INTERNATIONAL TRADE AND ECONOMIC GROWTH

by

Arthur B. Mackie

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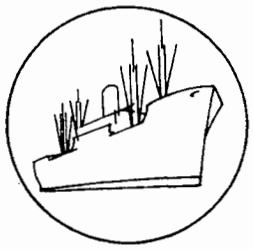

SPECIAL in this issue

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As the world's largest trading country, the United States is vitally interested in the prospects of increased trade potentials growing out of sustained economic growth in foreign countries. Since foreign economic growth and trade expansion may be major factors affecting continued economic growth in the United States, it is vitally important that more knowledge be gained about the interrelationships of foreign economic growth, international trade, and market potentials for U.S. farm products. This knowledge is needed to provide the basis for formulating U.S. foreign trade and economic aid programs and policies. Such knowledge is also needed to help improve the development and implementation of domestic growth policies.

It was in recognition of the increased trade benefits growing out of rapid economic growth of Western Europe and the Common Market that Congress passed the Trade Expansion Act of 1962. Implicit in this legislation is the assumption that foreign economic development will continue to expand market and income opportunities for domestic producers and that domestic economic growth will be improved through expansion of U.S. exports. In other words, expanded market outlets would make possible a greater utilization of excess production capacities of industry and agriculture and allow for a more efficient and fuller utilization of the nation's resources.

The objective of this paper is to examine the basic relationships between economic growth and trade as a basis for evaluating the effects of increased incomes in foreign countries on trade with the United States. More specifically, trade and income data will be examined for different groups of countries at different stages of development for 1959 and 1960 as a basis for evaluating market potentials for U.S. agricultural products with continued economic growth abroad. These 2 years were chosen for a cross-sectional analysis of income and trade data since these years seem indicative of future economic conditions at home and abroad. In addition, more income and trade data were available for more countries for these years than for later years.

1/ International Agricultural Economist, Economic Development Branch, Development and Trade Analysis Division, ERS.

Very little work has been done on evaluating the impact of foreign economic development on the demand for U.S. agricultural products. 2/ Yet, such knowledge is essential for making projections of trade potentials. It is hoped that this examination will shed some light on this increasingly important but complex problem and provide an improved basis for making trade projections based on economic growth potentials.

In this paper, trade and income data are analyzed for the following countries and groups of countries in 1959 and 1960:

1. European Economic Community (EEC) including Belgium, Luxembourg, France, Italy, West Germany, and the Netherlands.

2. European Free Trade Association (EFTA) including United Kingdom, Denmark, Norway, Sweden, Austria, Portugal, and Switzerland.

3. Other Western Europe (OWE) including Finland, Greece, Iceland, Ireland, Spain, Turkey, and Yugoslavia.

4. Canada.

5. Japan.

6. Australia, New Zealand, and the Republic of South Africa.

7. Asia, excluding Japan, China Mainland, North Korea, North Vietnam, and USSR.

8. Africa, excluding the Republic of South Africa.

9. Latin America.

This grouping of countries was chosen (1) for simplicity of presentation of aggregate income-trade relationships and (2) because analysis of individual country data yielded essentially the same general results. In addition, world trade data are summarized by these country groupings, which greatly facilitate data collection and verification. 3/

Relation of Trade to Development

During the last century it was thought that economic development of a country would reduce its dependence on foreign trade and that the spread of industrialization throughout the world would diminish the importance of international trade. 4/ Historically, growth in U.S. exports has equaled growth in

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2/ For a recent article on this subject, see Raymond P. Christensen and Arthur B. Mackie, "Foreign Economic Development and Agricultural Trade," Foreign Agricultural Trade of the United States, September 1963.

3/ World trade and income by countries are summarized by these trade areas as reported in the United Nations Statistical Yearbook, 1961, New York, 1962.

4/ Torrens, Robert, Essay on the Production of Wealth, London, 1821, pp. 288-289.

production since 1879, except for the two decades from 1920 to 1940. 5/ These data suggest that this pessimistic outlook for world trade may not be substantiated, based on U.S. experience.

Recent world trade statistics show that imports of agricultural and other goods have actually increased most rapidly in those countries with the most rapid rate of industrial and general economic growth during the past two decades. Thus, the postwar trade-income ratios for the United States and other countries suggest that a positive and complementary relationship exists between economic growth and trade, and that the actual and potential level of trade between countries depends upon their levels of economic development. 6/

Growth in trade usually means more imports of agricultural as well as other products. With economic growth, consumers achieve more purchasing power and begin to want and buy goods not widely produced in their country. Therefore, diversity of consumption, created by the economic growth process, leads to increased trade.

Available world trade statistics indicate that the best commercial export markets for U.S. farm and other products are in the highly-developed countries. The higher levels of income and demand in the developed countries give rise to greater actual and potential trade between these countries and the United States than between the United States and less-developed countries.

However, there is a tendency for countries in the preliminary stage of industrialization to need a greater volume of imports than they are in a position to pay for with their exports. Practically all countries in this stage of development -- with exception of those that are unusually well endowed with natural resources, such as petroleum -- are faced with balance-of-payments difficulties. 7/ It is in these countries that shipments of agricultural products under Public Law 480 (P.L. 480) can be useful by bypassing balance-of-payments problems, thereby permitting the internal demands to be reflected in actual imports to a larger extent. Thus, the relationships between income and trade analyzed here, in large part, abstract from balance-of-payments considerations. They do reflect, however, the demands that must be met if economic growth is to be maintained.

5/ Lipsey, Robert E., Price and Quantity Trends in the Foreign Trade of the United States, Princeton University Press, Princeton, N.J., 1963, Chapter 2, pp. 36-44.

6/ The distinction between economic development and economic growth is very vague and the two terms are often used interchangeably. However, in this paper economic development will refer to the process by which an economy passes from a less-developed stage to a more advanced one, while economic growth will refer to an increase in national output (income) within a given stage of development.

7/ An example of this tendency of developing countries can be found in the early history of the United States. This country consistantly ran a deficit balance of international payments prior to 1900. See U.S. Dept. of Commerce, Historical Statistics of the United States, Colonial Times to 1957, Washington, D.C., 1962, pp. 564-565.

There are many factors in addition to income that affect the level of trade between countries. Some of these are general and preferential tariffs, quantitative restrictions, bilateral arrangements, exchange restrictions, consumption habits, comparative costs, colonial or sovereignty status, population, and basic resource endowments. 8/ But the average level of income appears from this analysis to be a dominant factor in determining the level of total and agricultural import trade.

One way to appraise the effect of income on trade is to compare different areas or groups of countries with different levels of income per capita in different time periods. Another method, and the one used in this paper, is the comparison of income and trade data for one time period for different countries and groups of countries. The effect of moving up the development scale or income level in the same time period is analogous (but not identical) to movement of a particular country over time through the different stages of development. Under these conditions or assumptions, changes in trade associated with changes in income can be measured and expressed in terms of import elasticities. The cross-sectional analysis has the advantage over a time series analysis in that differences in prices can be ignored, whereas they cannot in the long-term analysis.

Fundamental to the analysis of development and trade in this paper is the recognition that the demand for imports is a part of the total demand for agricultural and other products, and that an increase in the total demand for, say, agricultural products growing out of increased consumer incomes also expands the demand for agricultural imports. The extent to which the demand for imports increases with economic growth, of course, depends upon the growth in domestic supplies and the income elasticity of demand for agricultural products.

In any case, a measure of the changes in the demand for imports associated with changes in incomes -- elasticity of imports -- can be determined for all countries, regardless of the stage of economic development. For example, with an elasticity of 1.0, a 10 percent change in income per capita will be associated with a 10 percent change in imports per capita. Such a measure as this has the merit of enabling one to deal with the vast differences in conditions and restrictions to trade in countries at different stages of economic growth, so that the long-term trends in trade and interrelationships between development and trade can be determined.

Per Capita Income and Trade

The absolute level of imports per capita is highest in the developed countries. The general relationship between levels of economic development and total trade is reflected in the data on per capita income and imports in table 1. That is, trade tends to increase with income. A breakdown of the trade and income data

8/ Deutsch, Karl W., et al., "Population, Sovereignty, and the Share of Foreign Trade," Economic Development and Cultural Change, Vol. X, No. 4, July 1962, pp. 353-366, and Linder, Stephen B., An Essay on Trade and Transformation, John Wiley & Sons, New York, New York, 1961.

Table 1.--Income and imports per capita: Total and agricultural value by major importing region and origin of imports, 1959-60 average 1/

Region 2/	Income per capita	All imports per capita from:		Agricultural imports per capita from:		
		World	United States	World	United States total 3/	United States commercial
	-- Dollars --					
Developed 4/						
Western Europe						
European Economic Community	783	148.61	17.02	57.89	5.97	5.41
European Free Trade Association	973	219.85	21.02	87.63	7.57	6.94
Other	260	50.33	6.15	10.91	2.81	.45
North America						
Canada	1,589	300.28	207.10	140.11	23.21	23.13
United States	2,279	83.02	---	22.19	---	---
Other developed						
Japan	315	36.45	11.99	16.34	4.40	4.19
Australia, New Zealand and Republic of South Africa	723	146.04	22.84	46.80	1.92	1.82
Total developed	656	125.89	22.10	48.06	5.76	4.96
Less developed						
Africa	107	31.46	2.99	6.11	.67	.16
Asia	110	14.81	2.60	2.93	.95	.20
Latin America	282	37.25	16.77	6.37	2.39	1.93
Total less developed	110	21.47	4.93	5.08	1.13	.46
Eastern trade						
Union of Soviet Socialist Republics	615	24.33	.11	5.69	.01	.01
Eastern Europe	392	73.53	1.23	29.34	1.03	.10
China and others	71	3.19	.00	.32	.00	.00
Total Eastern trade	218	14.71	.16	4.38	.10	.01
World total	400	41.13	6.90	13.07	1.57	1.09

1/ Value data are U.S. dollars. Estimates of total imports were computed from data in the United Nations Statistical Yearbook 1961. Estimates of world agricultural imports were computed from data in GATT International Trade 1961, Geneva, September 1962. Imports from the United States are agricultural exports to major regions as reported by "U.S Foreign Agricultural Trade by Commodities, Calendar Year 1962 Annual Supplement, June 1963. Population and income data were obtained from Demographic Yearbook 1960, United Nations; International Monetary Fund, International Financial Statistics, supplement to 1962-63 issues and Vol. XV, No. 8, August 1962.

2/ European Economic Community (EEC) includes Belgium, Luxembourg, France, Italy, West Germany, and Netherlands. European Free Trade Association (EFTA) includes United Kingdom, Austria, Denmark, Norway, Portugal, Sweden, and Switzerland. Other Western Europe (OWE) includes Finland, Greece, Iceland, Ireland, Spain, Turkey, and Yugoslavia. Africa includes all countries except Republic of South Africa. Asia includes all countries except Japan, China Mainland, North Korea, North Vietnam, and Mongolia. Eastern Europe includes Albania, Bulgaria, Czechoslovakia, Hungary, Poland, East Germany, and Rumania. China and others include North Korea, North Vietnam, and Mongolia.

3/ Total agricultural imports include commercial shipments as well as all shipments under special U.S. Government export programs.

4/ Information on income and trade excludes the United States in the summary for developed countries.

of the developed countries shows that Canada, EFTA, and EEC, in that order, had the highest level of per capita income as well as imports per capita -- both total and agricultural.

The lower level of imports of both total and agricultural products by the United States appears to be an exception to the general case, even though the level of income per capita is higher than in other developed countries. However, the larger geographic and economic size of the United States, along with its diversity of natural resources and production capabilities, makes this country less dependent on trade for its diversified demand than other developed countries with less resources for producing the variety of products demanded by high-income consumers. These non-income factors may explain, in large part, the lower levels of U.S. imports per capita than for other developed countries.

The effect of size on the import patterns is important but the following analysis abstracts from this consideration. Although the data on imports and income of the United States are listed in table 1, they are not used in the present analysis since the primary concern here is with countries importing from the United States. Furthermore, a graphic analysis of individual countries indicates that the scatter of country observations follows a rather uniform pattern with the United States deviating rather sharply from this pattern -- suggesting that very large and very populous countries may be exceptions to the general case. 9/

As a group, the developed countries had an average income per capita in 1959-60 of $656 or about 6 times that of less-developed countries ($110). Total imports per capita by the developed countries were also about 6 times larger, but agricultural imports were about 9.5 times larger than in the less-developed countries. In comparison, the developed countries imported only 4.5 times more of all products from the United States than the less-developed countries and 5 times more of all agricultural products. Imports of commercial agricultural products by the developed countries, however, were almost 11 times larger than for the less-developed countries.

These relationships clearly illustrate the importance of the developed countries as market outlets for U.S. and world products, especially agricultural products. The low level of imports from the United States by the Eastern Trade Area countries reflects the importance of political restraints on trade. Current shipments of agricultural products to these countries reflect the growing demand for increased trade with the United States and removal of these trade-reducing factors.

These general relations between development and trade -- whether with the United States or all countries -- suggest that a high degree of correlation exists between the level of income and trade and that imports are related to income. To quantify this relationship between economic growth and demand for

9/ There is evidence, based on limited income and trade data, that the USSR and China would also fall into this pattern. Due to their lower levels of income, however, the divergences from this general pattern are less pronounced than for the United States.

imports, the concept of elasticity is used in the following analysis. And, as noted previously, the concept of elasticity is simply a measure of the percentage change in imports associated with a percentage change in incomes.

Elasticity of Imports

The elasticity of imports of all goods and services from all countries (excluding the Eastern Trade Area) by the 9 major trading areas was estimated to be 1.06 in 1959-60 (table 2). That is, a 10 percent increase in total income in all countries would result in a 10.6 percent expansion of total imports. These relationships (fig. 1) suggest that (1) world trade would expand slightly faster than world income and (2) imports per capita would expand slightly faster in those countries or groups of countries experiencing the fastest rate of increase in per capita incomes. International trade data during the

Table 2.--Elasticity coefficients of imports, total and agricultural, by major economic regions and origin of imports, 1959-60 average 1/

Type and origin of imports	Regression or elasticity coefficients (b)		Correlation coefficients (R^2)	
	All countries	All countries excluding Canada	All countries	All countries excluding Canada
TOTAL IMPORTS				
All countries 1/	1.06		93	
United States	1.26	.95	82	63
AGRICULTURAL IMPORTS				
All countries 1/	1.40		94	
United States				
Total	1.02	.84	77	79
Commercial 2/	1.65	1.56	84	78

1/ Based on the data in table 1. Income and imports of the United States, USSR, and Mainland China are not included in the calculation of these coefficients. The addition or deletion of the countries of Eastern Europe does not alter the correlation results.

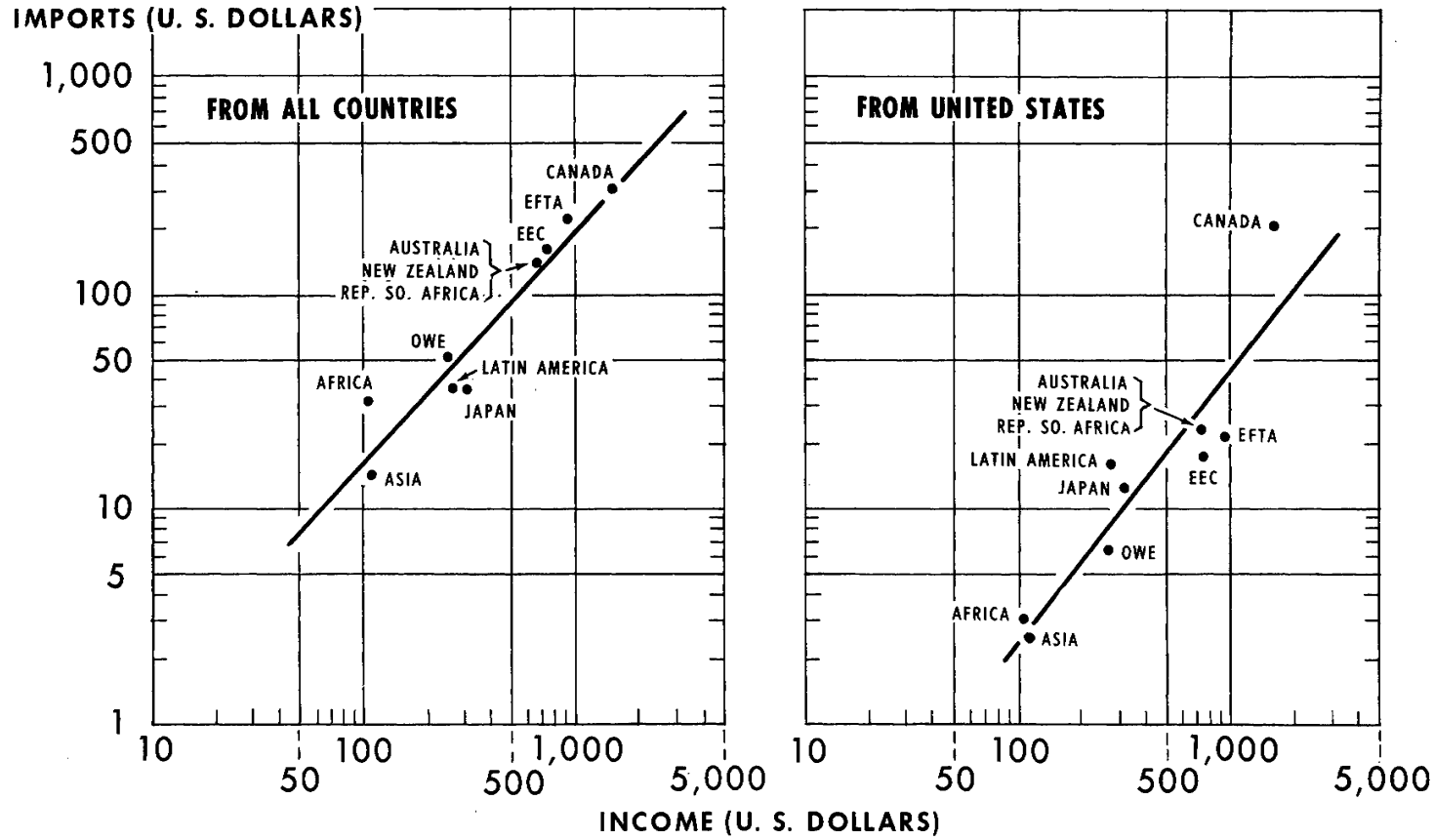
2/ Excluding special shipments under Public Law 480 (P.L. 480).

1950's suggest that these two statements reasonably characterize the trade among the developed and less developed countries in the postwar years during which world trade grew slightly faster than world production and income. 10/

10/ GATT International Trade 1960 and 1961; United Nations Statistical Yearbook 1961, New York, 1962. See also: Tinbergen, Jan, Shaping the World Economy, The Twentieth Century Foundation, New York 1962, Appendix VI.

TOTAL IMPORTS RELATED TO INCOME

Per Capita, Selected Areas, 1959-60 Average



EFTA: INCLUDES UNITED KINGDOM, DENMARK, NORWAY, SWEDEN, SWITZERLAND, AUSTRIA, AND PORTUGAL.

EEC: INCLUDES BELGIUM-LUXEMBOURG, FRANCE, ITALY, WEST GERMANY AND THE NETHERLANDS.

OWE: INCLUDES FINLAND, GREECE, ICELAND, IRELAND, SPAIN, TURKEY AND YUGOSLAVIA.

ASIA: EXCLUDES JAPAN, USSR, CHINA, NORTH KOREA AND NORTH VIETNAM.

AFRICA: EXCLUDES REPUBLIC OF SOUTH AFRICA.

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figure 1

Both economic growth and trade have expanded most rapidly in such regions as Western Europe and Japan since 1950, and their rapid growth in imports has strongly influenced the patterns of postwar trade expansion.

A comparison of the relationships between total imports from the world and the United States and income per capita for the 9 major economic regions is shown in figure 1. The slopes of the regression lines indicate that the elasticity of imports from the United States was greater (1.26) than it was from all countries (1.06) in 1959-60. The higher elasticity of imports from the United States is due primarily to the high level of imports by Canada. If Canada is excluded, the elasticity (.95) is slightly less than that for the world imports (1.06).

The geographic proximity of Canada and the United States obviously has a definite effect on trade. 11/ In addition, these two countries have the highest level of income per capita, and according to Linder, would have the highest actual and potential levels of trade. 12/ With the limited examination given to these special factors in this paper, it is impossible at this point to sort out the relative importance of non-income factors on trade. They are important enough, however, that one should not fail to investigate these special factors in more detail before undertaking trade projections.

Changes in agricultural imports associated with changes in income (elasticity of agricultural imports) for the 9 major areas were higher in 1959-60 than for total imports, regardless of whether the imports were from the United States or from all countries. From all countries, the elasticity of agricultural imports was 1.40; it was 1.65 for commercial agricultural imports from the United States. However, if commercial and noncommercial imports (shipments under special Government programs) are considered, the elasticity falls to 1.02, or about the same for total imports (1.06) from the world (table 2).

The implication of the higher elasticities for agricultural imports suggests that agricultural trade would expand faster than total trade with continued world economic development and 1959 and 1960 economic conditions. This implication is contrary to historical patterns of trade expansion relationships. That is, the demand for nonagricultural goods and services and hence total trade usually expands more rapidly with rising consumer incomes than it does for food and other agricultural products.

The larger import elasticities observed for agricultural than nonagricultural products in 1959-60 may have been due to particular circumstances associated with the upswing of the business cycle in Western Europe and Japan. For example, the EEC and Japan in 1959-60 greatly stepped up their agricultural imports over the previous 5 years, and no doubt strongly influenced the income-import relationship observed in 1959-60. 13/ In addition, growth in income and demand for agricultural products may have been more rapid than growth in

11/ Op. cit., Deutsch, pp. 353-366.
12/ Op. cit., Linder, p. 98.
13/ Op. cit., GATT, International Trade 1960, pp. 59-104.

supplies during this time and caused agricultural imports to increase more rapidly than total imports in the short run.

There are many possible reasons why import elasticities for commercial agricultural imports from the United States are higher than world imports, both total and agricultural. One reason, of course, is the importance of Canada in our export market. The close geographic proximity makes Canada a good export market for agricultural as well as manufactured products. The Canadian economy is more closely integrated with the U.S. economy than other countries and therefore has a greater tendency to engage in mutual trade than other high-income countries. If Canada is excluded from the calculations shown in table 2, the elasticity for agricultural imports falls to .84 for total and 1.56 for commercial agricultural imports.

The influence of the special U.S. export program on agricultural trade with the less-developed countries is another possible reason for the higher import elasticities for commercial agricultural imports from the United States than for world agricultural imports. The lower elasticity for total agricultural imports than for commercial agricultural imports from the United States (1.02 vs 1.65) suggests that noncommercial agricultural imports for the less-developed countries are large enough to make uncertain what the actual level of imports would have been in the absence of the Public Law 480 export program. However, the elasticity for world agricultural imports (1.40) suggests that the actual level of agricultural imports from the United States -- in the absence of special export programs -- by countries in Africa, Asia, and Western Europe outside of EEC and EFTA, might have been somewhere between the two levels, total and commercial. The relationships are shown graphically in figure 2.

It should also be borne in mind that, because of the continuation of food aid to economic development, both income and imputs in the less-developed countries would probably have been lower in the absence of the special program. To the extent that these special imports of agricultural products have aided economic development in these countries, the long-run objective of expanding trade has been promoted and the short-run objective of reducing our surplus stocks of agricultural products has been achieved.

These conclusions are tentative and are based on a limited investigation of the trade-development relationship. A more detailed analysis of these special programs is needed before definite conclusions can be drawn. An analysis of this magnitude is, of course, outside the scope of this report.

A cross-sectional analysis only represents a picture of what is happening at one point in time. Just as a trackman may run a race unevenly, so trade may grow unevenly. The results of other cross-sectional analyses of different points in time may or may not yield the same elasticities of imports for total and agricultural products. They may be different because of different (1) patterns of trade, (2) economic conditions, (3) non-income factors affecting the free flow of goods and services between countries, and (4) supply-demand conditions of food and other agricultural products. Consequently, one should reconcile the results of cross-sectional analysis with time series analysis before attempting to make long-term trade projections on one particular

AGRICULTURAL IMPORTS RELATED TO INCOME

Per Capita, Selected Areas, 1959-60 Average

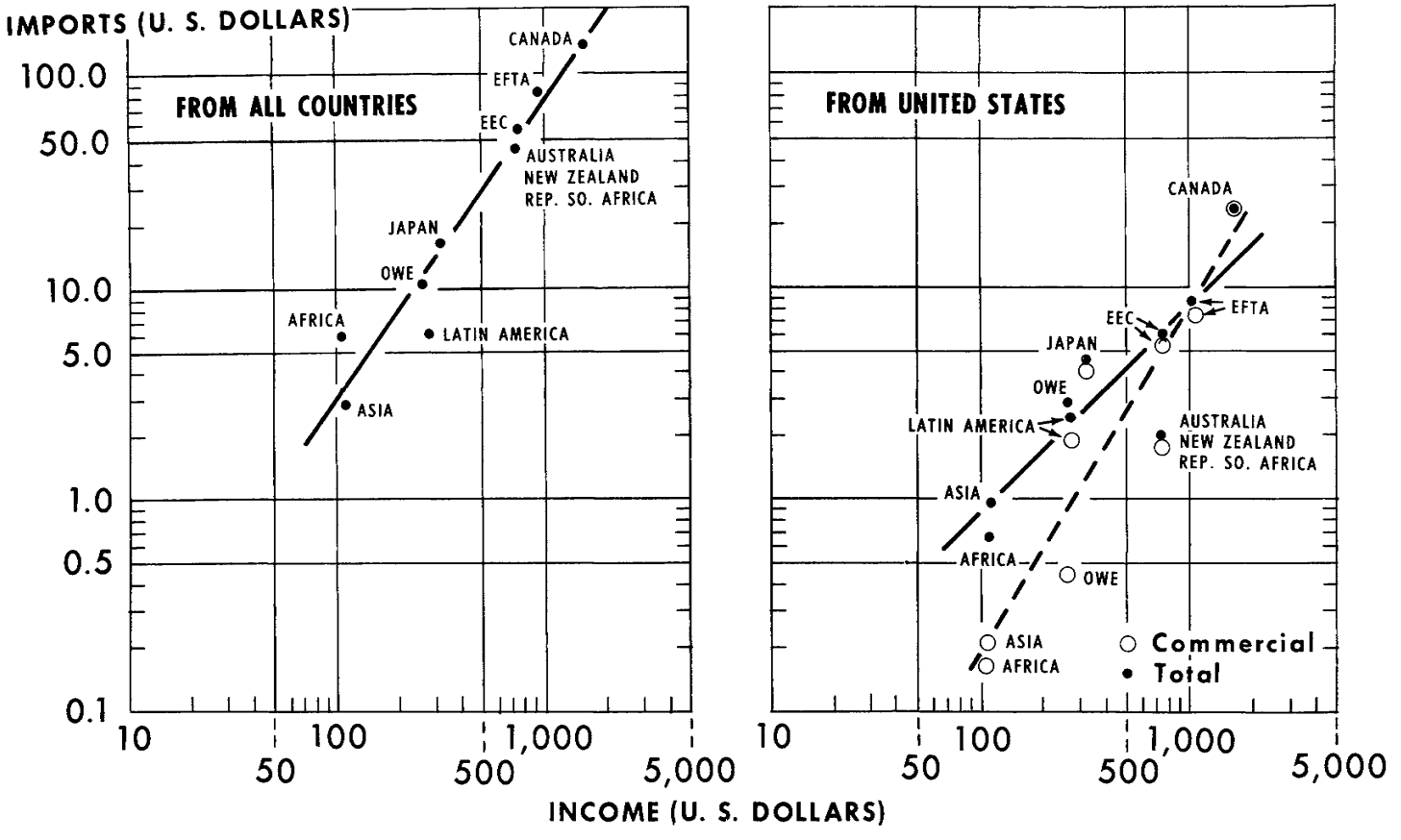

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figure 2

trade-income relationship. This precaution is necessary to insure that changes in trade patterns -- such as a more rapid increase in agricultural than nonagricultural trade, as found in the above analysis of 1959-60 trade and income data -- are real and reflect the true long-term changes in demand rather than temporary shortages of supplies and increases in demand. In some cases the results of these two types of analyses may not be entirely reconcilable because of the large short-term changes in trade and economic conditions that materially deviate from the long-term trends.

Some tentative projections of export potentials for U.S. agricultural products, based on the 1959-60 income-trade relationship, indicate that a 3 percent annual rate of growth in per capita income for all countries would almost double 1959-60 agricultural exports by 1980. These preliminary results are comparable to those obtained in a previous article using time series data for total trade and income for the developed and less-developed countries. 14/ Projections, based on historical growth rates or current income-trade relationships (import elasticities) should necessarily yield comparable results if the long-term trade patterns are uniform and are highly related to changes in income. Both approaches should be used, however, in making trade projections since particular information and additional insights can be obtained by using the two together rather than separately.

Summary and Conclusions

The results of the foregoing analysis suggest that there is a definite relationship between development and trade and that sustained economic growth will generally lead to an increase in the actual and potential level of trade between countries. These income and trade relationships, as revealed by a cross-sectional analysis of the 1959-60 trade and income data for 9 major trading areas, suggest that world trade will expand slightly faster than world income with continued economic growth and that imports from the United States, total and agricultural, may grow faster than world income.

Future expansion in the demand for U.S. agricultural and other products will continue to be closely tied to world economic conditions. Rapid economic growth abroad will help maintain a steady growth in U.S. agricultural and total trade; economic stagnation and recessions abroad will brake trade expansion and reverse the current growth trends in U.S. exports. Therefore, any projections of U.S. trade potentials must necessarily take into account world economic and political conditions.

There will be, of course, slow, moderate, and fast rates of progress in the different countries in the years ahead, resulting in different rates of expansion in imports. Thus, estimates of trade potentials for any future period will vary with whatever economic conditions are assumed in the different countries. What is important however, is that when economic growth does occur, regardless of the rate, some positive increase in trade is very likely to result.

14/ Christensen, Raymond P., and Mackie, Arthur B., "Foreign Economic Development and Agricultural Trade," Foreign Agricultural Trade of the United States, September 1963.

Under these conditions it becomes very clear that market outlets for an increasing part of American agriculture will become more and more dependent upon the rate of economic progress in other countries.

In addition, rising incomes in foreign countries will expand the consumption and demand for U.S. farm products and will affect the volume and commodity composition of U.S. agricultural exports.

Shifts in demand for different commodities are also logical consequences of economic growth. Implications of these shifts for U.S. farm products are very important in projecting the demand for particular commodities. But an examination of the changes in the commodity composition of U.S. agricultural exports associated with foreign economic growth is not possible in the scope of this article. Such an analysis, however, should be an essential part of any long-term trade projection study designed to yield estimates of foreign demand for particular commodities.