



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Agriculture and Trade Analysis Division  
Economic Research Service  
United States Department of Agriculture

**Staff Report # AGES870928**  
1988

**Trade and Development**  
Shane, M., ed.

Proceedings of a Meeting of the  
International Agricultural Trade Research Consortium  
December, 1986, CIMMYT, Mexico City, Mexico

## **TRADE AND DEVELOPMENT, DEVELOPMENT AND TRADE**

Mathew Shane <sup>1</sup>

There is an important relationship between trade and economic development and also one between development and trade. The first, highlighted by T. N. Srinivasan, focuses on the impact that trade has on development. There is another analysis, perhaps best put forward by John Mellor, that the driving force of trade, agricultural trade, is income growth. I will briefly discuss the underlying analysis of each and then their relationship to each other. I will only focus on the highlights of these issues, recognizing that many details and refinements will be omitted. My objective is to place this discussion into its overall context.

### **Trade and Development**

Classical trade theory argued that by using trade according to comparative advantage a country can achieve a level of income in excess of what could be achieved with domestic resources alone. Although the neoclassical argument of the gains from trade is clearly the source for much of the argument toward outward as distinct from inward orientation policies, the number of simplifying assumption underlying this analysis precludes this from being more than the starting point for the analysis.<sup>2</sup>

The most serious drawback for our purposes is that the framework is static rather than dynamic and abstracts away from all of the problems facing real economies in the highly uncertain real world that we live in. The discussion of the relationship between trade and development gets us into both issues of intertemporal choice and the issues of market imperfections and uncertainty.

### **Issues of Dynamics**

Development is a dynamic process, the core of which is technical and institutional change leading to increases in standards of living exemplified by rising per capita income. From the classical model, static gains from trade can be achieved under certain conditions. However, can trade be an avenue that induces a pattern of development that leads to a higher rate of growth in income than would occur without trade? Central to this issue is technology and information. Whether one can actually obtain a new long-run equilibrium growth path with higher per capita income growth or just a temporary path with higher growth is not really important here. Although we are just obtaining a set of increases in per capita income rather than in growth, the central issue may be whether one can achieve clearly superior levels of consumption (see report by Lucas (1)).<sup>3</sup>

Suppose that an economy is faced with two investment possibilities: one, the traditional technique and the other a new technique available from the world market. Suppose further that there are scale factors associated with the implementation of the new technology such

---

<sup>1</sup>The author is an economist with Agriculture and Trade Analysis Division, Economic Research Service, U.S. Department of Agriculture, Washington, DC.

<sup>2</sup>Nonsatiation, free disposability, the possibility of lump sum transfers, and the existence of a social welfare function are but a few assumptions.

<sup>3</sup>Underscored numbers in parentheses are listed in the References at the end of this article.

that the purchase of this technology is beyond the means of the economy. If finance and trade is not available, an economy can either borrow money to purchase the new technology or joint venture with a group that has access to the new technology.<sup>4</sup> By obtaining this technology, an economy can achieve a present discounted valued consumption stream clearly superior to one without the prospect of technical transfer.

Trade can take place in factors that directly affect production possibilities as well as commodities. Thus, trade and international finance are integral parts of the process of technical change. We can, however, even broaden this further so that the trade process involves not only elements of technical change, but institutional change as well. The setting up of the international research centers is but one example of the transfer of institutional capacity.

The ability to trade under unbiased conditions not only allows for technical and institutional change underlying a dynamic growth process, but also fundamentally alters the dynamic inducements toward future change. Trade not only allows for increases in income and capacity, but it does so under a changed system of relative prices. This change in relative prices, therefore, induces a process of technical change that can be substantially different from that which would occur without trade. Furthermore, the ability to market internationally allows for expanded production capacity beyond what could be used in the domestic economy alone, permitting the exploitation of economies of scale.

The informational efficiency, which unbiased price signals provides, should not be underestimated. Embedded in world prices are signals about returns to investments and production. An unbiased price indicates possibilities for returns based on what the market is willing to accept. Biased prices, which deviate from free trade solution, imply investment returns unrelated to demand factors and the possibilities of surpluses or deficits in the future. The fact that current prices reflect current expectation of conditions and not necessarily those that will exist in the future does not change this. This only points to the need to develop contingency markets to insure against changes in market conditions.

The sixties and seventies were periods when trade by developing countries grew more rapidly than did their per capita incomes. Growth in per capita exports grew at 8-percent per annum, while growth in per capita gross domestic product (GDP) for developing countries grew at 5-percent per annum. Growth in real agricultural trade per capita grew at approximately the same rate as per capita GDP. During the sixties and seventies, developing countries were increasingly taking advantage of both the static and dynamic gains of trade. This pattern has not continued into the eighties.

Although developing countries, on average, pursued policies to increase their openness to world markets, a substantial number of them pursued policies resulting in reduced exposure to world markets. Given the advantages of participating in trade, why would such patterns persist over long periods of time? The analysis of this issue takes us into the subject area of government intervention. The answer lies in the fact that some individuals or groups view reduced exposure to the international market as being in their best interest. They pursue this because there are rents to be obtained from controlling access to these markets.

By defining government intervention as any policy or action taken by governments that cause prices to deviate from what would prevail in an unbiased market, we can view the consequences of such intervention on the trade and development process in several ways. One type of government intervention involves a movement of domestic prices away from free trade

---

<sup>4</sup>Vernon Ruttan has stressed that the contribution of social scientists as distinct from technical scientists is that the former is concerned with institutional change, while the latter is concerned with technical change (4).

solutions. This involves several possibilities. One involves the movement of prices from world market toward their autarky levels or beyond. It is possible, and there appear to be several empirical instances in which this has occurred, when government intervention has actually led to a situation in which countries become exporters of their "natural import good" and importers of their "natural export good." It is also possible for governments to subsidize exports and generate exports in excess of the free trade solution. Government interventions can clearly distort the trade mix away from an unbiased outcome.

What is the impact of government intervention on growth and development? If under competitive equilibrium assumptions, the unbiased trade solution represents a static global optimal outcome, any deviations from that solution will represent a loss and will likely imply a slower growth outcome. It is possible, however, if there are market imperfections present or if the government has a lower discount of the future than does the private sector, that government intervention could lead to higher growth and development outcomes than would be obtained by an unbiased solution. One only needs to reflect on a situation where the outcome results in higher rates of efficient investment. Higher growth will be generated, but at the cost of current consumption. This solution is efficient, but not Pareto optimal. It appears that government intervention from the perspective of economic development does not necessarily generate an inferior outcome.

### **Development and Trade**

Up to this point, the discussion has focused on issues relating trade to development. These issues relate primarily to the production side of an economy. It is argued, if an economy pursues an outward-oriented unbiased trade policy, that an economy can use the gains from exporting commodities to increase income, consumption, and growth. The related issue looks at the impact that development and growth has on the demand for imports. If export growth drives income growth and development, then income growth and development drive the demand for imports.

How development impacts on the import mix changes over the course of development. We can demonstrate this by focusing on what happens in the food and agricultural sector. In the early stages of development in which many of the low-income developing countries fall, the staples of consumption are largely confined to basic foodstuffs. These would include roots and tubers, coarse grains, and food grains if produced locally or provided on concessionary terms. The income constraint is binding on demand, and the technology constraint is binding on production. Very little trade takes place during this stage. There is, however, a very high-income elasticity of demand for food which can be greater than 1 in some instances. It is this very high-income elasticity that makes these countries potential import markets.

There is an intermediate stage when the dynamics of development drive the dynamics of trade growth. During this stage, large increases in per capita income occur and driven by the high-income elasticities, and a changing composition of the diet from basic staples to food grains to meat, demand for food far outstrips the increases in production. This excess demand is met by increases in imports.

There is a final stage of development when consumption patterns mature. In this stage, the income elasticity for food can become negative. Furthermore, an institutional basis has been developed for generating sustained increases in production through technical change. In this stage, import growth either levels off or declines. In a number of instances, these countries can switch from being importers to exporters when the agro-climatic resource base and political environment is correct.

This pattern is reflected in the empirical trends of developing and industrial countries. The rapid growth in demand for food in the developing countries during the past 20 years has

generally exceeded their capacity to accelerate domestic production. The opposite is true for the industrial countries; demand is growing slower than production (table 1). Thus, these two groups are becoming increasingly dependent on each other. The surpluses produced in the industrial countries are key to meeting the rapidly increasing food needs of the developing countries.

The empirical patterns associated with development are striking. It is the middle- and upper-income developing countries that are the growing markets for agricultural products and not the low-income countries. Underlying the surge in imports is the transition to meat consumption from food grains. The underlying production and use patterns in developing countries implies a much higher import growth demand developing for coarse grains rather than for food grains. This is most notably occurring in the upper-income developing countries rather than the low- and middle-income countries. The increasing use of coarse grains for feed also supports this theory.

Factors related to food demand and its components are driving the system. By using results from cross-section time series data, we found the income-elasticity patterns that generated the import patterns (3). The elasticity for the food grains (wheat and rice) rises rapidly until incomes reach approximately \$1,000, and then declines throughout its range, becoming negative at about \$3,500. The income elasticity of meat rises more slowly and has a plateau at approximately 0.8 between incomes of \$1,000 and \$4,000 and slowly accelerates its decline so that when incomes reach \$7,000, it becomes negative. This elasticity for the components of food translates into nonlinear patterns of food consumption per capita, which have increasing and then decreasing per capita patterns for food grains and meats and an overall declining pattern for coarse grains.

Table 1--Consumption and production changes in developing and industrial countries

Item	Change 1961-63 to 1980-82	
	Developing	Industrial
	<u>Percent</u>	
Consumption per capita:		
Food grains	23	1
Coarse grains	20	35
Oilseeds <sup>1/</sup>	10	127
Production per capita:		
Food grains	14	44
Coarse grains	4	74
Oilseeds	66	140

<sup>1/</sup> Oilseeds include only soybeans, soybean oil, soybean meal, peanuts, peanut oil, and peanut meal.

Source: (2)

## Conclusions

The changing composition of demand as a driving force for import demand extends far beyond the food sector. Development creates demands for an expanded consumption bundle that will outstrip the capacity of an economy to respond, at least in the short run. The relationship between trade and development and development and trade is thus a complementary one. The ability to export and respond to world demand in a way consistent with comparative advantage allows low- and middle-income countries to accelerate their growth and development far beyond what could be obtained in a self-sufficient autarky state. The resulting income growth provides consumption demands that exceed domestic capacity. Since exports are a lead sector, the foreign exchange necessary to respond to changing demand is available. Exports drive development, which drives import demand. It is, therefore, not surprising that the single most important variable in import demand is foreign exchange availability and not income. Income growth, as we have seen, can have both positive and negative effects on import demand, depending on the development stage of a country.

The current world environment in which both trade and income growth are lagging is a very poor environment to stimulate development. Many developing countries, saddled with substantial international debt, are faced with declining per capita incomes for the foreseeable future. Considering the interdependence of the developing and industrial world, solutions must be sought that will allow us to break out of the current low-level world equilibrium.

## REFERENCES

- (1) Lucas, R. E. "Mechanics of Economic Development," unpublished manuscript, Univ. of Chicago, Dept. of Economics, 1986.
- (2) Marks, Suzanne Marie, and Mervin J. Yetley. Global Food Demand Patterns Over Changing Levels of Economic Development. Staff Report No. AGES870910. U.S. Dept. Agr., Econ. Res. Serv., Oct. 1987.
- (3) Roe, Terry, Mathew Shane, and De Huu Vo. Price Responsiveness of World Grain Markets: The Influence of Government Intervention on Import Price Elasticity. TB-1720. U.S. Dept. Agr., Econ. Res. Serv., June 1986.
- (4) Ruttan, Vernon. "Social Science Knowledge and Institutional Change," American Journal of Agricultural Economics, Vol. 66, No. 5, Dec. 1984, pp. 549-559.