FAO

Forces Shaping Global Food Demand & Agricultural Trade

Recent shifts in trade patterns reveal dramatic changes in global food demand that will likely continue well into the future. Driving these shifts are changes taking place in both developing and developed countries, particularly income growth. Food purchasing power has increased for most consumers in the world as average real per capita income levels doubled from 1960 through 1998. In some countries with limited natural resources, food imports have helped lower domestic prices and thereby increased purchasing power. Growth in urbanization, interest in food quality, and concerns about food safety standards are also shaping demand and influencing future prospects for food consumption and international trade.

Changing Composition Of Agricultural Trade

The composition of world agricultural trade by commodity has been evolving over the last two decades. Bulk commodities (primarily grains and oilseeds) now make up less than 30 percent of the value of world agricultural trade, compared with 41 percent in 1985. Trade in intermediate processed products (semiprocessed bulk commodities like vegetable oils, meals, and flours) has kept pace with the overall level of world agricultural trade. Processed consumer-oriented products such as meat, beverages, bakery products, and snack foods make up a growing share of global food trade. Fresh horticultural products, because of their perishability, remain a small share of trade despite technological advances that preserve quality during transit and extend shelf life.

Import demand for bulk commodities is tied more closely to increased caloric intake and population growth than is demand for processed consumer products. Developed countries' value of bulk commodity imports is stagnant, but bulk imports by developing countries are growing, rising to over 50 percent of world bulk trade in 1995 from near 40 percent in the 1980s. Imports of both food grains and feed grains by developing countries have grown steadily, while growth in nonbulk imports by developing and developed countries (4.5 percent and 4.6 percent) has remained nearly constant over the last two decades.

Sustained import growth of nonbulk commodities by developed countries raises the question of whether population growth and increasing food consumption are the sole drivers of trade in processed products. Growth in two-way trade of high-value food products has boosted global food trade as individual countries export and import similar and competing products. Given this phenomenon, trade can expand without growth in consumption. An example of growth in intra-industry trade between high-income countries is the U.S. exporting high-quality beef at the same time it imports a greater volume of lower quality beef. Similarly, the U.S. imports high-value dairy products—mainly in the form of cheese—but exports lower valued dairy products such as powdered milk and whey products. And demand for foreign brands of packaged or bottled products has made beverages one of the faster growing categories in world food trade.

Shifts in the composition of U.S. agricultural exports have been particularly dramatic. In 1980, bulk exports accounted for nearly 70 percent of the value of total U.S. agricultural exports but the share declined steadily to less than 40 percent in 1998. With relatively low bulk prices in the late 1990s and with slow volume growth, the value of U.S. bulk trade in 1998 was below the value in 1980. As world demand for meat expanded, U.S. meat and meat product exports multiplied sevenfold—from $900 million in 1980 to $6.5 billion in 1998, and the meat share of total U.S. agricultural exports grew from 2.1 percent to 12.6 percent.

Income & Food Consumption

Income growth and subsequent changes in food consumption are key elements of shifts in global food demand and trade patterns. Real per capita income grew by almost 100 percent, on average, among most countries during the last four decades. Although real per capita income in 1998 was just over US$500 for low-income countries compared with almost US$28,000 for high-income countries, income growth among developing countries between 1961 and 1998 (221 percent for lower income developing countries) has generally surpassed that for the developed countries (173 percent for higher-income developed countries). Large gains in per capita income have resulted in significant changes in food consumption patterns, especially for higher income developing countries.

Often the best available measure of food consumption is the supply or availability of food in a market. Per capita global food availability has increased from about 2,255 calories per day in 1961 to 2,792 in 1998. In addition to a general increase in total available foodstuffs, the basic sources of calories are changing, with animal and horticultural products accounting for a growing share of total calories consumed. Per capita global availability of meat and of fruits and vegetables increased by more than 60 percent between 1961 and 1998, while the supply of roots and tubers decreased by over 21 percent. World cereal supply also increased by almost 17 percent during the same period.

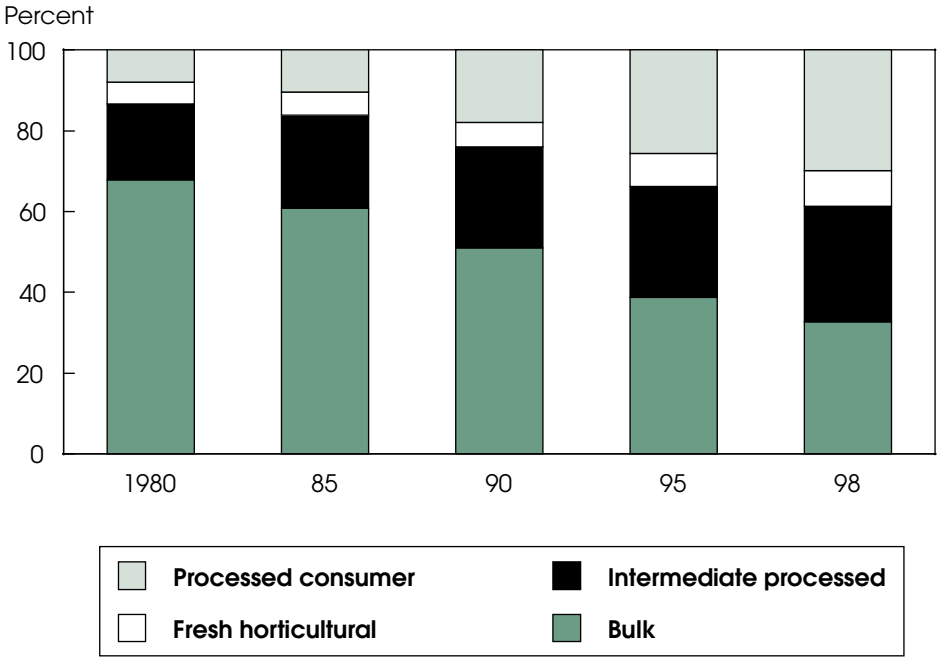
Shifts in food consumption patterns tend to vary among countries based on their level of economic development. At the highest income levels, per capita consumption (as indicated by food availability) of both cereals and roots and tubers decreased between 1961 and 1998, while consumption of meat and produce increased substantially. In low-income countries, where food security remains a concern despite recent economic gains, decreases in root and tuber availability were more than offset by dramatic increases in per capita supply of all other food types.

Despite these gains, per capita availability of meat and fruit and vegetables in low-income countries remains far below availability in middle- and high-income countries. With the exception of roots and tubers, food supply substantially increased in middle-income countries. In contrast to high-income countries, consumption of cereals in all developing countries continued to increase during 1961-98, by almost 32 percent in low-income and 12 percent in middle-income countries. Demand for livestock feed resulting from rising demand for meat accounted for part of the increase.

Differences in total food availability between developed and developing countries are also reflected in their respective food budget shares. In low-income countries, food accounts for a greater portion (47 percent) of consumers' total budget than in wealthier countries where, on average, food expenditures account for only about 13 percent. Staple food products such as cereals, fats and oils, and fruits and vegetables account for larger shares of the total food budget in low-income countries than in high-income countries. (Because data for fruits and vegetables include roots and tubers—cereal substitutes in poorer countries—they are categorized here as staples.) Meat and dairy account for a greater share of the food budget in high-income countries.

Estimates of countries' responses to income shocks can be used to assess future global food needs. Forecasts of food demand, trade, and demand for associated transportation and infrastructure facilities assist policymakers in allocating

Bulk Commodities Make Up a Larger Share of U.S. Agricultural Exports. . .



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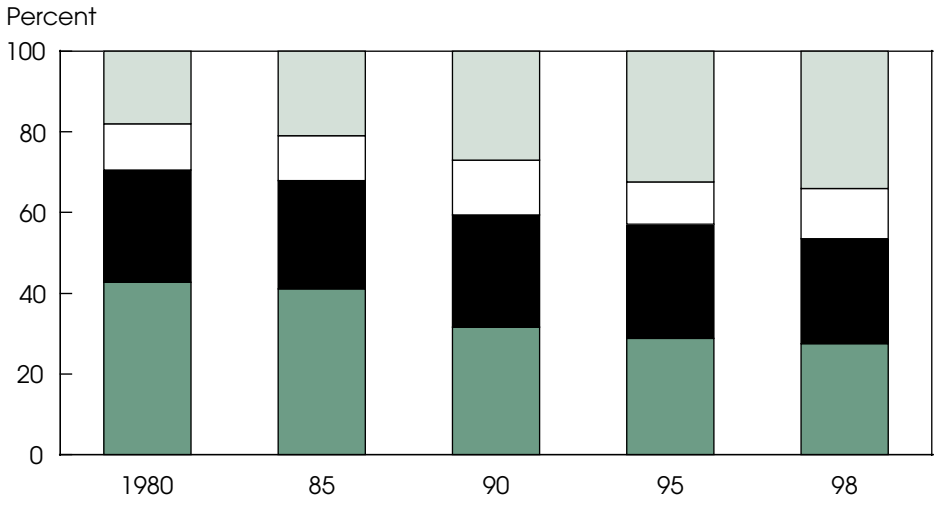

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resources. Income elasticity of food items—a measure of responsiveness of quantity of food demanded to a unit change in income—is greater in poorer countries than in wealthier ones. This means that when income rises, increases in food consumption expenditures are greater in poorer countries than in wealthier countries, and the consumption changes are not distributed evenly across all food groups. With income gains, low-income countries increase food consumption spending most on higher value items such as fish and dairy and least on cereal consumption.

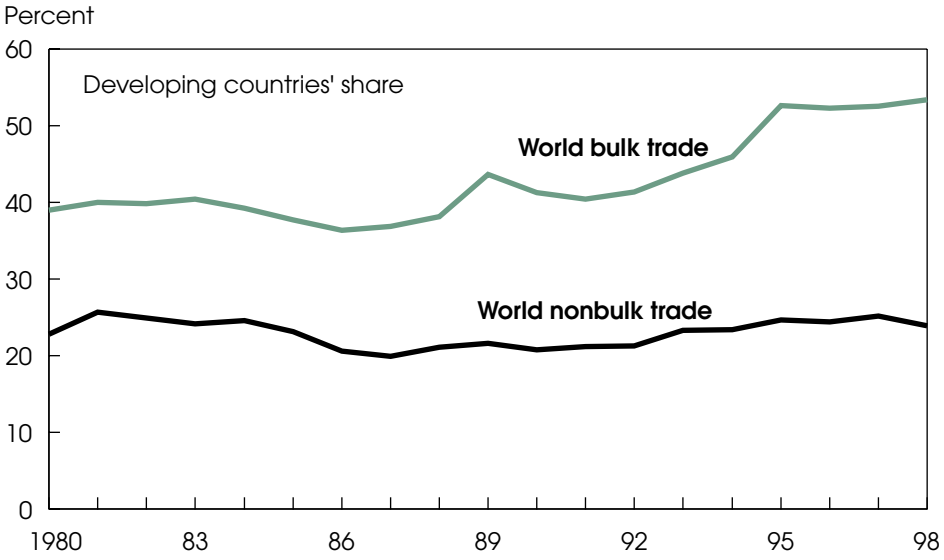
Urbanization & Food Consumption

Food preferences change as populations become more urbanized. Because of urban/rural differences in lifestyles, demands on time, food availability, and disposable income, the diets of urban and rural residents generally differ significantly. Consumers in urban areas have better marketing facilities and a greater supply of products from domestic and foreign producers than consumers in rural areas. Urban occupations are often associated with higher pay scales than rural areas, which are often highly dependent on low-paid agriculture.

Moreover, given the subsistence nature of agriculture in many developing countries, food consumption choices in rural areas are often constrained by residents' ability to sell their output because the income is used to purchase other food. With economic opportunities in urban areas more numerous than in rural areas and a greater percentage of women in the labor force, studies indicate that the increased opportunity cost of meal preparation increases demand for nontraditional "fast food" in many countries.

The effects of urbanization on diet differ from country to country. For poorer countries, urbanization may initially lead to substitution of marketed staple cereals and processed foods for basic rural staples such as rice and cassava. For example, FAO data for the 1970s and 1980s indicate significant increases in wheat consumption in urban China and India along with decreases in coarse grain and rice consumption. Further, wheat consumption increased somewhat in rural areas while rice consumption remained stable. With further gains in income levels, food consumption expenditures may rise and shift toward increasingly expensive sources of nutrients such as meat, fruit, and vegetables, instead of staples such as cereals prepared at home.

Developing Countries' Imports Account for a Growing Share of World Trade in Bulk Commodities



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Alternate demands for time in dual-income households have resulted in increased preferences for higher value, more processed products in many higher income countries. In addition, demand for quality and increased awareness of health and safety issues have significantly changed food consumption patterns in wealthier countries. For example, due partly to health concerns and to relative prices, the red meat share of total U.S. meat consumption declined from 79 percent in 1970 to 62 percent 30 years later, while the poultry share increased from 21 to 38 percent. Similarly per capita fruit and vegetable consumption in the U.S. increased 25 percent between 1977 and 1999.

Future growth in the urban population is particularly important in developing countries. In 1960, developed countries accounted for about one-third of the world's urban population. However, by 1998, developed countries accounted for only about one-fifth of the 3.4 billion global urban population. Assuming continuation of growth rates seen in the 1990s, urban population in developing countries can be expected to double to nearly 4 billion by 2020. Therefore, the effects of future dietary changes associated with urbanization will be most evident in developing countries.

Demand for Food Quality & Safety

Increased affluence and education are changing consumers' choices of food products in developed countries, and standards for quality and safer food products increase with a nation's wealth. Countries vary in how they perceive and handle risks from disease-causing organisms, based generally on access to and use of advances in science, detection technology, and mitigation methods. Accordingly, wealthier countries with more information about food safety risks tend to establish more stringent food safety standards for both domestically produced and imported food. And lower income countries are more concerned with sufficient food availability.

Percentage Rise in Meat Availability in Low-Income Countries Far Surpasses Rest of World

	1961	1970	1980	1990	1998	1961-98 change
		Kg/capita/year				*Percent*
Cereals						
Low-income countries	128.5	148.2	157.1	173.1	169.4	31.8
Middle-income countries	125.0	131.0	139.9	142.2	139.8	11.8
High-income countries	122.3	111.7	107.3	108.1	112.9	-7.7
World	135.3	143.8	149.6	159.9	158.2	16.9
Roots and tubers						
Low-income countries	20.5	21.4	18.2	14.8	16.1	-21.5
Middle-income countries	14.6	14.1	12.4	11.7	13.1	-10.3
High-income countries	17.4	15.4	14.6	14.6	14.8	-14.9
World	19.0	19.1	16.3	14.0	14.9	-21.6
Fruits and vegetables						
Low-income countries	71.8	60.6	65.0	90.8	108.9	51.7
Middle-income countries	117.5	128.3	150.8	156.9	161.9	37.8
High-income countries	152.7	176.9	186.8	216.2	223.7	46.5
World	101.5	103.8	111.8	127.8	169.2	66.7
Meat						
Low-income countries	5.3	7.6	10.0	14.7	22.2	318.9
Middle-income countries	22.7	26.9	33.6	37.7	39.8	75.3
High-income countries	54.2	64.8	76.1	80.7	85.8	58.3
World	24.5	28.5	32.2	33.6	39.4	60.8

Countries grouped according to World Bank income definition. World average may not necessarily correspond to average of the three income groups because Yugoslavia and many countries of the former Soviet Union are not included in the income groups.
Source: FAO Food Supply Data, 2001.

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Major incidents of illness associated with food consumption have greatly increased consumer concern about food safety in recent years, leading to lasting changes in consumer perceptions and food purchasing patterns in certain developed countries. For example, recent outbreaks in Europe of bovine spongiform encephalopathy (BSE)—known as "mad cow disease"—have led to dramatic declines in beef consumption there and significant economic losses for associated industries. In the first year of the crisis, the UK's total economic loss from BSE was estimated at US$1.2-1.6 billion.

Disease outbreaks have also fostered consumer interest in purchasing organically produced foods, supporting production processes that are "environmentally friendly," and encouraging farming operations that take animal welfare concerns into consideration, though these activities may not necessarily factor into protection from disease transmission. Worldwide markets for organic foods—though small—are expanding, and interest in organic foods is greatest in higher income, better educated population segments in nearly every country. As many as 20 to 30 percent of consumers surveyed in Europe, North America, and Japan report purchasing organic foods regularly. Sales of organic foods have risen 15 to 30 percent in Europe, the U.S., and Japan for more than 5 years. Animal welfare concerns have led to changes in food production and marketing. For example, in most Western European countries, new regulations impose restrictions on livestock and dairy producers and processors, besides detailing conditions under which farm animals may be raised, fed, and slaughtered.

The public and private sectors are responding to consumer demand for quality and other attributes by developing and implementing mandatory and voluntary schemes for quality control management and assurance. These schemes—adopted at the national or regional level—are causing changes in the way food items are produced, marketed, and traded in Europe, and to some extent in the U.S. Quality assurance schemes, besides developing standards for production, processing, and transport, may include standards for environmental management practices. Among the potential outcomes of imposing standards is an increase in agricultural production costs. For example, a standard requiring producers to limit the number of animals in a given area means either that additional land must be purchased or that fewer animals may be kept, and the associated increase in per-unit cost may result in higher prices for the consumer. Many consumers may value the added benefits to society from production process standards and may be willing to pay for these benefits. But some consumers may prefer to purchase a cheaper foreign product that is not subject to the same standards and thus costs less to produce.

In general, any policy that imposes costs on domestic firms that foreign firms do not face can potentially put the domestic firms at a disadvantage. Domestic firms understand the consequences of differences in regulation among countries, and sometimes apply political pressure on legislators to block imports from countries that do not have similar regulations or to at least take some policy action to reduce the competitive advantage of less regulated foreign suppliers.

What's Ahead for Global Food Consumption & Trade?

As food consumption reaches a state of maturity in developed countries, developing countries will no doubt play a more important role in world agricultural trade. This trend is already evident in bulk trade. Population and income growth will create additional demand for food in developing countries, but limited resources will likely constrain food production in some of them. Unless agricultural productivity growth accelerates, developing countries will have to rely partly on imports in the foreseeable future to satisfy their growing food demands. What is less certain is exactly how the composition of world trade is likely to change.

Developing countries will represent a larger share of the world market and will be the major force driving trade in bulk grains. Nevertheless, it is unlikely that growth in bulk trade will exceed growth in nonbulk trade. Rising per capita incomes in developing countries over the coming decade will lead to greater demand for high-value products and less

World Agriculture & Trade

Food Share of Household Budget Is Larger for Low-Income Consumers…

	Budget share for food, Consumer income level		
	Low	Middle	High
	Percent		
Total food	47	29	13
Cereals	28	20	16
Meat	18	22	25
Fish	5	5	6
Dairy	9	13	14
Oils and fats	7	5	4
Fruits and vegetables	23	21	20

…Who Also Cut Food Spending More When Income Falls

	Income elasticity of food, Consumer income level		
	Low	Middle	High
	Percent		
Total food	0.73	0.58	0.29
Cereals	0.56	0.41	0.19
Meat	0.82	0.65	0.33
Fish	2.77	0.92	0.43
Dairy	0.93	0.71	0.35
Oils and fats	0.58	0.43	0.21
Fruits and vegetables	0.66	0.53	0.27

Income elasticity of food is change in food expenditures per unit change in income.

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demand for basic products. For example, livestock product consumption is likely to grow faster than food grain consumption. USDA's baseline projections indicate that world wheat trade will grow by only 1.7 percent annually during 2000-10 compared with about 2.5 percent per year for world meat imports.

In wealthier countries, consumer access to adequate quantities of food is generally not an issue, and consumers are increasingly turning their attention to the quality of food—i.e., a greater variety of foods made with certain production techniques, meeting established safety standards, or complying with regulations. Differences in food production and processing regulations among countries and acceptance or recognition of standards among trading partners can create challenges in global food trade. Recognizing these challenges, many countries are currently working toward multilateral solutions. Consumer quality concerns and multilateral rules governing quality issues will likely be among the key factors shaping future agricultural trade. AO

Anita Regmi (202) 694-5161
and Mark Gehlhar
aregmi@ers.usda.gov
mgehlhar@ers.usda.gov

Upcoming report from USDA's Economic Research Service

Changing Structure of Global Food Consumption and Trade

Watch for it this month on the ERS website

May Releases—USDA's Agricultural Statistics Board

The following reports are issued electronically at 3 p.m. (ET) unless otherwise indicated.

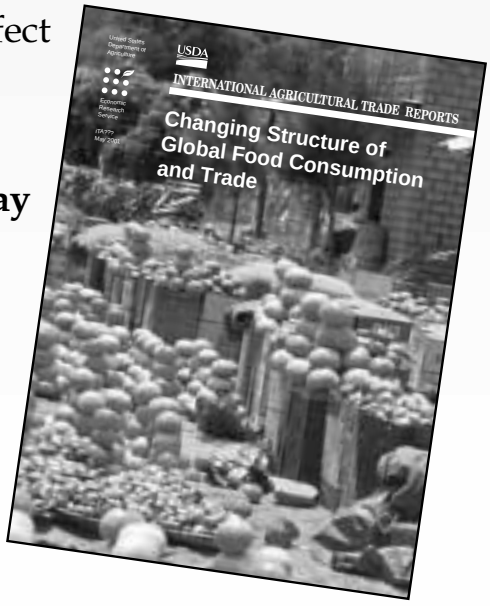
May

1 *Weather - Crop Summary (12 noon)*
2 *Broiler Hatchery*
3 *Egg Products*
4 *Dairy Products Prices (8:30 a.m.)*
Cattle Predator Loss
Dairy Products
Poultry Slaughter
7 *Crop Progress (4 p.m.)*
8 *Weather - Crop Summary (12 noon)*
9 *Broiler Hatchery*
10 *Cotton Ginnings - Annual (8:30 a.m.)*
Crop Production (8:30 a.m.)
11 *Dairy Products Prices (8:30 a.m.)*
Milkfat Prices (8:30)
14 *Potato Stocks*
Turkey Hatchery
Crop Progress (4 p.m.)
15 *Weather - Crop Summary (12 noon)*
16 *Agricultural Chemical Usage - Field Crops*
Broiler Hatchery
Milk Production
18 *Dairy Products Prices (8:30 a.m.)*
Cattle on Feed
Cold Storage
Farm Labor
21 *Crop Progress*
22 *Weather - Crop Summary (12 noon)*
Chickens and Eggs
23 *Broiler Hatchery*
Catfish Processing
Livestock Chemical Usage - Sheep
Monthly Agnews
25 *Dairy Products Prices (8:30 a.m.)*
Milkfat Prices (8:30 a.m.)
Livestock Slaughter
Monthly Hogs and Pigs
29 *Crop Progress*
30 *Weather - Crop Summary (12 noon)*
Broiler Hatchery
Peanut Stocks and Processing
Pest Management Practices
31 *Agricultural Prices*

An upcoming report from the Economic Research Service. . .

Changing Structure of Global Food Consumption and Trade

- How higher income, urbanization, improved transportation, other demographic shifts, and consumer perceptions about quality and safety are changing global food consumption patterns.
- Why world food demand projections differ if they account for urbanization, and how urbanization affects caloric requirements and food availability.
- How advances in transportation technology partly explain for shifts in the composition of U.S. agricultural trade from bulk commodities to nonbulk items, including perishable products.
- What caused the shift in U.S. diets from beef toward chicken over the last 30 years.
- Which factors contribute to higher fruit and vegetable consumption.
- How food safety concerns affect international trade.
- Why interest in organic foods is expanding worldwide among higher income, better educated populations.
- How animal welfare laws will affect consumers worldwide.
- How concerns over food quality and safety will affect market structure, international competitiveness, and trade.



For release in May

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