The growth of grain imports by some developing countries slowed during the 1980's as their economies faltered and external debts mounted. The United States, the world's largest grain exporter, lost some of its grain markets as a result. U.S. policies further reduced U.S. exports as the United States lost market share in developing countries by holding export prices steady in the face of low world prices and high surpluses. With a higher exchange value of the dollar, U.S. agricultural exports became less competitive in world markets.

Recent U.S. agricultural policies that lower grain export prices and use surplus stocks to combat low-priced foreign grains may help the United States to recapture its share of prospective grain markets. But the amount that developing countries can import will depend on their own pace of economic development. The United States can promote this economic development by cooperating with other developed countries to reduce trade restrictions and debt burdens and to restore the flow of investment capital to developing countries.

This report shows how economic growth can lead developing countries to supplement local grain production with imports. Grain markets can grow if measures are undertaken to resolve the debt problems and promote economic development in developing countries. U.S. farmers could share in these growing markets if U.S. grain exports are priced competitively.

**ECONOMIC DEVELOPMENT IMPROVES TRADE POSSIBILITIES**

Trade possibilities with developing countries improve with economic development, often spurred by agricultural development assistance. Economic growth increases incomes in developing countries, enabling them to participate in world trade.

*Agriculture Primes the Pump of the Whole Economy*

The transformation from an agricultural to an industrial economy creates higher incomes, which lead to commercial markets for U.S. farm products, particularly grains. Because of agriculture's large contribution to gross national product (GNP), economic progress in developing countries requires development in their agricultural as well as nonagricultural sectors. Increased agricultural productivity raises a developing country's farm income and supplies additional food and raw materials for processing. Nonfarm income then rises as farmers spend their income on local goods and services. As farming becomes more
efficient, fewer workers are required, freeing them for nonfarm jobs. Industrialization accelerates as alternative sources of employment become available.

Economic Growth Fosters Higher Incomes, Demand for Food

Economic development leads to rising incomes that transform a potential demand for better diets into real purchasing power. The effective demand for food generally outruns domestic production because few developing countries have enough resources to expand output in all commodities fast enough to keep up with a rapidly growing economy.

Higher Incomes Enable Imports

Imports, paid for by the higher incomes, help supply the rising demand for food and feed. Countries with more rapid economic growth generally increase their agricultural imports faster than countries with slower economic growth. Dependence on imports, therefore, is due to economic development, not production failures. The more a developing country’s economy grows, the more it can also afford to import. As countries develop, they specialize in producing what they do well, and import where they have shortfalls. When a developing country moves toward industrialization, incomes rise, fueling further development and providing cash for more imports, including food (see box).

Figure 1. Developing countries are becoming less self-sufficient in grain

The self-sufficiency ratio for developing countries is declining, and the trendline indicates increasing dependence on grain imports from the United States and other major exporters. The ratio is grain production divided by the sum of grain production plus net imports. A country with no imports or exports will have a self-sufficiency ratio of 1. For example, if a country produced 30 million metric tons and imported 1.5, its ratio would be 30/31.5 = 0.95.
Economic Development, Self-Sufficiency, Income, and Trade

Developing countries as a group are becoming less self-sufficient in meeting the demand for grain and more dependent on imports. This growing dependence, true for food grains since World War II and especially striking for coarse grains (fig. 1), does not necessarily stem from failed economic policies or agricultural failures. Rather, this dependence often grows apace with agricultural and economic development, and is spurred by rising incomes and purchasing power.

Some think that U.S. exports are threatened by increasing agricultural productivity in developing countries. They cite countries which have expanded output of particular commodities and eliminated imports of those crops: wheat in India, rice in Indonesia. But these examples are only anecdotal evidence that the developing world is trending toward self-sufficiency in agriculture. While the United States has lost some export markets, the loss has been more than offset by gains elsewhere because of rapidly rising demand, illustrating the complex nature of specialization and self-sufficiency.

As countries develop their agricultures, they tend to specialize in producing crops they are best suited to produce. For example, new technologies significantly increased wheat output in the traditional, spring-wheat growing countries and reduced or eliminated imports of those types of wheat. This Green Revolution for wheat allowed India to move from the developing world's largest wheat importer to self-sufficiency in wheat production. However, this remarkable revolution in production has not increased wheat output everywhere in developing countries because wheat is not well suited for tropical climates. For example, improved rice varieties allowed Indonesia, once the world's largest rice importer, to become self-sufficient in rice. But rising incomes and increasing urbanization led to a greater demand for wheat, which could be met only by imports because Indonesia's climate is not suited for wheat production. Indonesia's annual imports of wheat and wheat products rose from 20,000 tons in the mid-1960's to 1.6 million tons today.

Rising agricultural productivity can mean enhanced ability to purchase needed goods from the world marketplace. While resulting in successful production that sometimes competes with U.S. products, economic development overseas also produces healthier markets for U.S. farm and nonfarm products. If production exceeds domestic needs, the income from the export of these locally grown crops can help pay for the imports of other commodities. For example, Malaysia is the world's leading exporter of palm oil, which competes with U.S. soybean oil for some uses. However, Malaysia's rising incomes and stronger demand for higher protein foods, such as meat and poultry products, have expanded its livestock sector to where it now accounts for 13 percent of national agricultural output. Malaysia must import virtually all of its feed needs, such as corn and soybean meal, because the land and climate cannot support the production needed.
Growth Brightest for Grains

With higher incomes, a better and more diverse diet becomes possible. Starch-based grain diets can be supplemented with animal products, which in turn require more feed grains. The increased use of grains as feed implies considerable potential for expansion in these markets. For example, 1 kilogram of livestock produced under an intensive production system requires 2–6 kilograms of feed grain. The need for, and use of, grain as feed can grow rapidly as more people can afford meat in their diets.

Importing low-cost grain benefits consumers in developing countries and farmers in developed countries. Countries import grain to supplement locally produced grains when rapidly increasing demand for grain outstrips local production. Livestock producers can then continue to expand output to meet local demands for livestock products. Without imports, domestic livestock producers would have only high-cost local grains, if available. Their production costs would rise, increasing the cost of livestock products to consumers.

NEWLY INDUSTRIALIZING COUNTRIES ARE THE FASTEST GROWING GRAIN MARKETS

Economic growth and rising incomes lead to trade. Prospects in developing countries differ by income group. Developing nations are classified here into four income groups: high-income OPEC (Organization of Petroleum Exporting Countries), newly industrializing, middle-income, and low-income countries. Each has widely differing development needs. But income growth is essential to all types for creating new export markets for U.S. farm products. The newly industrializing countries have accounted for most of the growth of grain imports by developing countries. These countries account for less than 25 percent of the total population in developing countries. The rest of the developing countries, the middle- and low-income developing countries, have the potential to also become strong growth markets for U.S. agricultural products if their economies prosper.

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OPEC, the highest income group (with per capita incomes ranging between $7,200 and $19,300), needs a stable and prosperous world market for its oil exports and a favorable international economy in which to invest its export earnings.

The newly industrializing countries, several of which have received substantial economic aid (technical and food assistance), no longer need direct aid. This assistance in the past sometimes helped develop their farm sectors. Their rapidly rising incomes in the 1970's produced most of the increase in grain imports to developing countries, as seen by their lowered self-sufficiency (fig. 2). These countries have increasingly relied on grain imports for over 15 years. The countries in this group have a total population of over a

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**Figure 2. Higher income developing countries are more dependent on imports for grains**

Although most low-income countries have rising productivity, their economies have not grown enough to bring them toward industrialization and higher incomes. These countries do not have the purchasing power to participate in world trade and are trending slightly toward self-sufficiency.

Diets in middle-income countries are beginning to include more animal and wheat products, which is opening the door to feed and food grain imports as demand outpaces production. These countries are trending away from self-sufficiency and can continue growth in imports as their economies industrialize and incomes rise.

The newly industrializing countries are no longer self-sufficient in grains and have been growth markets for the past two decades. Rapidly rising demand for meat and wheat products overwhelmed production so much that these countries shifted from net exporters of grains to net importers. These markets can continue growing as debt problems are eased and as developed countries import more products from the newly industrializing countries.

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* The ratio is grain production divided by the sum of grain production plus net imports. A country with no imports or exports will have a self-sufficiency ratio of 1.
half billion and per capita incomes ranging from $1,600 to $7,500. Farming provides jobs for 15–35 percent of the workforce and generates about 10 percent of their GNP. Further economic development depends on foreign investment and a strong international economy with few trade barriers for their exports. However, debt problems jeopardize the economic prospects of some of these countries, especially in Latin America.

Middle-income developing countries, with per capita incomes between $400 and $1,600, require foreign aid and foreign capital. These countries are making progress, but many of their 675 million citizens are still impoverished. Farming employs 40–70 percent of the workforce and provides 20 percent of their GNP. These countries need foreign capital for their economies to prosper.

Low-income developing countries, where per capita incomes are less than $400 per year, need economic aid (technical and food assistance). These countries are primarily agricultural, with 70–90 percent of their workforce in farming. Farming generates almost 40 percent of GNP. Many of the 1.4 billion people in these countries live in subsistence agricultural economies that often lack basic physical, educational, and social infrastructures. Their involvement in international grain trade is small relative to their large population. They do not produce much for export, so there is little money for commercial imports. Food imports are sometimes donations in the poorest of these countries. These countries also need foreign capital if they are to begin to climb up the economic development ladder that will eventually lead to commercial exports for U.S. agriculture.

Income Changes Self-Sufficiency, Need for Imports

Increased incomes, which have raised consumption above local production, are responsible for the declining self-sufficiency in grains shown in figure 2. The higher the income, the lower the self-sufficiency, and the more rapid the increase in dependence on imports.

The lowest income group has only slightly moved toward self-sufficiency over the past 25 years. These low-income countries import only 9 percent of all grain imports of the developing world, despite having half of the population. It is important to recognize that a low-income country's self-sufficiency may be due to a lack of purchasing power. India, for example, still has millions of undernourished people whose incomes are too low to afford an adequate diet. Potential demand far exceeds current production. Annual per capita GDP (gross domestic product) in India is about $270. A higher income level could dramatically boost India's present grain import position.

The middle-income group, the next step up the economic development ladder, is trending away from self-sufficiency. These countries are at a level where income is beginning to change diets to include more animal and wheat products.

The newly industrializing countries (NIC's) show how higher incomes dramatically affect trade. As incomes rose, the NIC's shifted from net exporters of grains to net importers. The rapidly increasing use of grains, and the need for imports to meet these demands, overwhelmed their exports. This group now imports 45 percent of the total grain imports by developing countries.

The highest income group is very dependent on grain imports. Their self-sufficiency ratio has fallen from 0.4 to 0.2. However, these OPEC countries and their populations are relatively small (less than 1 percent of the developing world); their grain imports account for 13 percent of the grain imports by the developing world.
Debt problems in developing countries jeopardize present trade, not just trade possibilities. Debt repayment problems have slowed the import growth in some developing markets and have brought others near an economic crisis. These problems must be addressed so the economies can be developed. Developing countries cannot solve these problems alone, as their economic position is closely linked with the rest of the world, especially through banking and trade. Developing countries need more foreign capital for the investments that produce economic growth.

Borrowing from international banks fueled the booming trade that produced the rapid income growth in the newly industrializing countries in the 1970's. Much of the borrowing was done under short-term, variable-interest-rate loans. These borrowed funds supplemented domestic savings, allowing larger investments than would have otherwise been possible. The investments raised productivity and incomes. The rising incomes raised demand for food, creating markets for agricultural imports.

These countries expected to repay their loans out of the increased output from their investments. But demand and prices for their exports fell with the 1981–82 recession, and interest rates on their variable-rate loans rose. Under this squeeze, many developing countries could not pay the interest and principal on their debt, threatening their own economies and U.S. banks.

These debt problems were initially viewed as banking problems. Loans to Latin America were more than 170 percent of the combined capital of nine large U.S. banks. Widespread default seriously threatened the U.S. banking system because loan losses could have made these banks insolvent.

However, the debt also threatened other U.S. interests, including agriculture. Loan defaults would have immediately shrunk markets for all U.S. exports to developing countries. New development capital would have dried up following default, limiting the income growth needed to create new markets.

Resolving the Debt Problems Would Spur Trade

The actions of debtor countries and their lenders to resolve this difficult situation could limit expansion of agricultural imports because debt payments compete directly for available export earnings needed to buy imports. Unless debtor countries can improve their balance of trade by increasing export earnings or can obtain additional long-term loans, they must either reduce annual debt service payments or they must reduce imports. Many have reduced their imports.

Reducing Annual Debt Service Payments

Lenders could address the immediate debt crisis by reducing or eliminating annual payments by stretching out repayment schedules on short-term loans, converting debt to equity investments or financial securities, lowering interest rates, or forgiving debt.

Restructuring Debt. Converting short-term debt into long-term debt would stretch out, and thereby reduce immediate, repayment schedules.

Debt-Equity Swaps. A swap would reduce the country's debt payments and remove a shaky loan from the bank (although the bank would face a loss from the discount). A foreign investor purchases the loan at a discount from the banker. The debtor country gives local currency to the buyer for the discounted loan. The currency is used to purchase assets in the debtor country. A debt swap reduces the investment cost for
foreigners by exchanging foreign currency for local currency at a better rate than in the financial markets. But use of debt swaps is likely limited because it is politically difficult for debtor countries to allow foreigners to buy large shares of local businesses.

**Fixed-Rate Securities.** Converting the variable-interest-rate loans into fixed-rate securities to be sold to investors would reduce the risk of another sudden rise in interest rates as happened in the early 1980's. Such a conversion would also reduce debt payments if the lenders agree to write off part of the converted loan. But investors will likely not buy securities for the full value of a shaky loan.

**Lower Interest Rates.** Lowering interest rates would also reduce the debt payments, but banks would likely bear the burden of the adjustment. For example, banks would have to cut the rates for borrowers because the U.S. Government likely would not lower U.S. interest rates primarily to solve the developing countries' debt problems.

**Forgive the Debt.** Banks hesitate to forgive debt because of political repercussions. If some countries are forgiven their debt, then other countries, including those able to meet their obligations, might also demand that their debt be forgiven.

**Improving the Trade Balance of Debtor Countries**

Many developing countries restructuring their debt are subject to International Monetary Fund (IMF) conditions to reduce imports and increase exports in order to raise export earnings available for debt-service payments. While these actions lead to long-term economic growth, they severely hurt trade in the short run. Therefore, these actions also limit exports from trading partners of developing countries and increase supplies in international markets. Debtor countries have two options to improve the balance of trade:

**Limit Imports.** Debtor countries can use tariffs, quotas, and other protectionist restrictions to promote the production and use of domestic products. But increased protectionism gives their consumers fewer choices, forces them to pay higher prices, and invites trade retaliation.

**Promote Trade.** A debtor country can also cut import expenditures by lowering the exchange value of its currency. Such a devaluation would raise the price of imports relative to domestic products, thereby encouraging their consumers to switch to locally made products. A devaluation also promotes exports because it lowers the country’s prices of their products to consumers in other countries. Economic policies to improve a country's trade balance by promoting exports are more effective than protectionist policies in promoting long-term national economic growth.

**FOREIGN CAPITAL AND TRADING PARTNERS ARE NEEDED FOR ECONOMIC GROWTH**

Foreign capital can help make the large investments needed for rapid economic progress. Developing countries generally have an abundance of low-cost labor and natural resources, but lack the capital needed to develop these resources.

Following World War II, capital flowed to developing countries largely from direct investments by multinational companies and from capital transfers by governments and international agencies such as the World Bank. But borrowing overshadowed direct investment in developing countries in the 1970's. Now they again need more direct foreign investment because commercial lenders are wary. Some countries are paying more on old loans from international banks than they are getting in new loans. This net capital flow out of developing countries could slow their economic development.
New capital will not flow into these countries, or stay, unless investors see improved prospects for economic growth. When economic conditions deteriorated in the early 1980's, citizens in developing countries invested large amounts of their capital in the United States and Western Europe. For example, capital exported by Venezuela in 1981–82 was 2.5 times larger than the increase in its foreign debt. Developing countries must create an environment favoring economic growth and investment in order to reverse the capital flow.

Industrialized countries can help these countries achieve their development goals. The United States has helped for humanitarian reasons, U.S. foreign policy objectives, and expanded overseas markets for U.S. products. Programs such as Public Law 480, general development aid through the U.S. Agency for International Development (USAID), and aid from various international agencies support those objectives. These programs sometimes focus on agricultural development in the low-income countries.

U.S. farm groups often question foreign aid programs when assistance goes for agricultural development elsewhere. This aid builds competition on the world market that will hurt U.S. farmers, they say. However, development assistance to agriculture is crucial to low-income countries. Agriculture is frequently the key sector for the initial stage of development. As the largest sector and largest employer in most developing countries, agriculture must develop if the total economy is to prosper. And, U.S. farmers can benefit from prospering economies overseas. For example, the University of Minnesota analyzed how rising agricultural productivity in low-income countries increases imports. They found that a 1-percent increase in agricultural productivity increases gross disposable product (GDP) 1.15 percent per person. A 1-percent increase in GDP per person in these countries increases agricultural imports 1.1 percent.

The United States has helped developing countries as a good trading partner. Economic growth in developing countries in the 1980's depended heavily on U.S. imports of their products, such as tropical crops not grown in the continental United States (coffee and tea) and many manufactured products. The United States consumes 60 percent of exports of manufactured goods from developing countries, compared with 40 percent in 1980. The dollars these countries earned selling their products in the United States helped pay for imports of U.S. agricultural products.

Because some of these exports compete with U.S. products, nonagricultural interests in the United States are calling for increased protectionism. These calls for increased protectionism threaten U.S. agricultural exports to developing countries. Limiting developing countries' exports to the United States will not help these countries obtain the U.S. dollars they need to service their debts and buy more U.S. agricultural products.

U.S. PRICES MUST BE COMPETITIVE

Markets in developing countries have been growing, partly because of U.S. development assistance in the past and income earned from U.S. imports of their products. But U.S. farmers have not reaped all the benefits from development assistance and trade because U.S. grain export prices have been too high. Economic growth creates the markets, but competitive prices ensure a share of those markets. Although the markets grew, farmers in other countries captured increasing shares. U.S. policies must maintain prices that are low enough to compete in oversupplied world markets.

The present situation is quite different from the booming world demand in the 1970's. Only the United States had the capacity to respond to the surging world demand for grain. The United States gained over 75 percent of the 100-percent increase in world grain trade when U.S. farmers rapidly increased production by bringing in land that had been idled during the 1960's land diversion programs.
The world trading environment changed in the 1980's, however (see box). The United States lost market share when it held export prices to developing countries steady in the face of fierce competition from the increasing surpluses in the industrialized countries, particularly the European Community (EC) (fig. 3).

Changes in U.S. agricultural policies are now helping the United States regain its share of grain markets. The Food Security Act of 1985's loan rate reductions, marketing loans, and generic certificates are lowering U.S. export prices, making the United States more competitive in developing countries. U.S. trade competition, especially from the falling value of the U.S. dollar and lower U.S. grain export prices, has increased the EC's costs of maintaining the subsidies needed to sell its surplus grain. The extent to which the EC maintains its current grain exports under U.S. competition is a political decision, which will depend on whether the EC increases export subsidies enough to offset the lower U.S. prices and the falling dollar.

U.S. prices also affect developing countries. Rising export prices signal potential producers that there is a relative shortage of a commodity. Domestic policies designed to benefit U.S. farmers by artificially raising commodity prices send self-defeating signals to the world. If U.S. prices rise, developing countries will be encouraged to increase production of crops that U.S. farmers produce and export.

Figure 3. U.S. share of grain imports by developing countries

Grain markets in developing countries have been growing, but farmers in other countries captured a large share during the 1980's. The U.S. share has fluctuated widely since the 1960's, but the downturn from the early 1980's has reversed. Recent adjustments have reduced production costs and lowered prices, enabling the United States to recapture its long-term share of coarse grain markets in developing countries. [The ratio shows imports from the United States divided by total imports (3-year averages).]
Domestic Policies Yield International Consequences

Agriculture is a global industry in which a country's domestic actions have international effects. Agricultural policies, implemented by one country to help solve its domestic agricultural problems, affect not only that nation's own trade, but trade among other countries as well. Many industrial market countries apply policies to reduce the pain of agricultural adjustment to economic development or other changes, and also to ensure a national food supply in an international crisis. These policies have contributed to a buildup of grain stocks in some developed countries and to low grain prices worldwide.

Developed countries commonly use prices and other policy measures to support farmers' incomes and slow the migration of people out of agriculture. When domestic support prices are fixed above international market-clearing prices, excess land, labor, and capital are kept in production, often leading to surpluses. These surpluses go into storage (often government-owned) or are exported using subsidies.

Relief from current surpluses in the United States and other developed countries is unlikely to come from growth in domestic demand. In the EC, for example, agricultural production has been rising almost 2 percent a year since the late 1960's. However, EC annual consumption has been rising only about 0.5 percent. The EC switched from being a major net importer of grains to being a major exporter. This dramatic shift took a large market from U.S. farmers, and resulted in fierce competition for markets in the developing countries.

In high-income developed countries, the output of many basic food commodities increases faster than consumer demand. Their consumers do not want a greater physical quantity of food; increases in consumer expenditures with rising incomes in high-income countries are for variety, improved quality, and more processing and retailing services with food. Agricultural productivity, however, continues to advance with the introduction of new technology.

The cost advantages of this new technology often require larger farms, thus substituting capital for farm labor. This substitution is a longrun characteristic of agriculture under economic growth. To slow the exodus of people from agriculture, policymakers in the United States, as well as in other developed countries, have often supported agricultural incomes with price supports.

If price supports are set above international prices, import restrictions or tariffs are needed to prevent or control an increase in imports of the protected commodities (such as sugar in the United States). Export subsidies are needed when production exceeds domestic use and the government does not want to store the surplus (such as wheat in the EC).

Export subsidies directly affect the trade performance of other countries and can force them to adopt offsetting policies. For example, the EC's export subsidies kept wheat prices competitive enough to enable the EC to take foreign markets away from other exporters. The United States recently modified its policies and programs in an attempt to regain lost market share.
SUMMARY

U.S. farmers face shifting grain markets in developing countries. Markets for some commodities disappear as agriculture in developing countries becomes more productive, raising yields and output of those crops in which they have an advantage. New markets appear and grow as rising incomes from economic development transform a potential demand for better diets into actual demand. Grain exporting countries such as the United States can benefit from rapid economic growth and industrialization in developing countries because few developing countries can improve their agriculture fast enough to keep up with rapidly rising demands for improved diets.

Developing countries are likely growth markets for agricultural exports. The best U.S. strategy for increasing exports to these countries is to encourage economic growth there and to competitively price grain exports. Because of agriculture's large contribution to gross national product (GNP), economic progress in developing countries requires development in their agricultural as well as nonagricultural sectors.

During the boom of the 1970's, the United States captured a large share of these growing markets. During the early 1980's, the U.S. share declined because of a lack of price competitiveness. Now, because of recent changes in U.S. policies, U.S. agriculture has become more competitive and is beginning to recover its market share in developing countries.

Debt repayment problems have slowed the economic growth underlying some of these markets. Short-term measures are needed for economic development to continue and to avoid an actual crisis. In the longer term, more capital needs to go to developing countries for the investments that produce economic growth. The resulting economic growth should benefit U.S. farm exports, if priced competitively.

FOR ADDITIONAL INFORMATION. . .

Contact Gary Vocke at (202/786-1705), Agriculture and Trade Analysis Division, Economic Research Service, U.S. Department of Agriculture, Room 828, 1301 New York Avenue, NW., Washington, DC 20005-4788. Also see . . .


Current debate on farm policy is based on conflicting reactions to the 1985 Food Security Act. A decision made on behalf of one group may have unanticipated or adverse effects on others. This bulletin is one in a series published by USDA's Economic Research Service aimed at informing those debating farm policy about the highly interrelated nature of agricultural policymaking. For more information on upcoming bulletins, write to ERS Information, Room 237, 1301 New York Avenue, NW., Washington, DC 20005-4788.