

# The Main Street Economist

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## WHAT IS DRIVING FOOD PRICE INFLATION?

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Retail food prices surged in 2007, posting their highest gains in almost two decades. Robust food demand, record high crop prices, and accelerating costs for labor and energy fueled the sharp gains in retail food prices. The stage is set for another round of price gains in 2008.

Today's momentum in food prices may be signaling a new era of even higher food prices in the future. Supplies of agricultural commodities are expected to tighten further as worldwide populations grow and incomes rise, boosting demand. As in the past, keeping food prices in check will depend on whether agriculture can increase supplies by enhancing productivity.

### FOOD PRICES SOAR

Food price inflation in 2007 rose twice as fast as overall inflation. On an annual basis, 2007 retail food prices rose 4 percent above 2006 levels, outpacing the 2.3 percent gains in core consumer price inflation, a measure that excludes the volatile food and energy sectors (Table 1). And, perhaps more important, food price inflation accelerated as the year progressed. By December, retail food prices had posted their biggest annual gain since 1990.

Sharp gains in at-home food prices emerged from all segments of the food industry, with some of the biggest gains coming at the meat and dairy counters. After

declining in 2006, dairy prices spiked in 2007, rising 7.4 percent above year-ago levels, with strong export demand for dried milk underpinning overall dairy prices. Poultry and pork prices rose sharply after falling in 2006. Robust meat demand also propelled stronger gains in U.S. beef prices. Fish and seafood price inflation held steady.

Crop-based food products experienced rapid price gains as well. After modest price gains the past three years, cereal and bakery product prices jumped 4.3 percent in 2007. Strong demand, both domestically and internationally, underpinned sharp 2.9 percent gains in fat and oil product prices. Fruit and vegetable price gains eased after U.S. production rebounded from a freeze-damaged crop in 2006. In contrast, price inflation for processed fruits and vegetables accelerated, reflecting higher processing costs.

In 2008, food price inflation is expected to ease but remain high by historical standards. In December, the U.S. Department of Agriculture (USDA) forecast annual food price inflation to range between 3 and 4 percent, below 2007 gains but well above the ten-year average of 2.6 percent. The strongest price pressures are expected to emerge from cereal and bakery products and fats and oils, where prices are expected to rise more than 5 percent. In contrast, meat, poultry, fish, and dairy price increases are expected to slow, rising less than 3 percent.

TABLE 1

## CONSUMER FOOD PRICES

Item	Relative importance <sup>1</sup>	Final 2004	Final 2005	Final 2006	Final 2007	Forecast 2008 <sup>2</sup>
<b>Consumer price indexes</b>	<i>Percent</i>			<i>Percent change</i>		
<b>All food</b>	100.0	3.4	2.4	2.4	4.0	3.0 to 4.0
Food away from home	43.1	3.0	3.2	3.1	3.6	2.5 to 3.5
Food at home	56.9	3.8	1.9	1.8	4.2	3.5 to 4.5
Meats, poultry, and fish	14.5	7.4	2.4	0.8	3.8	2.0 to 3.0
Meats	9.3	8.4	2.3	0.7	3.3	1.5 to 2.5
Beef and veal	4.5	11.6	2.6	0.8	4.5	2.0 to 3.0
Pork	3.0	5.7	2.0	-0.3	2.0	1.0 to 2.0
Other meats	1.9	4.4	2.3	1.8	2.3	0.0 to 1.0
Poultry	2.7	7.5	2.0	-1.8	5.2	1.5 to 2.5
Fish and seafood	2.4	2.3	3.0	4.7	4.6	3.0 to 4.0
Eggs	0.7	6.1	-13.6	4.8	29.4	-3.0 to -2.0
Dairy products	5.9	7.4	1.2	-0.6	7.4	2.0 to 3.0
Fats and oils	1.6	6.6	-0.1	0.2	2.9	5.0 to 6.0
Fruits and vegetables	8.7	3.0	3.8	4.8	3.8	3.0 to 4.0
Fresh fruits and vegetables	6.9	3.5	3.9	5.3	3.9	3.0 to 4.0
Fresh fruits	3.6	2.8	3.7	6.0	4.5	3.5 to 4.5
Fresh vegetables	3.4	4.3	4.1	4.6	3.2	2.5 to 3.5
Processed fruits and vegetables	1.8	1.3	3.3	2.9	3.6	3.0 to 4.0
Sugar and sweets	2.2	0.7	1.2	3.8	3.1	2.0 to 3.0
Cereals and bakery products	7.9	1.6	1.4	1.9	4.3	5.5 to 6.5
Nonalcoholic beverages	6.5	0.4	2.9	2.1	4.1	3.5 to 4.5
Other foods	8.7	0.5	1.5	1.4	1.8	2.5 to 3.5

<sup>1</sup>BLS estimated expenditure shares, December 2006.

<sup>2</sup>USDA Forecast, December 2007

### MARKETING COSTS DRIVE RETAIL FOOD PRICES

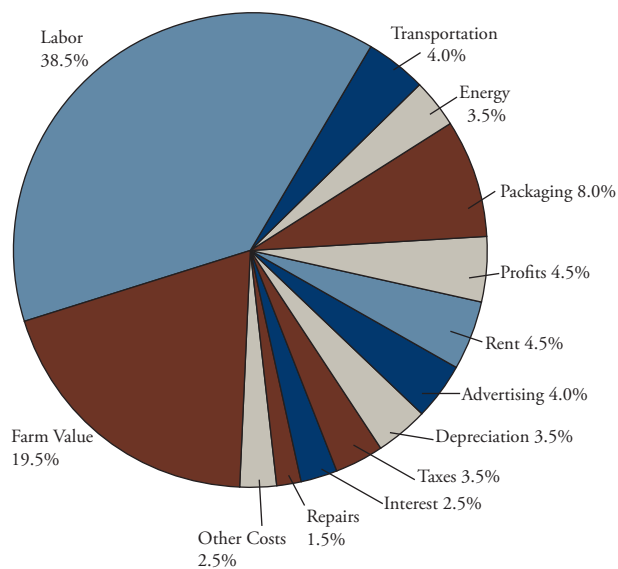
Marketing costs have risen sharply over the past 50 years, consuming a greater share of the retail food dollar. In 1950, marketing costs (the difference between the farm value and consumer spending for food at grocery stores and restaurants) accounted for 59 percent of total retail food costs. Over the past three decades, rising labor and energy costs have boosted that share steadily, from 67 percent in the 1970s to 80 percent today.

Labor costs have emerged as the biggest component of the retail food dollar. Labor is used to process and manufacture food, serve food at restaurants, and sell food at supermarkets and other food stores. Labor costs have risen as people have consumed more processed and prepared foods and increased away-from-home food

consumption. In 2004, labor costs accounted for 38.5 percent of the total food marketing bill, up from 28 percent in the 1970s (Chart 1).

In the year ahead, labor costs are expected to fuel food price increases. As 2007 ended, both food manufacturers and food service firms were adding employees at higher wage levels. Food manufacturers bucked national manufacturing trends for the year by expanding payrolls 0.9 percent annually and raising wages faster than the national average. Food service companies also recorded robust employment and wage gains. Average weekly earnings and employment rose 5.2 percent and 3.7 percent, respectively. While a weaker labor market in 2008 could ease some of the wage pressure, elevated labor costs will contribute to higher food prices.

**CHART 1**  
**COMPONENTS OF RETAIL FOOD COSTS**



Source: USDA

Energy prices are also a large component of the retail food dollar, boosting prices by raising the costs of processing, manufacturing, and transporting food. For example, in the late 1970s and early 1980s, high energy prices accounted for almost 9 percent of retail food costs. During the 1990s, energy prices eased and energy efficiency increased, diminishing the contribution of energy costs to the retail food dollar. In 2005, the most recent year for which data are available, direct energy costs and transportation costs accounted for roughly 8 percent of retail food costs.

Surging energy costs will also translate into higher food prices in 2008. In January, energy prices soared as crude oil prices exceeded \$100 per barrel. At the same time, gasoline prices breached the \$3 mark, and diesel fuel costs soared. Futures prices indicate that energy prices should remain high.

Historically, food prices have surged during times of higher crude oil prices. Moreover, research shows that energy prices are quickly passed through to higher retail food prices, with retail prices rising 1.82 percent in the short-term for every 100 percent rise in energy prices (Reed et al.). More recent research suggest stronger impacts.

Nevertheless, the inherent volatility of energy markets makes the impact of energy on food prices highly uncertain.

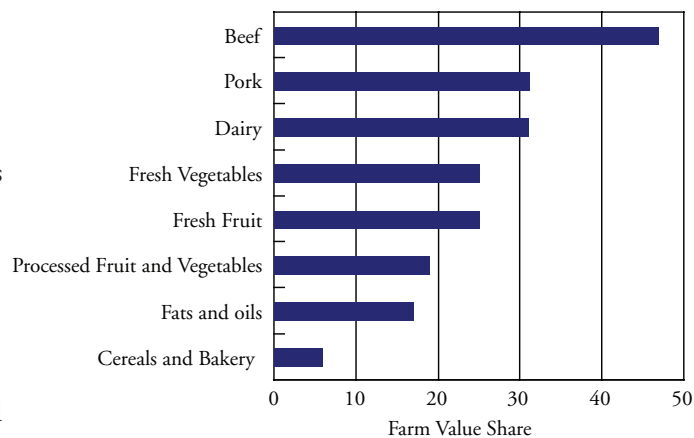
**FARM COMMODITIES STILL FUEL FOOD PRICE GAINS**

While marketing costs have increased over time, farm commodity prices have remained relatively stable. Thus, the farm commodity share of retail food prices has diminished. Still, farm commodities account for a substantial part of the retail food dollar, and the two continue to move in tandem.

In 2005, farm commodities accounted for 20 percent of retail food costs, down from 41 percent in the 1970s. In other words, for every retail dollar spent on food, 20 cents goes toward farm commodities. This amount is less than half that of three decades ago.

The farm commodity share of the retail food dollar, however, varies by the type of food group. Commodities represent a larger percentage of retail costs for foods requiring less processing, packaging, or advertising. For example, in 2005, commodities represented about 45 percent of retail beef costs and about 25 percent of retail fruit and vegetable costs. In contrast, commodities accounted for only 6 percent of retail cereal and bakery costs. Even within the cereal and bakery group, farm costs can vary dramatically with the level of processing. USDA reports that farmers receive 19 cents from every dollar spent on a bag of wheat flour, but only 5 cents from a dollar spent on a loaf of bread and just 4 cents from a dollar spent on a box of corn flakes.

**CHART 2**  
**FARM VALUE SHARE OF RETAIL FOOD COSTS, 2005**



Source: USDA

In short, both the decline in the relative importance of farm commodity costs over time and the variation across food groups reflect the level of processing and other marketing costs involved in preparing the farm commodity for the consumer. Today, people are eating more processed foods and consuming more food away from home. Processed foods and restaurant meals have higher marketing costs. And across food groups, packaged food with substantial advertising and specialized marketing, such as cereals, have higher marketing costs, contributing to lower farm costs per retail food dollar.

The farm commodity share of the retail food dollar has also been declining because increases in farm commodity prices have been relatively modest. After rising sharply in the 1970s, commodity prices have been relatively flat, even with annual price spikes. For example, U.S. corn prices averaged \$2.10 from 2000 to 2005, equaling the average annual price of corn in the 1970s. A similar story emerged for wheat, soybeans, pork, beef, and milk prices.

In 2007, however, farm commodity prices surged, and further gains are expected in 2008. By December, farm-level prices for food commodities had jumped 30 percent above 2006 levels. A summer rebound in milk, cattle, and hog prices, coupled with a winter rally in soybean, wheat, and corn prices, fueled the sharp rise in farm-level prices. Adding additional pressure to crop prices in 2008 are lean world grain inventories, which are expected to drop to record lows.

Historically, farm commodity prices have moved in tandem with retail food prices. The two are expected to move together in 2008. Stronger crop prices parallel the sharper inflation forecasts for cereal, bakery, fat, and oil products. At the same time, however, livestock prices are expected to fall in 2008 with slower retail food price inflation in meat and dairy products.

### **A NEW ERA OF HIGH FOOD PRICES?**

The sharp rise in farm commodity prices may be signaling a new era of higher food price inflation. Robust demand for farm commodities could outstrip existing production capabilities, straining food supplies and boosting prices. Moreover, population growth and

rising incomes are altering global food consumption patterns and boosting the demand for food, further supporting higher prices.

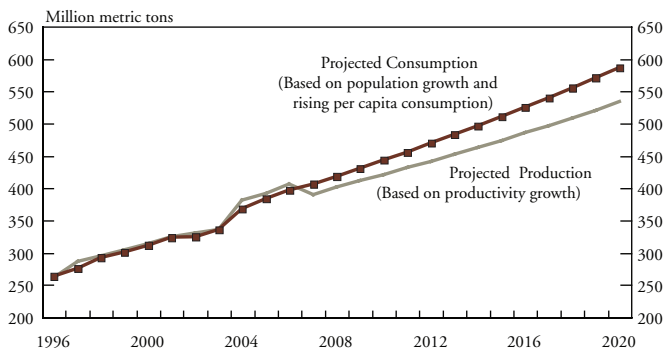
Global crop inventories have dropped to record lows, due in part to the increased use of agricultural commodities in nonfood products. World food supply discussions often focus on crop inventories because they are the foundation for most global food diets and livestock feeds. In the 2008 crop year, global wheat and coarse grain inventories are expected to fall to historical lows, with only 14 percent of annual consumption, or less than two months supply, expected to be held in reserve. Robust demand for bio-fuels, especially in the United States, has led to a decline in corn inventories, despite a record corn crop. An increase in U.S. corn acres limited the production of other crops. Globally, drought-reduced harvests further trimmed grain supplies.

Meanwhile, expanding global populations and rising incomes are also straining global food supplies. Global populations rose steadily in 2007, reaching 6.7 billion, compared to 5.8 billion people a decade ago. More important, rising global incomes, especially in developing countries, are changing food consumption patterns and boosting food demand. As incomes rise, people not only increase how much food they buy, but also the types of food they eat. For example, the per capita caloric intake of people in developed countries is 24 percent higher than people in developing countries, with most of the difference coming from protein consumption.

With about a fifth of the world's population, China is already leading a sea change in world food consumption patterns. Brisk economic gains are boosting the demand for proteins and the crops needed to feed animals. For example, since the mid-1990s, per capita world oilseed consumption has jumped 35 percent, led by the increased consumption in China.

If world population and income growth rates persist, rising food consumption could strain existing production capabilities. Assuming that the recent gains in per capita oilseed consumption, agricultural productivity, and planted acres continue at current rates, the demand for world oilseed consumption could outpace production over the next decade, placing upward pressure on prices (Chart 3).

### CHART 3 PROJECTED WORLD OILSEED CONSUMPTION AND PRODUCTION



Sources: Calculations based on USDA and U.S. Census Bureau data.  
Notes: Agricultural productivity and per capita consumption growth from 1994 to 2007 are expected to hold through 2020.

To meet the growing demand, agriculture will need to put more acres to the plough. For example, over the past decade, South America has bolstered its planted soybean acres. In 2003, USDA reported that Brazil had the potential to fulfill future world soybean demand.

But environmental concerns, water access, transportation infrastructure, financing, and other political issues might limit agriculture's potential (USDA). In light of such constraints, boosting agricultural productivity may be the best option for expanding global food supplies.

Historically, technological advances have enabled farmers to boost agricultural productivity to meet rising global demand. From 1900 to 2000, U.S. corn acres fell almost 25 percent, but corn yields jumped 387 percent. In the 1970s, a Green Revolution propelled a global surge in crop productivity. More recently, genetically modified crops have brought the promise of another revolution in agricultural productivity, which has slowed since the 1980s. New productivity gains could relieve some of the pressure on existing crop supplies and food prices.

Retail food prices surged in 2007 as prices accelerated for farm commodities, energy, and labor. Another sharp gain is expected for 2008, emerging primarily from foods made from crops. With global food demand projected to rise due to expanding populations and rising incomes, the productive capacity of the agricultural sector will be tested. But, as in the past, stronger agricultural productivity could help keep higher food price inflation at bay.

### REFERENCES

- U.S. Department of Agriculture, Foreign Agricultural Service, Production Estimates and Crop Assessment Division. 2003. "Brazil: Future Agricultural Expansion Potential Underrated," January 14, [www.fas.usda.gov/pecad2/highlights/2003/01/Ag\\_expansion/](http://www.fas.usda.gov/pecad2/highlights/2003/01/Ag_expansion/).
- Reed, A.J., Kenneth Hanson, Howard Elitzak, and Gerald Schuler. 1997. "Changing Consumer Food Prices: A User's Guide to ERS Analyses" Food and Consumer Economics Division, Economic Research Service, U.S. Department of Agriculture. Technical Bulletin No. 1862, January 14, [www.ers.usda.gov/publications/TB1862/tb1862.pdf](http://www.ers.usda.gov/publications/TB1862/tb1862.pdf).