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Food Price Volatility and Insecurity

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Introduction

In 2008, food prices globally rose to unprecedented levels. They continued to climb and stayed relatively high until mid-2011, when prices considerably [exceeded 2008 levels](#). Many factors influence food price volatility, including agriculture and energy policy, commodity prices and market speculation, extreme weather events, rising global demand, and falling surplus stocks. Without increases in agriculture production and improvement in food distribution, the world will have trouble feeding a growing population in the next two decades, much less ending hunger under [the UN Millennium Development Goals](#). The G20 meeting in November 2011 is expected to focus on ways to improve [food security and lessen price volatility](#).

The Global Food Market

Just fifteen food crops make up [90 percent of the world energy](#) intake, according to the UN Food and Agriculture Organization (FAO), with rice, maize (corn), and wheat comprising two-thirds of that number. The world grows [more grains \(PDF\)](#)--also known as cereals--than any other crop type. Much of the global increase in food prices stems from staple grains, which in some countries can represent more than half of calorie intake. Global wheat, corn, and sorghum prices increased [more than 70 percent](#) between June and December 2010, according to the World Bank. Because grains also represent a major food source for livestock, higher grain prices have contributed to higher dairy and meat prices.

A June 2011 report to G20 agriculture ministers from ten major NGOs, including the World Trade Organization, the World Bank, and the UN World Food Program notes that by 2050, [food demand \(PDF\)](#) will have increased by between 70 percent and 100 percent to meet a projected population growth of at least 2.5 billion additional people. "This alone is sufficient to exert pressure on commodity prices," the report notes.

Growth in agriculture production is largely expected to come from increased crop yields and will primarily be located in developing countries, according to a [2009 UN report \(PDF\)](#). Experts say there is plenty of opportunity to improve farming techniques in the developing world. Meeting projected demand will require increasing cereal production by an additional one billion tons, up from more than two billion tons currently, and more than doubling meat production from current levels. However, according to a 2011 report by the OECD, [annual growth in agriculture production \(PDF\)](#) in the next decade is forecast to be a third less than the annual growth in the previous decade. The report estimates that a 5 percent increase or decrease in harvest yield in major grains can lead to as much as a 25 percent difference in price.

Food Price Volatility

"[T]he crux of the food price challenge is [about price volatility](#), rather than high prices per se," writes Homi Kharas, senior fellow for food policy at Brookings Institution. According to the FAO, price volatility has been [extremely rare](#) in agricultural markets, but the global food system is becoming [increasingly vulnerable to it](#). The 2011 NGO report argues that "volatility becomes an issue for concern and for possible policy response

when it induces risk-averse behavior that leads to inefficient investment decisions and when it creates problems that are beyond the capacity of producers, consumers, or nations to cope."

Some contributors to volatility include:

- **Energy Prices and Biofuels.** Oil prices have experienced record highs in the last five years. Fuel is used in several aspects of the agricultural production process, including fertilization, processing, and transportation. According to [data from the U.S. Department of Agriculture](#), the U.S. farm industry's total expenditures on fuel and oil rose 22 percent in 2010. The OECD estimates that the slowdown in agriculture production in the next decade will primarily come from higher fuel and fertilizer costs.

The world has experienced a major growth in biofuel production, in part due to higher fuel prices, particularly in the United States. However, some argue that biofuels compete with food production and negatively impact prices. U.S. increases in corn production have largely gone to ethanol rather than to human consumption or animal feed. Corn-based ethanol rose from 15 percent of total U.S. corn production in 2006 to an estimated 40 percent in 2011. The 2011 NGO report recommends G20 countries [end biofuel mandates and subsidies \(PDF\)](#) and open "international markets so that renewable fuels and feed stocks can be produced where it is economically, environmentally, and socially feasible to do so." In June 2011, G20 agriculture ministers agreed on [measures to lift global food production](#) and improve supplies, but skirted the issue of biofuels, simply saying they would "continue to address the challenges and opportunities posed by biofuels."

- **Grain Stocks.** Increased use of grains to meet the demand for meat and biofuels has largely contributed to a [major increase in cereals demand \(PDF\)](#), writes Brian D. Wright, at the International Food and Agriculture Trade Policy Council. Grain reserves--carryover supplies that can provide a cushion for market fluctuations and seen as an indicator of market tightness--have declined significantly, falling from a [roughly 110-day supply](#) before 2000 to a sixty-four-day supply in 2007-2008. Wright notes that low stocks contribute to the kind of price shocks seen in 2008 and 2010-2011. Researchers from the FAO note that "ample and highly liquid commercial stocks held by major international suppliers appear a necessary and sufficient condition to instill confidence in world markets and to lessen the probability of future bouts of [extreme global volatility](#)" (PDF). However, other analysts have dismissed stocks as [an important factor in higher prices \(PDF\)](#).
- **Population Trends.** The growth of the middle class in developing countries has increased demand for food generally and for meat in particular, placing greater pressure on grain consumption. [Meat, dairy, and oils \(PDF\)](#) are expected to rise from about 20 percent of current calorie intake in developing countries to nearly 30 percent in the next forty years. Livestock feed currently represents about [65 percent of consumption \(PDF\)](#) of coarse grains (corn, sorghum, and barley), according to the FAO. A number of experts say the growth in meat consumption harms overall food security, since the production of one serving of meat takes more land, water, and energy than the production of a serving of corn or rice. Growing urbanization, particularly in the developing world, contributes to lifestyles that include higher [consumption of meat and commercial foods \(PDF\)](#). As more people leave rural areas for cities, a lack of investment in modernized farm equipment and irrigation techniques increases the burden on developing-world farmers, precisely as they dwindle in number and need to increase production capacity.
- **Commodities Markets.** Similar to the debate over [oil prices](#), non-sector participants--like pensions and hedge funds--in the agricultural markets are considered by some to be a driver of price volatility. Critics argue that such speculation should be curbed, because food access is ultimately a humanitarian issue. Others say market speculators are reacting to uncertainty rather than driving it. "Speculators make money out of understanding and providing insurance against volatility," writes Brookings' Kharas. "The volatility inherent in the food marketplace causes speculation, not the other way around." Still, a June 2011 report from Oxfam says that it is possible excessive speculation can [temporarily amplify volatility \(PDF\)](#) and contribute to food price bubbles. Many experts have said one way to lower uncertainty caused by commodities' trading is to increase markets' transparency and get countries to accurately report food stocks. Since commodities are pegged to the dollar, the currency-exchange rate volatility seen in recent years also has had an impact on food prices.
- **Weather and Climate Change.** Disasters such as drought and flooding can cause catastrophic damage to crops. A string of recent bad weather in 2010 and 2011 and related disasters such as wildfires in some of the world's biggest food exporters, such as in Russia and Australia, have helped raise prices to record levels. Climate change is forecast to spur more [crop-damaging weather events \(PDF\)](#) and impact water supplies and the availability of arable land, especially in the developing world. Countries in South Asia and parts of Africa, some of which have the world's fast growing populations, could lose more than 5 percent of their growing season, the FAO forecasts, placing an estimated 370 million people in jeopardy due to diminished food security. These regions already contain large populations considered chronically hungry. Experts say policies and technologies to adapt crops to climate change and increase water supplies will be needed.

- **Trade policy.** Most crops do not cross national boundaries; few have international trade rates higher than 20 percent of what is grown. However, prices and export controls can disproportionately impact import-dependent countries. "[F]ood price inflation is not simply the result of supply and demand," says a [June 2011 Oxfam report \(PDF\)](#). "[A] more globalized food system equals a more interdependent one too-- which makes the system vulnerable to zero-sum games when governments or other key players succumb to panic or herd behaviors." According to the UN's World Food Program, over forty countries in 2008 imposed some form of export ban in an effort to increase domestic food security. Many economists say hoarding, particularly in some rice-producing countries, exacerbated the 2008 food-price crisis. Following a 2010 drought and wildfires, Russia limited exports of wheat and wheat [prices more than doubled](#), according to the World Bank.

Food Security and Policy Implications

Higher food prices have the greatest impact in developing countries. "[F]or the planet's poorest two billion people, who spend 50 to 70 percent of their income on food, these soaring prices may mean going [from two meals a day to one \(ForeignPolicy\)](#)," writes Lester Brown, president of the Earth Policy Institute.

Aid groups including the UN World Food Program point out that rising food prices have increased the number of chronically hungry people by [at least forty-four million people](#) since June 2010 and jeopardize efforts to reduce global hunger. Record high prices also contributed to unrest in a number of countries in both 2011 and 2008. Wheat prices in the Middle East, for example, are considered a contributing factor [to the 2011 uprisings](#) in the region, and dozens of countries in 2008 experienced civil unrest, ranging from protests to riots, because of food prices.

The G20 2011 agenda includes ways to combat volatility in [agricultural and energy markets](#), which suggests the need for better regulation of financial markets and better management and prevention of food crises. A [task force of the World Economic Forum](#) suggests the G20 examine ways to: develop a global system to monitor information on food production and consumption, reserves, and price levels; increase the environmental sustainability of agriculture; target technology innovation and distribution; find strategies for reducing the impacts of volatility on the poor; and increase agriculture sector investment.

"To meet demand, every aspect of farming, of harvesting, of delivery of harvested goods and distribution has to improve dramatically," says CFR's Laurie Garrett, who calls the waste in some developing countries staggering. "[Developing countries] need efficient, scalable farming and to get what's farmed from remote rural areas into big distribution centers where farmers can not only realize value for their goods, but get the goods [into] the global food chain."

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