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ABSTRACT

This issue focuses on how U.S. trade policies must recognize the interdependent nature of trade partnerships. Economic concepts related to world trade are explained. The booklet contends that the United States cannot have a comparative advantage in producing all goods and that by offering consumers low-priced imports from overseas the United States can strengthen its economy. The basic premise is that the United States should export what it does best and import the best, looking for the best advantage to the economy. The booklet concludes with a student quiz. (EH)

ECONOMIC ISSUES

for Food, Agriculture and Natural Resources

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Trade is a Two-Way Street

About the cover:
Dr. Thomas Hertel's work supports the argument that the U.S. should not have a "one-way" attitude about trade, because "trade is a two-way street."

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Trade Is a Two-Way Street

International trade is daily news. Every day, issues of trade agreements—disagreements—appear in the news media. The World Trade Organization (WTO) recently announced that global trade in goods and services has reached an all-time high. We purchase fruits and vegetables from Chile, shirts from Indonesia, toys from China, coffee makers from Germany and cars from who knows where. Everything in our lives is touched by worldwide trade agreements and policies.

Nowhere is this more true than in agriculture, where a tremendous evolution has taken place. Agricultural exports in the U.S. were generally ignored in the past, or if there was a surplus of wheat, for example, our attitude was, "world, you are welcome to come and buy." Currently, however, about one out of every five acres of U.S. cropland is planted for export. In Indiana the percentage is even higher–almost 30% of combined corn, soybean and wheat production in Indiana is targeted for export markets.

Agriculture is now a major player in the game of international trade, and many believe that future prospects for exports depend on economic growth and continued liberalization of trade policies throughout the world. One supporter of liberalized trade policies is Professor of Agricultural Economics Thomas Hertel. He has developed a framework for analyzing world trade, the **Global Trade Analysis Project (GTAP)**, which involves a global data base and a computer-based economic model to analyze "what if" questions related to trade policies and their impacts. GTAP also involves a network of users on five continents and a consortium of national and international agencies.

Future growth of U.S. agricultural exports will be accompanied by imports of many products. Hertel believes that restricting [illegible]orts to the United states will have an adverse effect on U.S. exports. Freer trade in both agricultural and manufacturing products is essential to the health of world trade. Thus, he proclaims that "trade is a two-way street."

USEFUL TERMS

- **Asia Pacific Economic Cooperation (APEC)**—Regional trade agreement in the Pacific Rim aiming for free trade early in the next century.

- **General Agreement on Tariffs and Trade (GATT)**—An organization that historically oversaw the "rules of the road" in international trade. The GATT will be replaced by the World Trade Organization (WTO) over the next 10 years. See **ECONOMIC ISSUES for Food, Agriculture & Natural Resources** (No.3) *International Trade in a Global Environment* for a more in-depth discussion of the GATT and international trade.

- **Multifiber Arrangement (MFA)**—Sets bilateral quotas on exports of textiles and wearing apparel from developing countries into North America and Europe. Due to be eliminated under the Uruguay Round Agreement.

- **North American Free Trade Agreement (NAFTA)**—Regional trade agreement among the United States, Canada and Mexico.

- **Uruguay Round (UR)**—Recently concluded, a round of multilateral trade negotiations sponsored by the GATT.

- **World Trade Organization (WTO)**— The organization that has replaced the GATT (General Agreement on Tariffs and Trade) in overseeing the "rules of the road" in international trade.

Drivers of Change

In 1970, the dominant destinations for U.S. food exports were Europe, Canada, Australia and New Zealand (Figure 1). Japan and the rest of Asia imported much less. By 1990, the mix had changed. Japan was the dominant market. If the rest of Asia is added, you can see the relative importance of the two areas has been reversed. This change will continue. To understand how and why, we should first look at what Hertel calls the "drivers of change." These are among the factors that lead him to conclude that "trade is a two-way street."

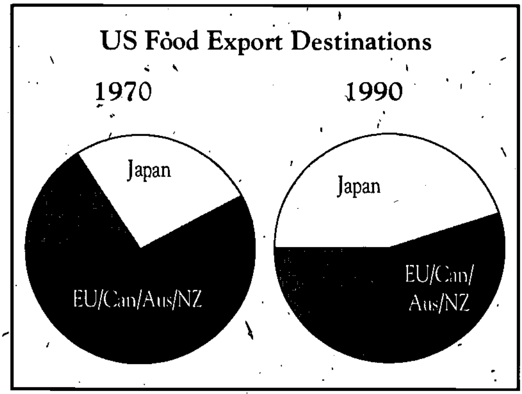

Figure 1

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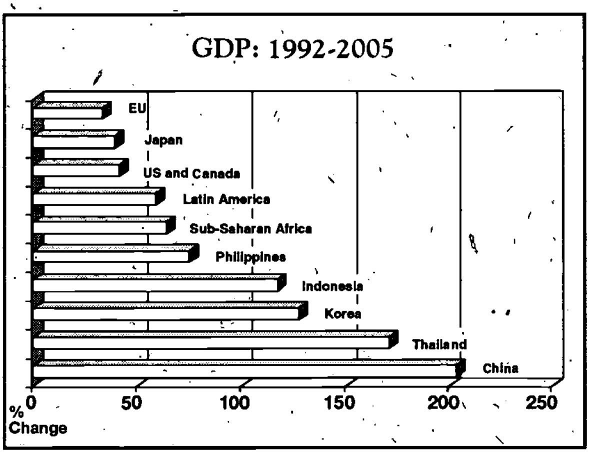
Engel's Law

According to Engel's Law, as total income increases, the share devoted to food tends to fall. This means that relatively poor countries such as India devote as much as 40% of their income to food, while the U.S. population spends only about 10%. The increasing standard of living in the developing areas of the world has a much greater impact on the demand for food than will additional income in already wealthy nations like Germany or the United States. Therefore, the distribution of global income growth is important when we attempt to project future food demands. If we accept this theory, then it is also important to consider another "driver of change."

Gross Domestic Product (GDP) Growth

Between now and 2005, the most rapid economic growth in GDP will occur in Asia, according to the World Bank, with countries in Southeast Asia and China topping the list. Figure 2 illustrates that the growth rate of China over this period of time is expected to be 200%—tripling in size! According to Engel's Law, there will be relatively slow growth in the mature markets of the U.S., Europe and even Japan. The export pie will continue to change,

Figure 2



and even Japan may likely be replaced in the future by other Asian markets. This supports the information contained in **ECONOMIC ISSUES for Food, Agriculture and Natural Resources** (No. 10) *Adding Value to Indiana's Commodities*. In that publication, China was predicted to be the best prospect for U.S. exports of consumer food. China was called the "Wild Card."

So far, this discussion has been based on agricultural economists' popular theory about the expected demand for food. This theory clearly points to Asia as the future export opportunity for U.S. agricultural and food products. However, only using the demand side analysis has been shown to fall short in predicting the rapid changes which are occurring in East Asia. For this reason, Professor Hertel points to another "driver of change."

Comparative Advantage

As a student of introductory economics, you know that there is always a *supply curve* to go with the *demand curve*. Therefore, depending only on the forecast of *demand* (looking at the growth and trade opportunities for the Pacific Rim countries) does not provide the total picture. Study of the *supply side* of this question is also important.

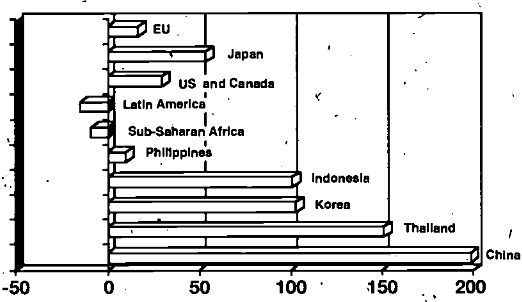
The shift illustrated in Figure 1 which occurred in Japan, Korea and Taiwan has been caused in part by the change from labor-intensive agriculture and manufacturing (use of hand and machine labor for the construction of tee-shirts and baseball caps) to use of capital and human capital-intensive manufacturing. Capital and human capital-intensive manufacturing requires more highly educated and skilled labor to plan, manage and operate equipment to manufacture of complex products (automobiles, stereos, televisions and computers). This same process is currently underway in Southeast Asia and China.

This shift in the structure of economy-wide activity is driven by changes in the capital-labor ratio, an element of comparative advantage in an economy. Capital-labor ratio measures the amount of machinery, tractors, drill presses and computers, used by each worker. When the ratio of machines to workers increases rapidly, owing to high rates of saving and investment, we expect shifts in comparative advantage and, hence, changes in the mix of products supplied.

If you look at the projections of the capital-labor ratio and the cumulative growth through the turn of the millennium (Figure 3), it is clear that the U.S., Canada, Europe and even Japan are expected to have modest changes compared to Indonesia, Korea, Thailand and China.

Figure 3

Cumulative Growth
Capital - Labor Ratio: 1992-2005



China is expected to experience very rapid structural change. Indeed, this index of changing comparative advantage is over three times the rate of Japan and over six times that of the United States and Canada. These changes cause much pressure on the economies of these countries to adjust the mix of products supplied.

With this rapid transformation currently underway, the landscape changes from a rural/agrarian economy to one of urban manufacturing. By taking both the *demand* and *supply* forces into consideration, Hertel has made projections through the year 2005. Japan will continue to increase imports of U.S. food products, but its share in the Asian total will decrease from 56% to 44%. The Newly Industrializing Economies (NIE's) in Southeast Asia as well as China will absorb this decline by increasing their U.S. food imports from 43% in 1992 to 56% in the year 2005.

US Food Exports to Asia
1992 and 2005

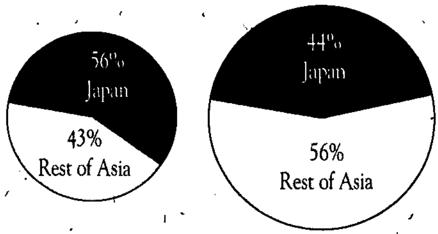


Figure 4

Trade Policy

Trade policies are the means countries use to come to grips with trade issues and try and regulate trade. Trade policies can be negotiated at three different levels, multilateral, regional and domestic.

Multilateral trade policies are like those rules the GATT/WTO seek to use to govern international trade and to settle trade disputes with other trading countries. The Uruguay Round of the GATT was concluded in 1994. For the first time, these negotiations set some significant "rules of the road" in international agricultural trade. The GATT is discussed in **ECONOMIC ISSUES for Food Agriculture and Natural Resources** (No.2) *International Trade in a Global Environment*. However, multilateral negotiations have become more complex and difficult to conclude. For example, the recently completed UR took about six years.

Thus, **Regional** negotiations have become a more popular choice. The United States has concluded such agreements in NAFTA (North America Free Trade Agreement) and is currently involved in discussions surrounding APEC (Asia Pacific Economic Cooperation).

Domestic policies also play a very important role, explains Hertel. This is nowhere so true as in agriculture, where the desire to set domestic policies independently of international trade rules led to the exclusion of agriculture from all GATT agreements prior to the Uruguay Round. Domestic considerations have also become increasingly important for the manufacturing sector, where renewed protectionism has emerged in response to pressure from so many imports.

The Two-Way Street of Trade

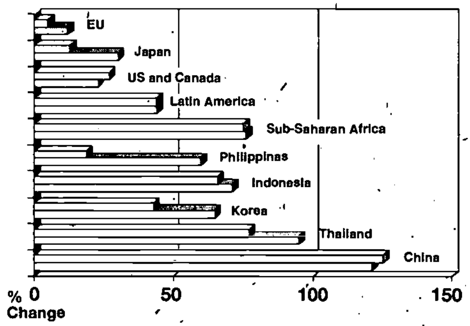
Factors like Engel's Law, GDP growth, comparative advantage and trade policies are among the "drivers of change" that will determine how countries will trade with each other by the year 2005 and beyond. Professor Hertel's analysis has led him to conclude that trade policies should be liberalized instead of made more restrictive, that "trade is a two-way street."

This means if we hope to export more food and agricultural products to Asia (where we see the potential for growth), we must expect they will export more of something else to us. Since the U.S. is the world's largest market, a good share of increased Asian exports will come to the United States. A discussion of trade deficit and surpluses is presented in **ECONOMIC ISSUES for Food, Agriculture & Natural Resources** (No. 3) *International Trade in a Global Environment*. These imports are a natural byproduct of economic growth and beneficial for U.S. consumers.

As a result of the Uruguay Round (UR) of the GATT, it should be easier to export most products to other countries. In theory, by making it easier for Asian manufacturers to export products to the U.S., it should be easier for the United States to sell farm and food products to Asian markets.

Figure 5 compares the projections of changes in agricultural output in the absence of the Uruguay Round (bottom bar) and the presence of the Uruguay Round (top bar). As you can see, this figure shows that China will have the most rapid growth rate in

Figure 5



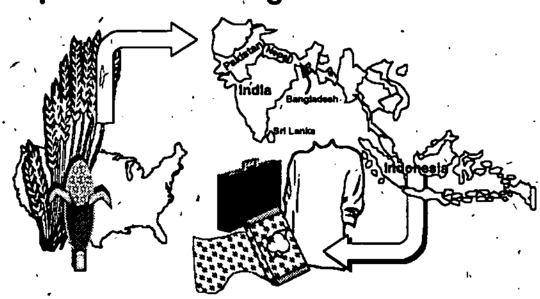
Top bar is with UR Bottom bar is without UR.

agricultural output, but agriculture still grows much more slowly than the rest of the economy. This figure also shows the GATT agreement *reduces* the rate of output growth in the European countries (EU), Japan, the Philippines (dramatically), Indonesia, Korea and Thailand relative to the level which would have occurred in its absence. In contrast, the agreement contributes to output *increases* in the U.S. and Canada and China (although China was not part of the agreement). In general, this global trade agreement will reinforce the strong underlying growth in food exports to the Asian markets by drawing Asian resources away from the farm and food sectors and into other sectors (like textiles and wearing apparel) with the abolition of the Multifiber Arrangement (MFA).

However, as we know, there has been great resistance to increasing Asian imports. This is many times referred to as "manufacturing protectionism." The Multifiber Arrangement (MFA) is scheduled to be abolished in 2005. This trade policy reform generates a strong response in many developing countries. Two very populous regions, Indonesia and South Asia (Pakistan, India, Sri Lanka, Bangladesh, and Napal), are important producers of textiles and wearing apparel. Their large populations also make them important future export markets for U.S. agricultural produce. As a result of abolishing the MFA and its quotas, the GTAP model developed by Professor Hertel projects that the U.S. economy as a whole will benefit. The estimated annual gain is $23.5 billion per year in 2005. More specifically, he projects increases in agricultural exports to Indonesia and South Asia of 16% and 15%, respectively, as a result of abolishing the MFA.

Hertel argues that by restricting imports of textiles and clothing from Asia, we are not only raising prices to our consumers, we are also limiting our exports of products in which we have a comparative advantage, in particular, food and agricultural products. Measures to free up these trade flows will benefit Indiana producers of corn, soybeans and hogs: Trade is a two-way street.

Impact of Abolishing the MFA in 2005



SUMMARY

Food and agriculture are an essential ingredient in human health and prosperity. As GDP continues to increase in developing countries, the U.S., with its abundant natural resources and strong agribusiness, is well-positioned to supply goods and services to the world market as these demands increase. However, continuing research and extension efforts will be required to maintain strong comparative advantage in food and agriculture.

The United States cannot have a comparative advantage in producing all goods. There is nothing wrong with offering consumers low-priced imports from overseas. As the developing countries upgrade their physical and human capital, these countries will naturally have the capacity to be the major suppliers of many goods. The United States must be able to adjust the mix of goods and services produced here–both within the food system and between food and non-food activities–to accommodate this changing comparative advantage. In other words, *we should export what we do best and import the rest.* And, in order to exploit our own comparative advantages, we must allow other countries to do the same. Trade is, indeed, a two-way street.

A ROLE FOR PURDUE'S SCHOOL OF AGRICULTURE

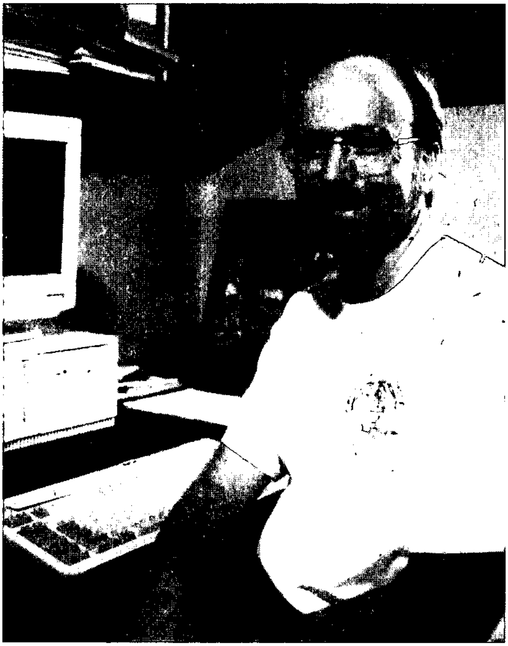
Purdue University's School of Agriculture is helping to facilitate students' adjustments to an increasingly competitive global economy by offering them a broad-based education, including overseas study programs designed to give graduates maximum flexibility and opportunity to build their futures.

Global Trade Analysis Project (GTAP)

Professor Hertel established GTAP in 1993 as an outgrowth of his research in global trade analysis. GTAP consists of a global data base, a computer-based economic model for asking "what if" questions about international trade policy. An international network of researchers and policy advisors use the data base and model to look at issues related to trade policy, natural resources and the environment.

Through a series of short courses at Purdue University, Professor Hertel has built a network of more than 150 users on five continents who are linked through the internet. These trained colleagues and users also contribute to the data base and modeling framework. In order to further build the network around the world, a short course has been held in Germany, and plans are being made for similar courses in South Africa in 1997 and South America in 1998. This provides the opportunity to capitalize on the expertise of specialists around the world, allowing analysis of issues relating to global trade, policy and resource use.

Thomas Hertel



Thomas Hertel is a professor in the Department of Agricultural Economics at Purdue University, specializing in the economy-wide analysis of trade policies. He is the founder and director of the Center for Global Trade Analysis (GTAP). This project maintains the global economic data base and modeling framework which is discussed in this publication. This project is documented in a forthcoming book: *Global Trade Analysis: Modeling and Applications*, published by the Cambridge University Press.

Dr. Hertel has won the Policy Article Prize from the Center for International Food and Agricultural Policy, and his students have won departmental and national awards for their theses. In 1995, he was named Outstanding Researcher in the Purdue School of Agriculture.

Quiz

1. What is the percentage of U.S. cropland targeted for export?
   A. 20%
   B. 45%
   C. 30%
   D. None of the Above

2. Which organization has replaced the General Agreement on Tariffs and Trade?
   A. Asia Pacific Economic Concordance
   B. North American Free Trade Agreement
   C. General Trade Protocol Arrangement
   D. Global Trade Analysis Project
   E. None of the Above

3. Professor Thomas Hertel believes that restricting imports to the United States will have an adverse effect on U.S. exports.
   A. True
   B. False

4. By 2005, Japan is expected to take over the largest slice of the export pie.
   A. True
   B. False

5. What recently concluded negotiations set some "rules of the road" in international agricultural trade?
   A. North Atlantic Free Trade Agreement
   B. General Trade Protocol Arrangement
   C. Uruguay Round
   D. Global Trade Analysis Project
   E. None of the Above

6. According to Engel's Law, the share of income devoted to food increases as the total income increases.
   A. True
   B. False

7. Which of the following is an example of a regional trade policy?
   A. Multifiber Agreement
   B. NAFTA
   C. General Agreement on Tariffs and Trade
   D. Uruguay Round
   E. None of the Above

8. The Multifiber Agreement is
   A. an example of trade liberalization
   B. a measure that restricts the export of U.S. textiles to Asia
   C. a regional trade agreement among the Pacific Rim countries
   D. an international agreement on the number of fibers allowed in textiles targeted for export
   E. None of the above

9. Agriculture has never been part of the GATT.
   A. True
   B. False

10. The phrase "trade is a two-way street" means that countries must restrict imports in order to expand exports.
   A. True
   B. False

Answers:
1-A, 2-E, 3-A, 4-B, 5-C, 6-B, 7-B. 8-E, 9-B, 10-B

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