around unity;[9] when η_p is assumed to be unity, the median estimate of η_y is negative when cross-elasticity effects are ignored but is 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 1960s (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 (4)–(6) would be higher by about 0.54 η_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

[8] Nearly one-fourth of the forty-six products studied had price trends as low as this. See col. (2) 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 (that is, those with an asterisk in the Commodity column of table 1) suggests in any case that the use of weights would not much alter the conclusion.

TABLE 1

POSTWAR DATA AND ESTIMATES FOR FORTY-SIX PRIMARY PRODUCTS

Commodity	Years (1)	Trend Rates of: Price (2)	Trend Rates of: Quantity (3)*	η_p if: $\eta_r = 1$ (4)	η_p if: $\eta_r = \frac{1}{2}$ (5)	η_p if: $\eta_r = 0$ (6)	α if: $\epsilon = 1$ (7)	α if: $\epsilon = 2$ (8)	Exports of North America and Western Europe as Percentage of Total Trade: 1934–38 (9)†	Exports of North America and Western Europe as Percentage of Total Trade: 1959–61 (10)†
I Food, Beverages, and Tobacco										
Coffee‡	1947–63	.001	.029	−0.011	0.380	0.771	.011	−.006	0	0
Cocoa‡	1947–63	−.006	.029	−0.194	0.293	0.780	.019	.009	0	0
Tea‡	1947–62	.012	.028	0.259	0.506	0.753	.000	−.028	0	0
Bananas	1947–63	−.014	.048	0.122	0.715	1.307	.046	.044	5	4
Mutton and lamb	1947–62	.030	.014	0.383	0.378	0.373	−.033	−.080	3	4
Sugar	1947–62	−.019	.048	−0.022	0.636	1.295	.051	.053	10	9
Rice‡	1947–62	−.026	.050	−0.162	0.601	1.364	.061	.071	3	17
Beef and veal‡	1947–62	.041	.054	1.766	1.611	1.457	−.004	−.061	4	28
Tobacco‡	1947–62	.011	.030	0.288	0.551	0.814	.004	−.023	51	42
Oranges and tangerines	1948–62	.004	.051	0.671	1.019	1.367	.030	.010	60	48
Maize‡	1947–63	−.029	.088	0.781	1.582	2.382	.101	.115	9	56
Wheat‡	1947–62	−.026	.052	−0.113	0.649	1.411	.063	.073	41	67
Barley‡	1947–63	−.041	.061	−0.247	0.707	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	0.190	0.642	1.330	.028	.009	7	22
II Oils and Oilseeds										
Sesame seed	1950–61	.013	.041	0.641	0.873	1.105	.012	−.017	§	0
Palm oil	1947–62	−.005	.030	0.143	0.336	0.816	.020	.0[illegible]	3	3
Copra, coconut oil‡	1947–62	−.017	.009	−1.042	−0.405	0.233	.010	[illegible]	5	4
Groundnuts, oil‡	1947–62	−.013	.047	0.098	0.681	1.264	.044	[illegible]	13	5
Palm kernels, oil	1947–63	.005	.008	−0.468	−0.132	0.204	−.014	−.0[illegible]	11	7
Butter‡	1950–62	−.016	.033	−0.349	0.278	0.904	.034	.034	44	39
Linseed, oil	1947–62	−.049	.035	−1.188	−0.127	0.934	.067	.100	15	45

Cotton seed, oil	1950–62	− 016	.066	0 550	1.172	1.795	.067	.067	13	68
Olive oil	1947–63	−.022	080	0.762	1 466	2.169	.086	.092	61	68
Rapeseed, oil	1950–61	− 038	.062	−0.155	0 762	1 679	084	.106	[illegible]	75
Soya beans, oil‡	1947–62	−.024	.188	3 621	4 357	5 033	197	.205	11	82
Tallow	1950–60	− 024	099	1.197	1 931	2 665	.107	.115	41	86
Lard	1950–62	− 041	.041	−0.801	0.155	1 111	.066	.091	74	89
Median (Group II)	.	−.017	.041	−0.143	0 681	1.111	066	.067	13	42
				III. Industrial Materials						
Natural rubber‡	1947-62	.020	025	0 409	0 538	0.668	−.012	− 048	0	0
Tin concentrates	1950–62	−.002	−.045	−2.081	−1 650	−1 218	−.059	−.073	0	0
Abaca	1950–62	−.002	− 026	−1 576	−1 143	−0 711	− 040	−.054	§	§
Jute	1947–62	−.032	−.044	−2 855	−2 021	−1.187	−.028	− 012	4	0
Crude petroleum‡	1950–62	.004	.100	2 007	2 352	2.697	079	.059	[illegible]	2
Sisal and other agaves	1950–61	− 071	044	−1 523	−0 160	1.203	.099	.154	5	9
Bauxite	1950–61	041	.095	2 862	2.714	2.566	038	− 019	[illegible]	9
Wool‡	1950–63	−.031	026	−0 930	−0.109	0 712	041	.056	21	9
Tungsten ore, concentrates	1950–61	−.086	−.027	−3.872	−2 304	−0 736	.043	.113		22
Lead ore	1950–62	−.068	057	−1 116	0 211	1.538	109	.161		26
Tin metal‡	1950–62	.000	− 009	−1 063	−0 657	−0.250	− 025	−.041		35
Lead metal	1950–62	−.057	.007	−2 163	−0 989	0.185	048	.089		36
Copper metal‡	1950–62	.007	064	1 090	1 406	1 721	.041	.018		37
Zinc ore	1950–62	−.045	.036	−1 053	−0 043	0 966	064	.093	[illegible]	40
Cotton‡	1947–63	−.036	.034	−0.869	0 026	0 920	054	.074	41	40
Solid fuels‡	1950–62	005	− 001	−0 709	−0 368	−0 027	− 022	−.043	[illegible]	66
Zinc metal	1950–62	− 046	.038	−1 042	−0 011	1.019	.068	.098	[illegible]	73
Aluminum‡	1950–62	.030	.079	2 146	2 142	2 137	.033	.014		95
Synthetic rubber‡	1950–62	−.037	.246	4 832	5.742	6 652	.267	289	[illegible]	100
Median (Group III)	...	−.031	034	−1 042	−0.043	0.920	041	.056	4	0
Median (all commodities)	.	− 016	041	−0.128	0.522	1 108	.042	.042	10	9

* Col (3) is also the estimate of α if ϵ is assumed to be zero
† Medians in cols. (9) and (10) refer only to those products for which data exist in both columns
‡ The value of the total world trade of the product exceeded U S $200 million in 1960
§ Not known but approximately zero
[illegible] Not available.
SOURCE.—United Nations (1963, pp. 11, 42–57). "North America" consists of the United States and Canada, "Western Europe" consists of all countries of Europe outside the present Soviet bloc.

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 (that is, made over half the world exports of) only two of the fourteen commodities[10] with negative long-run income elasticities. At the other extreme, the underdeveloped countries dominated only five of the thirteen commodities[11] 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'

TABLE 2

DISTRIBUTION OF ESTIMATED INCOME ELASTICITIES BY NORTH AMERICAN AND WESTERN EUROPEAN SHARES

EXPORTS OF NORTH AMERICA AND WESTERN EUROPE AS PERCENTAGE OF TOTAL TRADE IN 1959–61	ESTIMATED INCOME ELASTICITY (AT $\eta_p = \frac{1}{2}$)			
	Less than 0	0–0.7	0.7–1.0	Over 1.0
Less than 20%	7	9	2	2
20%–50%	5	4	0	3
More than 50%	2	2	2	8

SOURCE.—Table 1, cols. (5) and (10).

[10] Zinc metal and solid fuels.

[11] Beef and veal, oranges and tangerines, crude petroleum, bauxite, and copper metal.

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 six of the eight products[12] 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 ten percentage points between 1934–38 and 1959–61. On the other hand, for nine of the eleven 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 (that is, linseed), and gained relatively in only one product with an income elasticity greater than one (that is, oranges and tangerines).

Several caveats ought to be offered about the interpretation of these findings. (1) These changes in the trade shares since the late 1930s 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. (2) It is quite possible 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

TABLE 3

DISTRIBUTION OF ESTIMATED INCOME ELASTICITIES BY CHANGE OF NORTH AMERICAN AND WESTERN EUROPEAN SHARES

CHANGE BETWEEN 1934–38 AND 1959–61 IN EXPORTS OF NORTH AMERICAN AND WESTERN EUROPE AS PERCENTAGE OF TOTAL TRADE	ESTIMATED INCOME ELASTICITY (AT $\eta_p = \frac{1}{2}$)			
	Less than 0	0–0.7	0.7–1.0	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

* 10% means ten percentage points.
SOURCE.—Table 1. cols. (5), (9), and (10).

[12] Of those products for which there are data in col. (9) of table 1.

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. (3) 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 of why tropical products should so consistently succumb to lower income (or price) elasticities. And (4) 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 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 the prices of the demand substitutes for the poorer countries' products (that is, the relevant demand substitutes for the primary products of North America and Western Europe tend to be the primary products of the less-developed countries, and vice versa).

Two conclusions from tables 2 and 3 seem inescapable and noteworthy. (1) The advanced countries dominate the export of the more desirable primary products. And (2) 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_t) is

$$Q_t = g_t(t, P_t, P_s), \tag{4}$$

where the variables in the function (g_t) represent time (t) and the trend levels of its own price (P_t) 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]

$$\alpha = q_i - \epsilon(p_i - p_s), \tag{5}$$

where, as before, q_i, p_i, and p_s are estimated trend rates of change of the quantity of the ith 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 two[14] are shown in columns (3),[15] (7), and (8) of table 1, all calculated on the assumption that p_s is -0.016 (that is, the median price change of the forty-six primary products[16]). The use of this median price change cannot be defended, of course, for any particular product; where the price trends of the relevant substitutes are in fact greater (less) than -0.016, the estimate of α will be biased downward (upward). Nevertheless, the use of the median should prevent consistent bias over the forty-six products.[17] Under these assumptions, the estimates of α center around 4 percent, 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 percent per year. When ϵ is assumed equal to one, the rate of shift has exceeded 8 percent for nine commodities, and the shift has been negative for nine.

What is more interesting than the levels of the αs is the fact that the distribution of these αs is not the same for North America and Western Europe as for the other countries. As table 4 shows, for eleven of the fourteen commodities whose exports were dominated by North America and

[13] Alpha 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 equiproportional 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 col. (2) 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 αs 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_is inserted for p_s in each α-estimate, then the mean of the forty-six estimated αs would equal the mean of the forty-six q_is for any ϵ. So the above noted proximity for medians is not surprising.

TABLE 4

DISTRIBUTION OF ESTIMATED SUPPLY SHIFT RATES

EXPORTS OF NORTH AMERICA AND WESTERN EUROPE AS PERCENTAGE OF TOTAL TRADE IN 1959–61	ESTIMATED SUPPLY SHIFT RATE (AT $\epsilon = 1$)		
	Less than 0	0–0.05	More than 0.05
Less than 20%	6	11	4
20%–50%	2	5	4
More than 50%	1	2	11

SOURCE.—Table 1, cols. (7) and (10).

Western Europe, the rate of supply shift has exceeded 5 percent per year, while the same was true for only eight of the thirty-two 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. (1) 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 (2) 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. Although 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

[19] The median rate of price and quantity change of the fourteen products whose export was dominated by North America and Western Europe was -0.025 and $+0.064$, respectively, while the medians for the other thirty-two products were -0.006 and $+0.032$, for price and quantity, respectively.

[20] This result could follow from the anti-export, industrialization, or internal-absorption biases of most development plans as well as from conscious policy.

[21] The 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 (though clearly not identical with) the rate of growth of productivity.

that North America and Western Europe have managed to become ever more dominant in the more desirable primary products.

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