



Consumers and Food Price Inflation

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Summary

The heightened price volatility of global commodity markets in 2008, the devastating U.S. drought of 2012, China's growing demand for international commodities, and almost routine media reports of daunting world population growth all raise the specter of food price inflation and generate many questions about farm and food price movements. Understanding food price changes and their effects on consumers is an important matter for Members of Congress and their constituents. This report provides information on the current status and outlook for U.S. food prices, measuring their changes and how such changes relate to U.S. consumers.

Despite the hype associated with media coverage of international catastrophes, historical evidence suggests that prices for retail food products are driven more by consumer demand (strongly linked to general economic conditions), than by price changes in raw commodity markets, although this linkage varies with the degree of raw commodity content in the retail product. For a discussion of the relationship between farm and retail prices, and the major factors influencing farm-level and wholesale food prices, see CRS Report R40621, *Farm-to-Food Price Dynamics*.

During the 1991 to 2006 period, U.S. food prices were fairly stable—annual food price inflation, as measured by the Consumer Price Index (CPI) for All Food (excluding alcoholic beverages), averaged a relatively low 2.5%. However, several economic factors emerged in late 2005 that began to gradually push market prices higher for both raw agricultural commodities and energy costs, and ultimately retail food prices. U.S. food price inflation increased at a rate of 4% in 2007 and at 5.5% in 2008—the highest since 1990 and well above the general inflation rate of 3.8%. The situation of sharply rising prices came to a sudden halt in late 2008 when the financial crisis led to a severe global economic recession. Annual food price inflation dropped to 1.8% in 2009 and 0.8% in 2010, driven by the global financial crisis and its aftermath. In 2011, improving U.S. and global economic conditions led to a 3.7% rise in average food prices. However, by mid-2011 through 2013, food price inflation leveled off—due in part to continued sluggish economic growth, stagnant wages, and persistently high unemployment, which combined to weaken consumer purchasing power. The U.S. Department of Agriculture (USDA) projects that annual U.S. food price inflation will be in the 2.5% to 3.5% range in 2012 and from 3% to 4% in 2013.

For households with low disposable income levels where food expenditures are a large share of the budget, rising food prices result in diminished purchasing power and may force difficult budgetary tradeoffs. To help food-deficient households during periods of rising prices, many domestic food assistance programs are linked to price inflation through escalation clauses, in order to retain consumer purchasing power during periods of rising food prices. However, even for households with escalation clauses, a time lag usually occurs between the time the price inflation is measured and the time when the wage or program benefit is adjusted upward to compensate.

The All-Food CPI has two components—Food-at-Home and Food-Away-from-Home. The Food-at-Home CPI is most representative of retail food prices and is significantly more volatile than the Food-Away-from-Home index. The Food-at-Home CPI is projected at 3% to 4% for 2013, compared with 2.5% to 3.5% for Food-Away-from-Home prices. This difference is partially explained by the larger share of farm products in the final price of retail foods than in Food-Away-from-Home. Farm product prices are, in general, substantially more volatile than the other marketing and processing costs that enter into retail or ready-to-eat foods.

Contents

Introduction.....	1
Consumer Demand	2
Price Responsiveness.....	2
Income Responsiveness.....	3
Tastes and Preferences.....	4
Demographics.....	4
Other Non-Economic Factors.....	4
Summary.....	4
The Consumer Price Index (CPI).....	4
Historic Price Inflation Patterns	5
Overall Inflation versus Core Inflation.....	7
Consumer Income and Expenditures	8
Food as a Share of Consumer’s Budget.....	8
At-Home versus Away-from-Home Consumption	11
International Comparisons.....	13
Recent Food Price Inflation	14
Annual All-Food versus All-Items Price Inflation.....	14
Rapidly Inflating Global Commodity Markets, 2006 to 2008	14
The 2008 Financial Crisis Triggers a Severe Recession	16
Strong Inflationary-Deflationary Cycles During 2008-2012 Period.....	16
The 2013 and 2014 Forecasts for Annual Food Price Inflation.....	19
On-Again, Off-Again Economic Activity Drives Retail Food Price Pattern	19
At-Home versus Away-from-Home Food Price Inflation.....	20
Supply-Side Influences on Food Price Inflation	21
Annual Price Movements by Major Food Categories	21
Monthly Price Movements by Major Food Categories	23
Effect of Retail Price Changes.....	28
Price Inflation Escalator Clauses Often Respond With a Lag	28
Federal Spending for Domestic Food Assistance Programs.....	29
Supplemental Nutrition Assistance Program (SNAP, formerly Food Stamps)	30
Child Nutrition	31
The WIC Program.....	31
Additional Commodity Assistance Programs.....	32
Foreign Food Aid.....	32

Figures

Figure 1. CPI Weights for Major Categories	5
Figure 2. Annual Price Inflation, 1915-2014: All-Items vs. All-Food	6
Figure 3. Annual Price Inflation Since 1960: All-Items, All-Food, and Energy	8
Figure 4. Comparison of Real U.S. Disposable Personal Income (DPI) Per Capita and the Share of DPI Spent on Food, 1930-2011	9
Figure 5. Average U.S. Food Expenditure Shares: At-Home vs. Away-from-Home	12

Figure 6. Monthly Food Price Inflation Since 2000: At-Home vs. Away-from-Home..... 12

Figure 7. Annual Price Inflation: All-Items vs. All-Food, 1985-2014F..... 15

Figure 8. Annual Food Price Inflation Since 1997 15

Figure 9. Annual Change in Real GDP and DPI per Capita 17

Figure 10. U.S. Annual Average Unemployment Rate 17

Figure 11. Monthly Retail Food Price Inflation Spiked in 2008, Plunged in 2009, Rose Again in 2011, But Has Stabilized Since 2012..... 18

Figure 12. Food Price Inflation Volatility Has Increased Since 2005..... 19

Figure 13. Monthly Retail Food Price Inflation, At-Home vs. Away-from-Home 20

Figure 14. Monthly Retail Price Indexes: Various Major Food Groups 23

Figure 15. Monthly Retail Price Indexes: Beef, Pork, Poultry, and Eggs..... 25

Figure 16. Monthly Retail Price Indexes: Dairy, Fresh Milk, Cheese, and Ice Cream..... 25

Figure 17. Monthly Retail Price Indexes: Fruits and Vegetables..... 26

Figure 18. Monthly Retail Price Indexes: Sugar, Fat & Oils, and Snacks..... 27

Figure 19. Monthly Retail Price Indexes: Coffee, Carbonated Beverages, and Prepared Foods 27

Figure 20. Annual Outlays for USDA Food and Nutrition Programs Since 1970 29

Tables

Table 1. Retail Price Change, Mean and Variability, by Historic Time Period..... 7

Table 2. Average U.S. Household Food Expenditures in 2012 by Income Quintiles 10

Table 3. International Comparison of Food-at-Home Budget Shares, Selected Countries, 2012 13

Table 4. The Food-at-Home CPI by Category Since 2008 22

Contacts

Author Contact Information..... 33

Introduction

Everyone eats. As a result, everyone is affected to some degree by food price changes. This makes understanding food price changes and their effects on consumers an important matter for Congress. This report provides information on the current status and outlook for U.S. food prices, measuring their changes and how such changes relate to U.S. consumers.

The first section of the report, “Consumer Demand,” briefly reviews the major economic concepts underlying consumer food behavior. The second section, the “Consumer Price Index,” describes how U.S. food price inflation rates have evolved since 1915, when federal price data collection for inflation-measuring purposes began. The third section, “Consumer Income and Expenditures,” provides information on recent history and projections for U.S. food expenditure shares relative to total household budget, with comparisons across income quintiles, as well as internationally. The fourth section, “Recent Food Price Inflation,” examines retail food price inflation, including a review and discussion of the level of food price inflation registered by the consumer price index for all-food, at-home-food, and away-from-home-food purchases as well as for major food groups. Finally, a fifth section, entitled “Effect of Retail Price Changes,” briefly discusses the impact that rapid food price inflation can have on government food programs and the more vulnerable consumer groups.

Each section may be read independently of the others. Thus, those readers that are concerned primarily with the current status of U.S. retail food price inflation may proceed directly to the sections entitled “Historic Price Inflation Patterns,” “Recent Food Price Inflation,” or “Effect of Retail Price Changes.”

Note to Readers

This is one of several CRS reports that respond to concerns about the nature, causes, and effects of farm and food price movements.

This specific report, CRS Report R40545, *Consumers and Food Price Inflation*, focuses on aggregate food price inflation with comparisons of recent price inflation for both At-Home (i.e., retail) purchases and Away-from-Home consumption, as well as by major food groups. In addition, the report briefly discusses the potential economic and food security implications of food price changes.

A related report, CRS Report R40621, *Farm-to-Food Price Dynamics*, provides both background and complementary information for the material presented in this report by describing the linkages between farm, wholesale, and retail food prices.

Another related report, CRS Report R40152, *U.S. Farm Income*, describes the income outlook for the U.S. agricultural sector based on semi-annual (February and August) USDA forecasts for agricultural production and expenses, as well as for farm-level commodity prices and asset values.

An earlier report, CRS Report RL33204, *Price Determination in Agricultural Commodity Markets: A Primer*, describes unique characteristics of market conditions for agricultural products in general, as well as for specific types of agricultural commodities. It also reviews both the U.S. Department of Agriculture’s (USDA’s) forecast and reporting procedures and their relevance to commodity price formation, and the critical role of price discovery played by futures contract exchanges.

Consumer Demand

Consumer demand is influenced by economic factors—own-price, the price of close substitutes, the price of complementary items, and household income—as well as by several non-economic factors including tastes and preferences, family size, age of family members, geographic location, shopping behavior, and lifestyle choices. Economists attempt to study and measure the nature of consumer behavior in response to changes in prices, incomes, and household characteristics, with an eye for understanding the potential social welfare outcomes that may result from price and income changes across different socioeconomic groups. Policymakers, in turn, often attempt to use that information to design and implement policies that mitigate the more deleterious effects of price and income changes on consumers.

Price Responsiveness

In general, consumers will use less of any good if its price increases relative to other goods (referred to as the pure “substitution effect” by economists). However, a consumer’s price responsiveness is a matter of degree and is subject to the potential influence of disposable income as well as other non-price factors such as those listed in the preceding paragraph.

Under most circumstances, the availability of many close substitutes is likely to make consumers more sensitive or responsive to price changes, because they have the opportunity to switch to similar alternatives. In contrast, a lack of substitutes may give the consumer little choice but to continue to purchase the available good, even as its price rises, especially if it is deemed a necessity. Strong ethnic or cultural tastes and preferences may endear a person to a particular food type such that he or she will continue to purchase that food as its price rises even in the presence of abundant substitutes (for example, ethnic groups that are accustomed to eating rice at every meal may be reluctant to switch to bread or potatoes even if the price of rice rises relative to those other foods).

Rapid or unexpected changes in retail food prices will impact some consumers more than others depending on income levels and the importance of the affected food items in consumers’ budgets. In general, if an item represents a very small portion of the consumer’s budget (for example, consider salt), then a consumer is less likely to respond to a price change. For the average American consumer, basic food staples such as bread, potatoes, pasta, and rice tend to take smaller shares of the food budget (relative to meat, dairy products, fruits and vegetables, and more processed food products) and, as a result, consumers are less responsive to a change in their price. In contrast, high-valued food items such as expensive cuts of meat or seafood probably represent more costly (and infrequently purchased) delicacies for most households. As a result, most households will tend to be far more responsive to changes in the prices of such high-valued products than for basic staples. Often a price change for an item within a specific food group¹ may result in consumers switching to lower-quality items within that food category—the classic example being a switch from steak to hamburger when meat prices rise. In contrast, a widespread price rise across all food groups may engender substantial reshuffling of consumer food budget allocations as households try to meet their nutritional goals with their limited budgets.

¹ Examples of food groups include meat, dairy products, bakery goods, fruits, or vegetables.

Of course, the absolute size of a consumer's disposable income is also important in determining actual purchasing power. For households with smaller incomes, the food budget itself is likely a larger portion of total household expenditures, and such households are likely to be more responsive to price changes across all food categories than are higher-income households.

In summary, lower-income consumers who spend a significant share of their household budget on food are likely to be impacted more severely by rising food prices (and are likely to be more responsive to price changes) than high-income consumers with lower food budget shares.

Income Responsiveness

A household's absolute level of disposable income (and, to a lesser degree, wealth) directly affects its ability to respond to price changes. As a result, as household incomes grow, consumers often opt for more expensive or higher-quality selections of foods than are presently in their food budget, or may experiment by trying new or unfamiliar foods. For example, as incomes increase in less-developed countries, it is common to see per-capita expenditures on meat and dairy products increase. In contrast, when incomes decline, consumers tend to pull back from more expensive options. If the income decline is severe and is perceived as permanent or long-lasting, consumers may make substantial changes to their food budget choices.

In the aggregate, household consumption behavior in response to perceived income changes (if persistent and widespread) may affect a country's agricultural production or trade patterns, or it may impact the health and nutritional status of certain segments of the population. As a result, it is important for policymakers to monitor household wealth and income levels and distribution for unexpected shifts that may have important economic or health consequences.

Economists call the relationship between changes in consumer income and the quantity of an item purchased an *Engel curve*. This relationship is used by economists to classify goods.

- For a **normal good**, consumers buy more of it as incomes increase, but at a decreasing rate such that its average budget share declines at higher income levels.
- For a **luxury good**, consumers buy more of it as their incomes increase and at an increasing rate such that its budget share increases at higher income levels.
- For an **inferior good**, consumers buy less of it as their incomes increase.

Engel's Law as an Indicator of International Consumer Welfare

Of course, different goods will be classified differently by different people, since tastes and preferences differ. However, with respect to the overall food budget, in the aggregate certain behavioral norms are expected. **Engel's law** is the idea (largely validated by data with some minor exceptions) that food, in general, is a normal good, so that the budget share spent on food declines as a consumer's income rises. While Engel's law is generally observable for individual households, it tends to hold best in the aggregate—that is, when considering an entire population. To the extent that this "law" holds, then the proportion of a nation's income spent on food serves as a good index for international comparisons of relative consumer welfare (**Table 3**).

Tastes and Preferences

Non-economic factors such as cultural or ethnic preferences may determine both the share of a particular food product in the household's budget (e.g., rice represents a larger share of per-capita expenditure in most Asian households than in most European households at similar income levels) as well as a household's responsiveness to a change in the price of a particular product.

Demographics

Dietary needs also change with age and gender. For example, young children and adolescents generally need both more calories and a higher portion of protein-based calories to meet nutritional demands of rapid physical growth and high activity levels. Populations or households with a large share of individuals from this demographic stratum are more likely to consume larger per-capita portions of meat and dairy products than an older, more mature and sedentary population would. As a result, population demographics such as household composition, size, and age structure often play an important role in consumer price sensitivity and income responsiveness.

Other Non-Economic Factors

Shopping behavior—e.g., impulse purchases, quick-stop shopping at convenience stores to and from work, or weekend shopping at big-box discount stores—can influence the food choices as well as the average per-item prices paid by a household. Also, a household's geographic location—e.g., inner city, suburbs, or rural areas—may restrict both a consumer's selection of goods and the price range paid for them. Finally, in increasingly affluent societies, lifestyle choices—e.g., frequency of dining out, meal choices, etc.—when complemented with sufficient purchasing power, can also play an influential role in household food purchases.

Summary

For households with low disposable income levels where food expenditures are a large share of the budget, rising food prices result in greater responsiveness and may force more difficult budgetary tradeoffs than in higher-income households with smaller food-budget shares. Of course the opposite effect is true during periods of falling prices. However, each household's price and income effects also are influenced by its particular set of non-economic characteristics.

The Consumer Price Index (CPI)

The CPI is perhaps the most widely reported measure of U.S. price inflation.² The CPI is used both as an economic indicator of retail price inflation and as a means of adjusting current-period values for inflation. The "All-Items" CPI is the index most often referred to (i.e., the headline CPI) for representing consumer price inflation. It is generally divided into eight major spending categories, including a "Food and Beverage" category comprising 15.3% of the overall index.

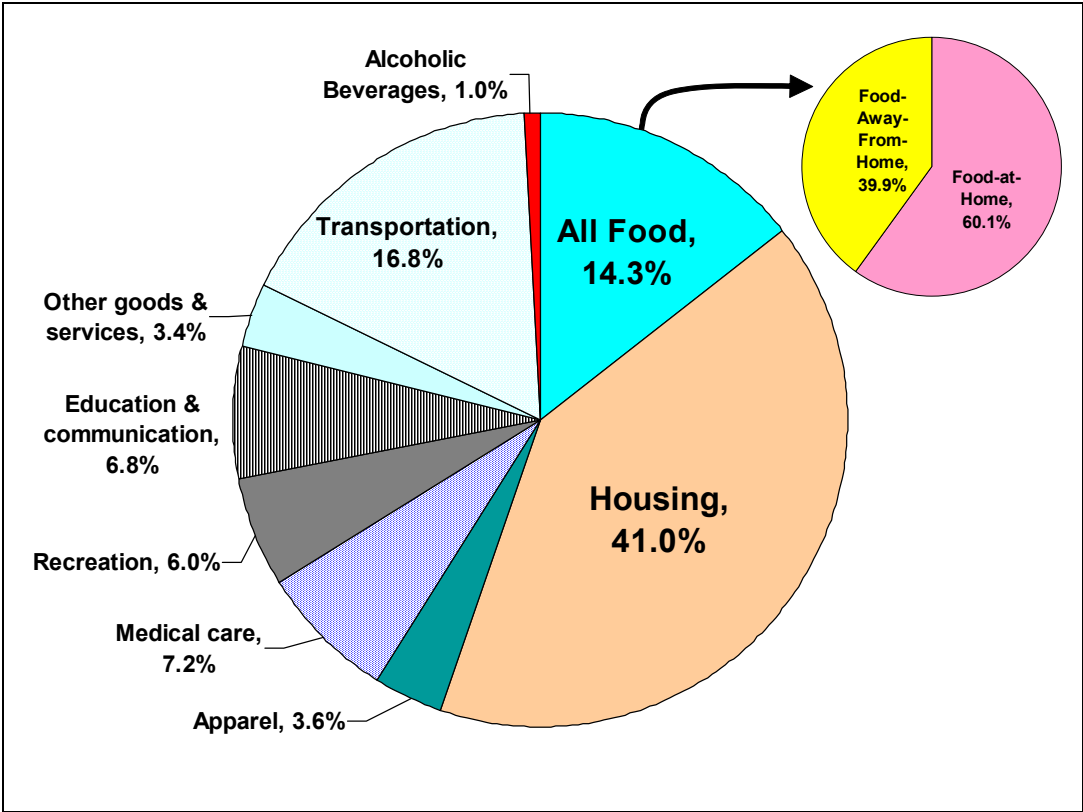
² See CRS Report RL30074, *The Consumer Price Index: A Brief Overview*.

The CPI category of “Food and Beverages” is composed of two major subcategories: “All-Food” (which has a relative weight of 14.3% in the all-items CPI), and “Alcoholic Beverages” (1.0%).

The All-Food CPI is the principal indicator of consumer food price changes (Figure 1). The All-Food CPI can be subdivided into the “Food-at-Home” (60.1%) and “Food-Away-from-Home” (39.9%) categories.

- The **Food-at-Home CPI** reflects changes in the prices of foods consumed at home. As such it is the principal indicator of changes in retail food prices in the United States and includes prices of foods purchased at grocery stores, food marts, and big-box discounters (e.g., Walmart, COSTCO, etc.).
- The **Food-Away-from-Home CPI** reflects changes in the prices of foods purchased and consumed outside of the home such as restaurants and other eating and drinking establishments. However, it also includes price changes for ready-to-eat foods purchased at hotels and motels, recreational places and sporting events, vending machines, and school and work cafeterias.

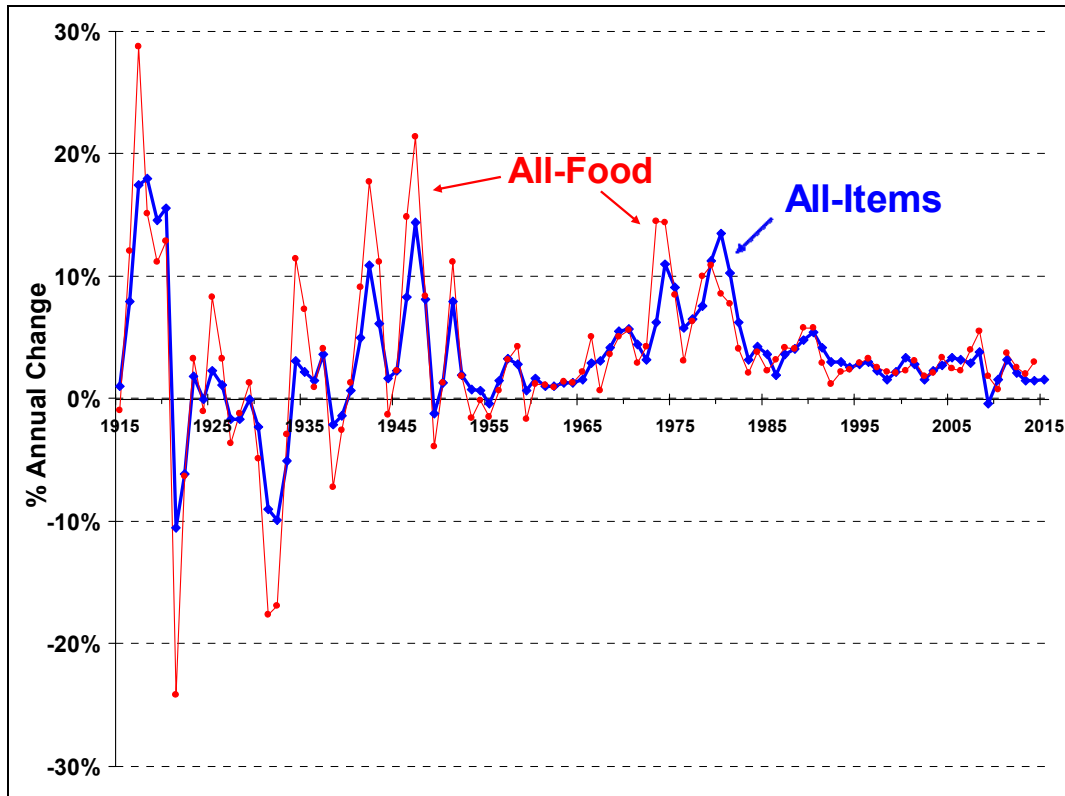
Figure 1. CPI Weights for Major Categories



Source: U.S. Department of Labor, Bureau of Labor Statistics (BLS), CPI-U, 2009-10 weights, December 2012.

Historic Price Inflation Patterns

Over time, the All-Food and All-Items CPIs have moved together, although the All-Food CPI has been consistently more variable than the All-Items CPI (Table 1 and Figure 2).

Figure 2. Annual Price Inflation, 1915-2014: All-Items vs. All-Food

Source: BLS, CPI 1915 to 2012. Forecast CPI values by Global Insights Sept. 2013 (All-Items, 2013-2015) and the U.S. Department of Agriculture's (USDA's) Economic Research Service (ERS) (All-Food, 2013-2014).

Notes: The percent change is calculated from the annual average CPI for successive years.

Prior to 1960, both of these indexes exhibited higher average inflation rates and more volatility than in recent years. During the 1914-1920 period—which encompassed the international market turmoil associated with World War I—both price indexes recorded double-digit average annual inflation. Food inflation hit its all-time high of 28.7% in 1917 (**Figure 2**). All-Items price inflation peaked a year later at 18%. Just four years later, starting in 1921, retail prices entered a prolonged deflationary period with a plunge of -24.2% for All-Food and -10.5% for All-Items, that lasted until 1941 when the wartime shortages of World War II finally renewed retail price inflation.

The variability of the overall CPI and its individual components is important because uncertainty about price changes makes planning more difficult—whether the meal planning of a household, the investment planning of a business, or the policy intervention planning of a federal agency.

During the 1941-1960 period, price inflation remained extremely volatile, alternating between spikes of inflation and steep disinflationary (i.e., deflationary) drops. It was not until 1960 that retail prices stabilized with tolerably mild inflation. However, this proved short-lived as the 1970s saw a return to sharp price spikes generated by an energy crisis and rapid, unexpected shifts in global crop supply and demand.³ By the early 1980s, retail price inflation had returned to modest

³ For a discussion of 1970s energy markets, see CRS Report R40187, *U.S. Energy: Overview and Key Statistics*. For a (continued...)

levels below 5%. Since 1983 retail prices, as measured by the All-Items and the All-Food CPIs, have been relatively low and relatively stable, except for temporary surges in 1989-1990 and again in 2007-2008.

Table 1. Retail Price Change, Mean and Variability, by Historic Time Period

(all data—mean and standard deviation [SD]—are percentages)

CPI Series	1914-1920		1921-1941		1941-1960		1960-1983		1983-2012	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
All-Items	10.8	7.4	-1.4	4.6	3.9	4.1	5.3	3.6	2.9	1.1
Energy	—	—	—	—	—	—	6.9	9.1	3.4	8.2
All-Food	11.6	9.6	-1.8	9.0	4.9	7.2	5.2	4.1	3.0	1.2
At-Home	—	—	—	—	—	—	5.0	4.5	2.9	1.7
Away-from-Home	—	—	—	—	—	—	6.0	3.1	3.1	0.9
Core^a	—	—	—	—	—	—	5.1	3.3	3.0	1.1

Source: CRS calculations based on CPI data from the Bureau of Labor Statistics (BLS), U.S. Dept. of Labor.

Notes: “—” = not available. The mean is the average annual price change for each period. The standard deviation (SD) is a measure of dispersion around the mean value for each period. Plus or minus one (two) SD captures 68.2% (95.4%) of the variation around the mean value for each period. The mean and SD have been calculated using the annual percent change data for each of the five different periods. A larger SD implies greater variability, for example, all-food price inflation has shown a clear pattern of declining variability as the SD has fallen from 9.6% during the 1914-20 period to 4.1% during 1960-83 (more than halving the variability), and finally to 1.2% during 1983-2012. This decline in variability is clearly evident in **Figure 2**.

a. The “Core” price index is the all-items CPI without the energy and all-food components.

Overall Inflation versus Core Inflation

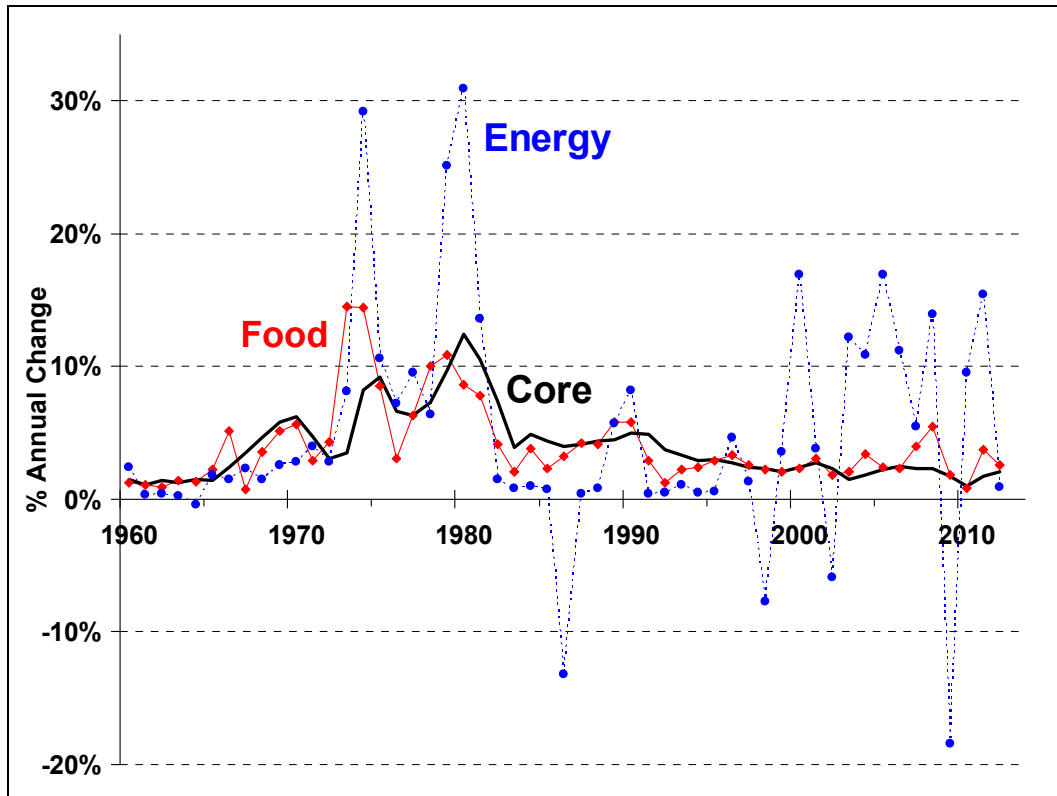
Many economists and policymakers believe that the food and energy components of the CPI are volatile and subject to shocks not easily dealt with through government monetary policy. In response, BLS also reports another price index, referred to as the “core” index because it removes the food and energy price components from the All-Items CPI.⁴ The so-called core CPI is thought to be a useful measure of underlying trend inflation in the short run. The food component of the CPI, although more volatile than the overall CPI, is still substantially less volatile than the energy component (**Figure 3** and **Table 1**).

Since 1960, the energy price index has been a more volatile component of the All-Items CPI than the food price index by a substantial margin. For example, the energy price inflation standard deviation (SD) of 9.1% was more than double the All-Food SD of 4.1% during the 1960-1983 period, and nearly six times larger since 1983 (8.2% versus 1.3%).

(...continued)

discussion of 1970s agricultural markets, see M. Peters, S. Langley, and P. Westcott, “Agricultural Commodity Price Spikes in the 1970s and 1990s,” *Amber Waves*, ERS, USDA, March 2009, at <http://www.ers.usda.gov/>; and P. Riley, “Global Grain Markets in 1996: Shades of 1972-74?” *Agricultural Outlook*, AO-233, ERS, USDA, Sept. 1996, pp. 2-6.

⁴ For more information, see CRS Report RS22705, *Inflation: Core vs. Headline*.

Figure 3. Annual Price Inflation Since 1960: All-Items, All-Food, and Energy

Source: BLS, CPI, August 2013.

Since 1983 both the All-Food and the All-Items CPIs have been lower (in terms of average values) and substantially more stable (in terms of SDs) than during the preceding seven decades. In contrast, the energy price index has remained nearly as volatile since 1983 (although at a lower mean level) as it was during the preceding two decades. This is an important point because the energy price index has seen its weighted share of the CPI gradually increase over time and, although energy's current weight share of 9.7% is slightly more than half that of the food weight share of 15.3%, energy price inflation is far more insidious than food inflation to the extent that energy costs figure in the retail price of practically every other component of the CPI.

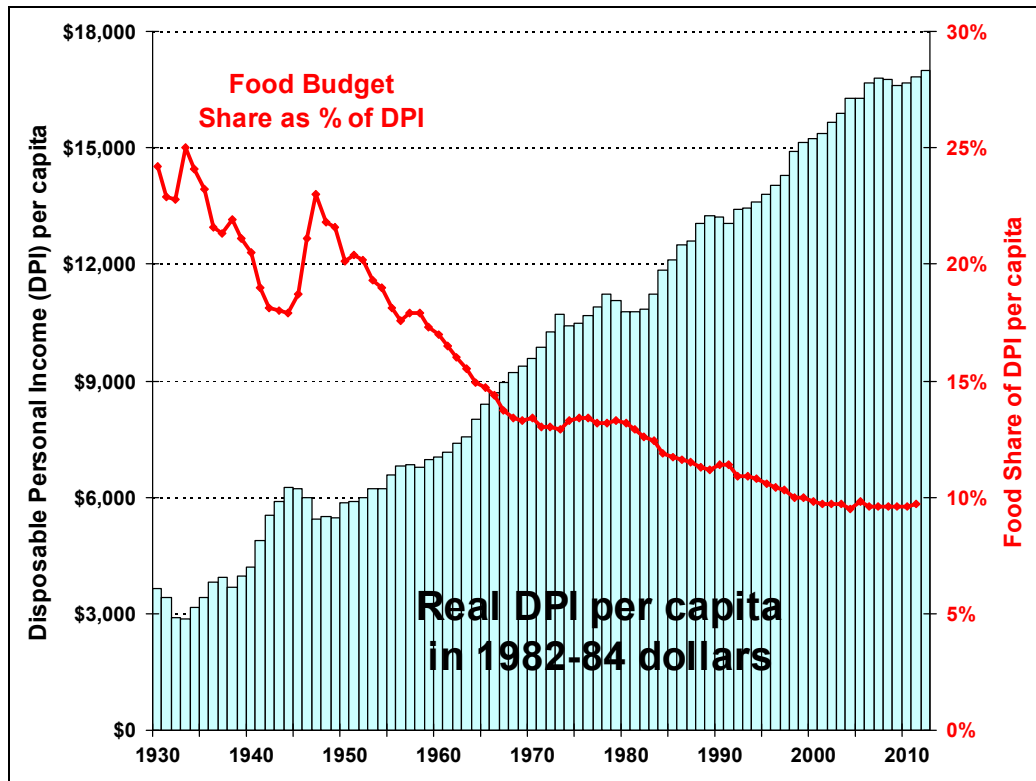
Consumer Income and Expenditures

A household allocates its available income across a range of expenditure, savings, and investment choices. As mentioned earlier, food expenditures as a share of a household's total budget are an indicator of sensitivity (or vulnerability) to unexpected food price changes. At the national level, food budget share (via Engel's law) can be used as a general indicator of welfare among nations.

Food as a Share of Consumer's Budget

U.S. consumers have seen their "well-being" improve substantially over the past 80 years (Figure 4) as measured by both food budget share and real disposable personal income (DPI) per capita. However, these national averages ignore any potential income distribution issues.

Figure 4. Comparison of Real U.S. Disposable Personal Income (DPI) Per Capita and the Share of DPI Spent on Food, 1930-2011



Source: Table 7, Food Expenditures Data Set, ERS, USDA; at <http://www.ers.usda.gov/data-products/food-expenditures.aspx>.

Notes: Real DPI is BEA nominal DPI series deflated by the all-items CPI with base 1982-1984 = 100; real food expenditures are the ERS series of food expenditures deflated by the all-food CPI with base 1982-1984 = 100.

- In 2011 total U.S. DPI was \$11,787 billion, or \$37,830 per capita—in inflation-adjusted 1982-84 dollars this equaled nearly \$17,000 per capita DPI.⁵ On average, 9.6% of disposable personal income was spent on food in 2011.⁶
- The U.S. food share of real DPI has fallen from a high of 25.2% in 1933 to under 10% since 2000, while the average DPI per capita (in 1982-1984 dollars) has risen from \$2,857 in 1933 to nearly \$17,000 by 2012.
- Based on 2012 Consumer Expenditure Survey (CES) data (**Table 2**), average food outlays of \$6,532 per household accounted for 12.9% of average total consumer expenditures of \$50,631 per household.⁷

⁵ “Table 2.1. Personal Income and Its Disposition,” National Income and Product Accounts, August 29, 2013, BEA, U.S. Dept. of Commerce. Estimates for 2012 total and per-capita DPI were \$11,549 billion and \$37,012, respectively. Comparable food expenditure data for 2012 were not available as of September 5, 2012.

⁶ The DPI and DPI-food-share estimates are for 2011 from Table 7, Food Expenditures Data Set, ERS, USDA; at <http://www.ers.usda.gov/data-products/food-expenditures.aspx>.

⁷ CES data are calculated “per consumer unit” which is described as “similar to a household” by BLS.

- The difference between the two food-budget-share estimates (9.6% based on DPI versus 12.9% based on CES total expenditures) is due to how disposable income and food expenditures are calculated for each of these indicators.

Table 2. Average U.S. Household Food Expenditures in 2012 by Income Quintiles

Income Quintile	Total	All Food	Food-at-Home	Food-Away-from-Home
Expenditures (and Share of Expenditures) per Household				
Lowest 20%	\$22,067	\$3,483 15.8%	\$2,441 11.1%	\$1,041 4.7%
Second 20%	\$32,299	\$4,591 14.2%	\$3,019 9.3%	\$1,572 4.9%
Third 20%	\$42,666	\$5,625 13.2%	\$3,520 8.3%	\$2,105 4.9%
Fourth 20%	\$58,688	\$7,842 13.4%	\$4,613 7.9%	\$3,228 5.5%
Highest 20%	\$97,382	\$11,115 11.4%	\$5,926 6.1%	\$5,189 5.3%
Average Outlay (\$)	\$50,631	\$6,532 12.9%	\$3,905 7.7%	\$2,628 5.2%
Share of Food Expenditures				
Lowest 20%		100%	70.1%	29.9%
Second 20%		100%	65.8%	34.2%
Third 20%		100%	62.6%	37.4%
Fourth 20%		100%	58.8%	41.2%
Highest 20%		100%	53.3%	46.7%
Average Outlay (\$)		100%	59.8%	40.2%

Source: “Table I. Quintiles of before-tax income: Average annual expenditures and characteristics,” BLS, Consumer Expenditure Survey, 2012, at <http://www.bls.gov/cex>.

- The share of household **Food-at-Home** expenditures (**Table 2**) varied across income quintiles, in accordance with Engel’s law—i.e., each succeeding higher income quintile increased its absolute dollar expenditures on food, but at a decreasing rate such that the Food-at-Home budget share declines across higher quintiles.
- For example, the lowest 20% of U.S. households spent \$2,441 on **Food-at-Home**, or 11.1% of their average total expenditures of \$22,067 in 2012, whereas the highest 20% of households spent \$5,926 on **Food-at-Home**, or a 6.1% share of their average total expenditures of \$97,382.
- However, the budget shares for **Food-Away-from-Home** and **All-Food** do not fully comply with Engel’s law—they decline across income quintiles until the 4th income quintile which surpasses the 5th quintile in budget shares (5.5% vs. 5.3% for **Food-Away-from-Home**; and 13.4% vs. 11.4% for **All-Food**). This pattern suggests that higher income groups appear to reach a relative saturation point for **Food-Away-from-Home** spending.

In summary, BLS data show that lower-income U.S. households tend to spend a larger share of their food budget on **Food-at-Home** consumption and are thus more vulnerable to unexpected retail food price increases (this is discussed further in the next section).

At-Home versus Away-from-Home Consumption

U.S. households have shown a strong propensity over time to increase their share of annual food consumption outside of the home (**Figure 5**). With the exception of a brief period following the end of World War II, the portion of the national food budget spent on food consumption away from the home has steadily increased from 12.7% in 1930 to an estimated 42.1% in 2012.

This phenomenon is associated with:⁸

- increasing per-capita disposable income,
- increasing female participation in the labor force,
- more two-earner households,
- increased advertising and promotion by large food-service chains,
- increasing time constraints on household members (e.g., longer commutes, increased work hours and less leisure time, etc.),
- the smaller size of U.S. households, and
- the increased availability of relatively low-cost, fast-food establishments.

The tendency for increased Away-from-Home food consumption has important implications for consumer responsiveness to price and income changes, as well as for household nutrition. This is because prices of Food-at-Home purchases are significantly more volatile than are prices of food-away-from-home purchases (**Table 1** and **Figure 6**).

ERS research suggests that Away-from-Home expenditures are typically higher for single-person households and households containing multiple adults without living-at-home children.⁹ By implication, households with living-at-home children typically rely more on Food-at-Home consumption (as a share of their budget) and are thus more vulnerable to the normally higher price variability associated with retail food prices.

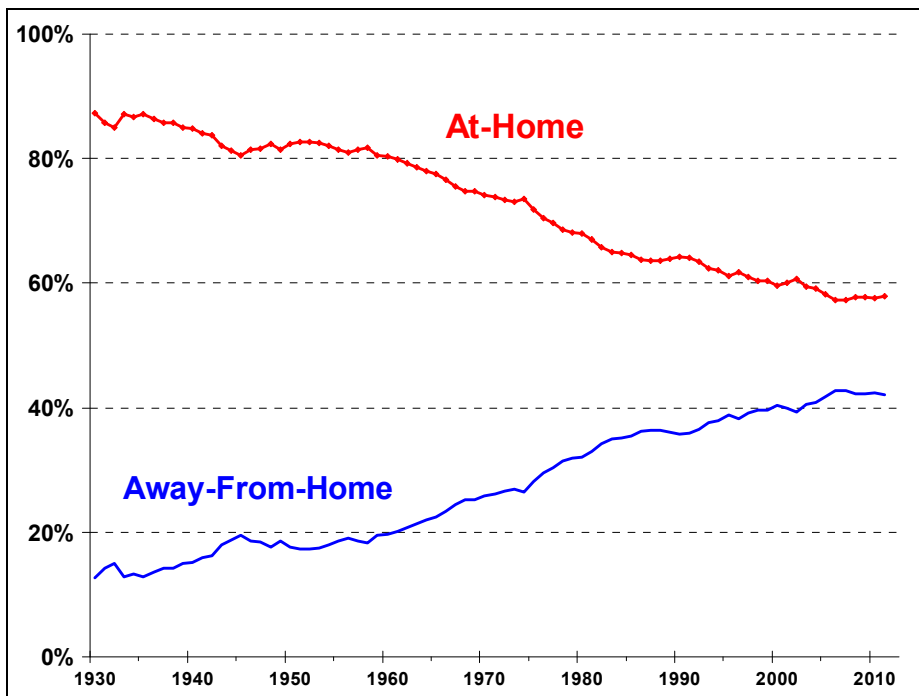
Is Food-Away-from-Home Consumption a Luxury Good?

Although increased Food-Away-from-Home expenditure is associated with higher income (both in absolute terms and as a share of the household food budget), it is not always a luxury item. A partial key to understanding how increasing food-away-from-home consumption may impact consumer behavior is the extent to which such consumption is a choice (for example, made in the evenings or on weekends during leisure hours) or more of an obligation (made during work hours), as well as the extent to which a consumer has alternative dining choices when eating out (for example, subsidized cafeteria meals are often available at schools or in large institutional work settings).

⁸ For a discussion of this issue, see “Food Away From Home,” *Diet Quality and Food Consumption* Briefing Room, ERS, USDA, at <http://www.ers.usda.gov/Briefing/DietQuality/>.

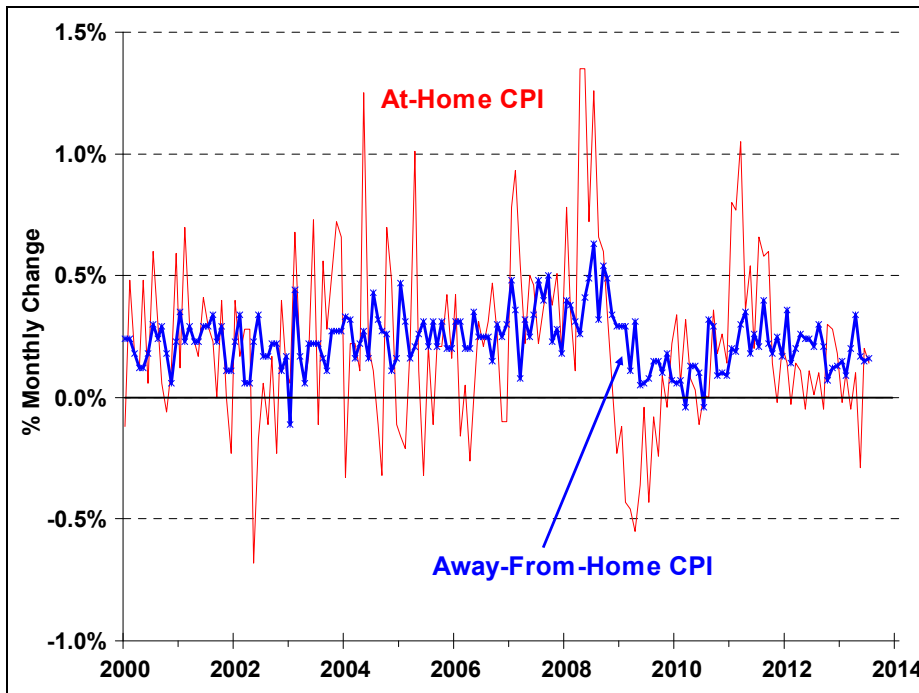
⁹ Hayden Stewart, Noel Blisard, Sanjib Bhuyan, and Rodolfo M. Nayga, Jr., *The Demand for Food Away From Home: Full-Service or Fast Food?* AER No. 829, ERS, January 2004.

Figure 5. Average U.S. Food Expenditure Shares: At-Home vs. Away-from-Home



Source: Budget shares based on data from Table 7, Food Expenditures Data Set, ERS, USDA; at <http://www.ers.usda.gov/data-products/food-expenditures.aspx>.

Figure 6. Monthly Food Price Inflation Since 2000: At-Home vs. Away-from-Home



Source: BLS, CPI, August 2013.

Note: Inflation measured as percent change in month-to-month seasonally adjusted CPI for each index.

International Comparisons

A comparison of food budget shares (based on Food-at-Home expenditures) from over 70 countries (**Table 3**) suggests that, on average, the United States has achieved a higher level of social welfare (based on this particular indicator) than any of the other countries in the database.

Table 3. International Comparison of Food-at-Home Budget Shares, Selected Countries, 2012

Country	Total Expenditures per capita	At-Home Food Expenditures per capita	At-Home Food Share
United States	\$34,541	\$2,723	6.6%
United Kingdom	\$24,260	\$2,214	9.1%
Canada	\$27,761	\$2,679	9.6%
Germany	\$22,762	\$2,481	10.9%
South Korea	\$12,002	\$1,468	12.2%
France	\$22,945	\$3,037	13.2%
Japan	\$27,761	\$3,188	13.8%
Italy	\$20,362	\$2,892	14.2%
Brazil	\$7,063	\$1,123	15.9%
Poland	\$7,773	\$1,521	19.6%
Mexico	\$6,518	\$1,625	24.9%
India	\$871	\$220	25.2%
China	\$2,149	\$577	26.9%
Russia	\$6,709	\$2,120	31.6%
Indonesia	\$1,964	\$655	33.4%
Nigeria	\$966	\$381	39.5%
Egypt	\$2,410	\$1,030	42.7%
Philippines	\$1,925	\$823	42.8%
Algeria	\$1,749	\$764	43.7%
Pakistan	\$871	\$415	47.7%

Source: ERS, USDA, Food Expenditure Data Products, “Expenditures on food and alcoholic beverages that were consumed at home by selected countries,” <http://www.ers.usda.gov/data-products/food-expenditures.aspx/>.

The food budget share is only one indicator of national welfare, and ignores any unfavorable distribution of the food expenditure share (should any exist). Even the lowest 20% of U.S. households, on average, spent less than 12% of their budgets on at-home food consumption in 2012 and, thus, appear relatively well-off in food terms based on this particular international standard (**Table 2**).

Readers should note that this cursory assessment is aggregate in nature and does not exclude the possibility that there are food-deficient individuals within the lowest 20% quintile of the U.S. population. According to ERS, in 2012, an estimated 14.5% of U.S. households were food-insecure at least some time during the course of the year—meaning that the food intake of one or

more household members was reduced and their eating patterns were disrupted at times during the year because the household lacked money and other resources for food.¹⁰

Recent Food Price Inflation

This section provides a discussion of recently observed food price inflation, first based on an annual aggregate perspective, then from a monthly, disaggregate perspective that examines price inflation for both Food-at-Home versus Food-Away-from-Home and major food groups.

Annual All-Food versus All-Items Price Inflation

As a general rule, the All-Item and All-Food CPIs tend to move together.¹¹ Following a relatively tumultuous period of price inflation in the late 1980s, both price indexes entered an extended period of relative stability. From 1991 through 2006, the All-Food CPI measured average annual inflation of 2.5%, compared with 2.7% annual average All-Items price inflation (**Figure 7**).

Rapidly Inflating Global Commodity Markets, 2006 to 2008

Several economic factors emerged in late 2005 that began to gradually push market prices higher for both raw agricultural commodities and energy costs.¹² These factors included the rapid development of the U.S. biofuels sector, as well as rising consumer incomes, not just in the United States but globally, which sparked demand for meat and dairy products, food and feed grains, as well as energy and transportation resources, and a wide assortment of raw materials ranging from minerals and metals to coal and petroleum. Driven largely by these demand forces, both general inflation and food price inflation began to accelerate in 2007 and reached a peak in 2008 when the All-Items CPI reached 3.8%, highest since 1991, and the All-Food CPI peaked at 5.5%, highest since 1990 (**Figure 7** and **Figure 8**).

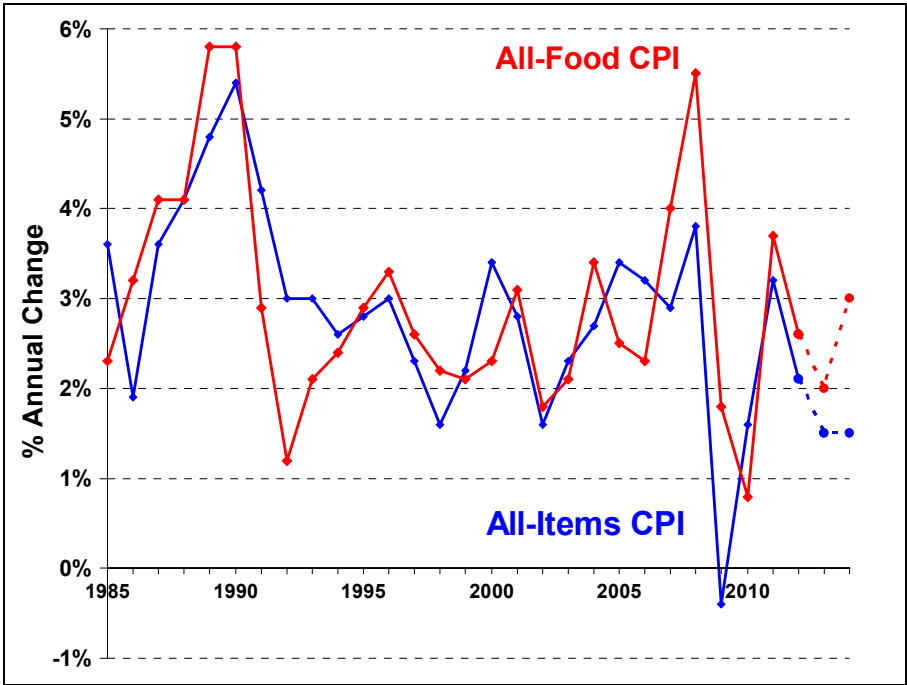
For a given level of income, higher prices mean lower effective purchasing power, since the same household budget will now acquire a smaller volume of products. The negative aspects of the sharp rise in retail food prices in 2007 and 2008 were magnified by a global financial crisis that emerged in 2008 and led to declines in both real (i.e., inflation-adjusted) gross domestic product (GDP) and real household disposable personal income (DPI)—after 15 consecutive years of positive growth both aggregate income indicators fell modestly in 2008, real GDP by 0.3%, and real DPI per capita by 0.2%.

¹⁰ *Household Food Security in the United States in 2012*, Economic Research Report No. (ERR-155), by Alisha Coleman-Jensen, Mark Nord, and Anita Singh, 41 pp, September 2013, ERS, USDA.

¹¹ The various CPI categories discussed here are indicative of price changes at the retail level in U.S. urban settings. Approximately 87% of U.S. consumers are covered by the CPI data collection process, thus CPI data are indicative of prices faced by most U.S. consumers.

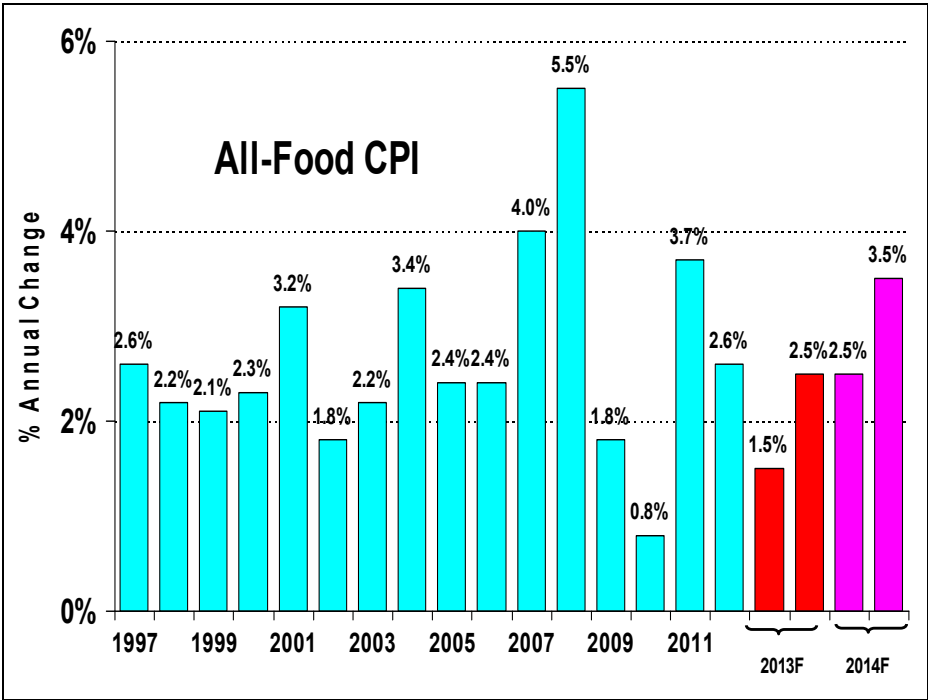
¹² For more information on the factors behind the sharp run-up in global commodity prices in the first half of 2008, see CRS Report RL34474, *High Agricultural Commodity Prices: What Are the Issues?* by Randy Schnepf.

Figure 7. Annual Price Inflation: All-Items vs. All-Food, 1985-2014F



Sources: Historical data for 1985-2012, adjusted for seasonality are from BLS; 2013 and 2014 forecasts of All-Food CPI are from USDA, ERS, August 23, 2013; 2013 and 2014 forecasts of All-Items CPI from Global Insights, U.S. Flash Forecast, September 2013. Percent change is calculated from annual average CPI for successive years.

Figure 8. Annual Food Price Inflation Since 1997



Sources: Historical data (1997-2012) from BLS; 2013 and 2014 forecasts from USDA, ERS, August 23, 2013.

The 2008 Financial Crisis Triggers a Severe Recession

The situation of sharply rising prices through the first half of 2008 came to a sudden halt when the financial crisis hit U.S. and global commodity and financial markets in mid-2008 leading to a severe economic recession in 2009. Annual average real GDP declined by 2.8% in 2009, the sharpest decline since 1946 (**Figure 9**). Real DPI also plunged downward in 2009, falling by 1%, sharply reducing average consumer purchasing power.

The economic downturn also manifested itself in a decline in household wealth due to sharply lower real estate values, tighter business and consumer credit, stagnant wage rates, and rising unemployment numbers (**Figure 10**). Unemployment is generally a lagging indicator in that it moves slowly and with a substantial delay relative to an economic downturn. This is primarily because employers need several months to determine the permanency of an economic downturn before idling productive resources including laying off workers. As a result, the U.S. unemployment rate associated with the economic recession of 2008 and 2009 did not peak until 2010, when it reached 9.6%. From 1995 to its upturn in 2009, the unemployment rate had averaged 5.1%.

Strong Inflationary-Deflationary Cycles During 2008-2012 Period

Monthly retail food price inflation responds with lags of up to several months to farm-level price changes in their underlying raw commodity markets. Prices for most farm-level agricultural commodities peaked in early 2008, then began a steady decline through 2010 reflecting abundant supplies, as well as the economic crises and diminished consumer purchase power.

However, most retail prices were slow to reflect farm-level commodity price declines, and it was only in late 2008 that retail prices began to significantly retreat for most foods. As a result, annual retail food price inflation peaked at 5.5% in 2008 before falling to 1.8% in 2009.

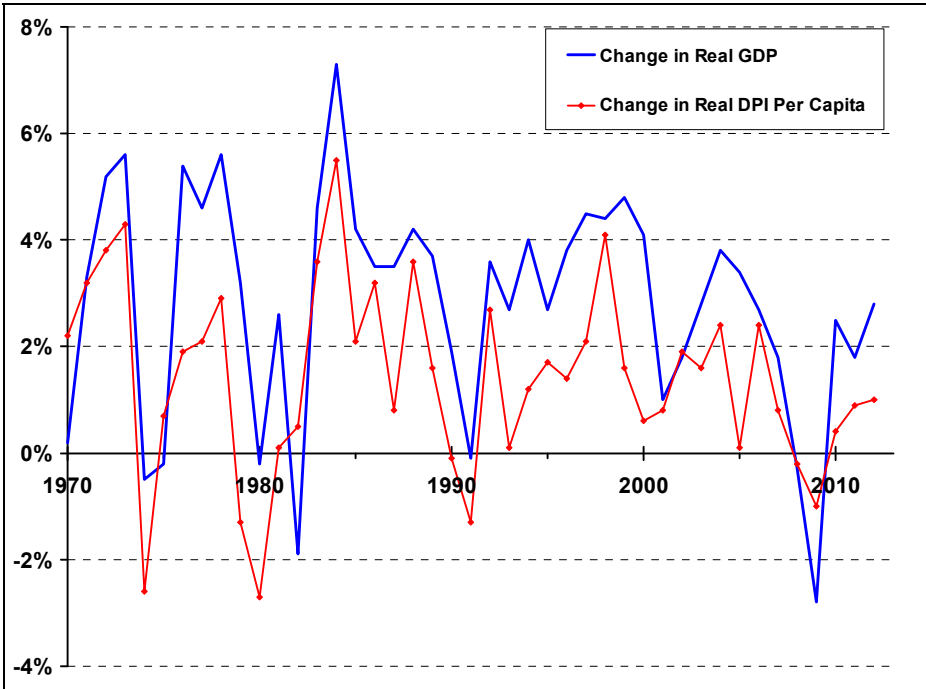
Monthly price data more clearly shows the strong inflationary and deflationary cycles that dominated food prices during the 2008 to 2012 period. After spiking up sharply during 2008, the change in month-to-month retail food prices declined precipitously through 2009 even though farm prices had stabilized by early 2009. This is because food processors and retailers are traditionally slow to pass on price decreases that they experience at the wholesale level for several reasons, including substantial inherent operating risk associated with volatile markets.¹³ The downward monthly price inflation trend reversed itself in mid-2009 (**Figure 11**); however, average annual food price inflation continued to fall, hitting 0.8% in 2010 (**Figure 8**).¹⁴

Sharply lower commodity and energy costs, combined with weak domestic and global economies, reduced inflationary pressures by mid-2009 for both the All-Items and All-Food price indexes. However, the All-Items CPI was subject to much stronger deflationary pressures than the All-Food CPI, particularly from weakening energy markets. As a result, the disparity between the two indexes widened in 2009 as the All-Items CPI fell at an annual rate of -0.4% (**Figure 7**).

¹³ These issues are discussed in more detail in CRS Report R40621, *Farm-to-Food Price Dynamics*, by Randy Schnepf.

¹⁴ ERS updates its food price forecast monthly at *Food CPI and Expenditures* Briefing Room, ERS, USDA, at <http://www.ers.usda.gov/data-products/food-price-outlook.aspx>.

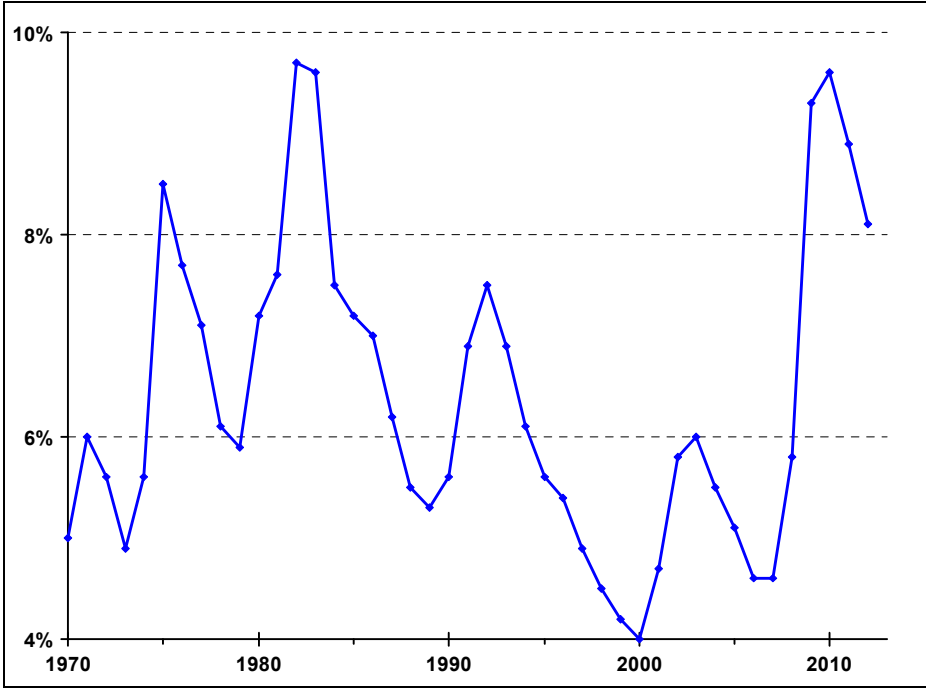
Figure 9. Annual Change in Real GDP and DPI per Capita



Source: Bureau of Economic Analysis (BEA), U.S. Department of Commerce, data as of August 29, 2013.

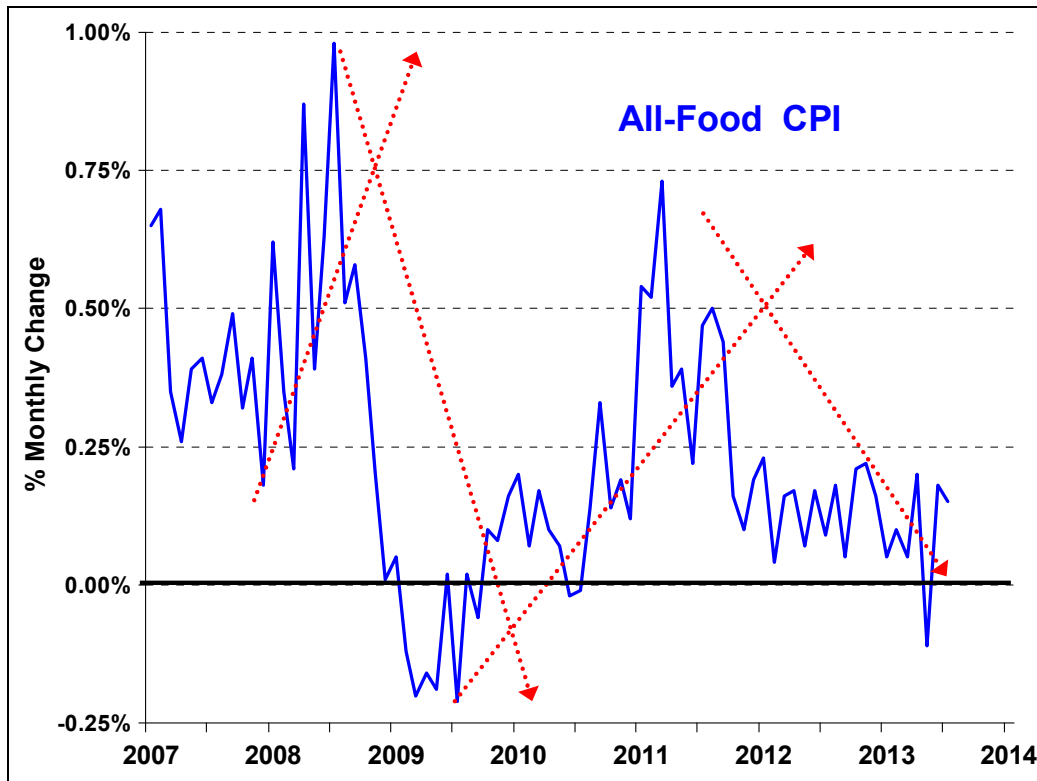
Note: GDP = Gross Domestic Product; DPI = Disposable Personal Income. DPI has been converted to per capita basis by CRS using Census Bureau population data.

Figure 10. U.S. Annual Average Unemployment Rate



Source: Historical data for 1950-2012, Dept. of Labor, BLS, September 10, 2013.

Figure 11. Monthly Retail Food Price Inflation Spiked in 2008, Plunged in 2009, Rose Again in 2011, But Has Stabilized Since 2012



Source: Data, adjusted for seasonality, are from BLS, CPI August 2013.

Notes: The percent change is calculated from the CPI for successive months. Multiply any given month's value by 12 to approximate the annual inflation rate experienced during that particular month, without compounding.

By late 2009 global economies resumed growing, albeit slowly, followed in 2010 by a gradual return to growth in the U.S. economy (**Figure 9**), thus reversing the deflationary price pattern. Because of the lags in the price-signal response process (referred to as price transmission by economist) described earlier, the price deflationary trend persisted into 2010 and provided some budgetary relief for households with employed members. However, surging unemployment numbers (also lagging well behind the general economy) meant that many households were unable to take advantage of food price declines.

By 2010, prices for most food groups had resumed their upward surge into 2011 (**Figure 11**) before leveling of (or at least slowing their growth) due to another bout of general economic weakness and persistently high unemployment. The unemployment rate peaked at 9.6% in 2010 and has declined slowly to 8.9% in 2011 and 8.1% in 2012—still historically high levels.

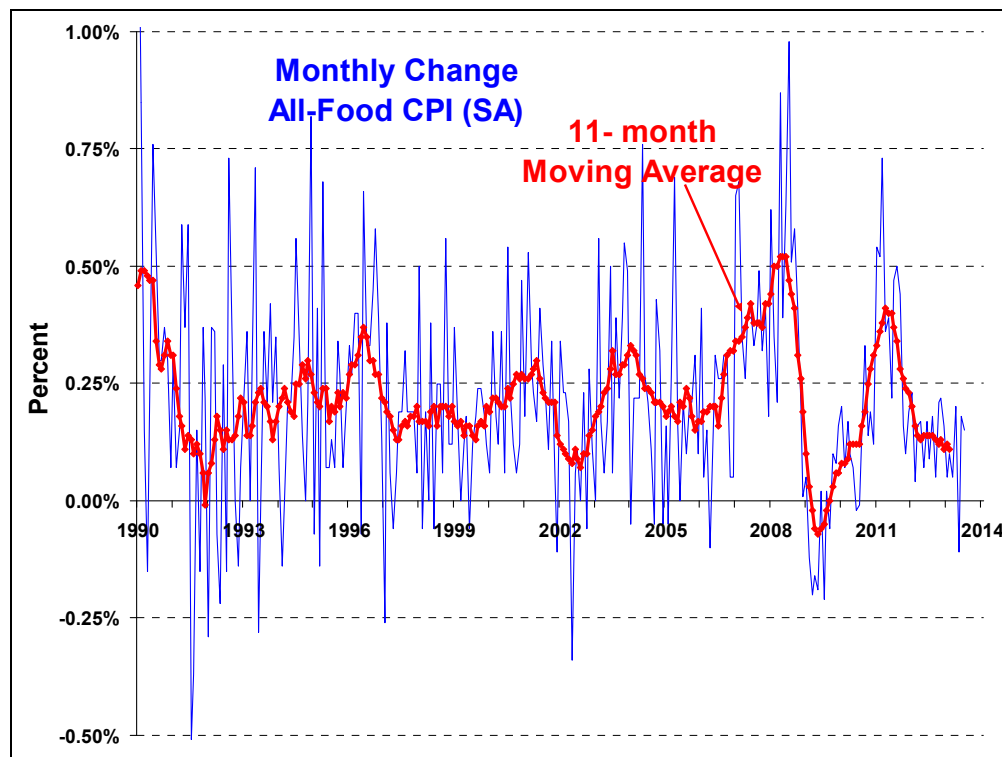
After several months of revived economic growth and improving employment numbers in the United States, the economy slowed sharply again in early 2011. This economic turn-around was reflected in declining monthly price inflation data into 2012 (**Figure 11**). Finally, retail food prices appear to have stabilized around the long-run average of 2.6% since early 2012.

The 2013 and 2014 Forecasts for Annual Food Price Inflation

U.S. and global economies remained sluggish through 2012 and into 2013 dampened by high unemployment, continued financial turmoil in Europe, and a slowing economy in China. Despite this economic uncertainty, tight U.S. and global commodity market supply and demand conditions (due largely to poor growing conditions in the United States, Central Europe and elsewhere during 2012), were expected to keep U.S. food price inflation in the 1.5% to 2.5% range through 2013 and a percentage point higher (2.5% to 3.5%) in 2014 (**Table 4** and **Figure 8**).

Figure 12. Food Price Inflation Volatility Has Increased Since 2005

(monthly change vs. 11-month moving average)



Source: Data, adjusted for seasonality, are from BLS, CPI August 2013.

On-Again, Off-Again Economic Activity Drives Retail Food Price Pattern

Retail food prices were clearly responding to the on-again, off-again demand driven by the shifting of U.S. and global economic activity. The same monthly All-Food price inflation measures (also adjusted for seasonality) are presented in **Figure 12**, but for a longer time period and accompanied by their 11-month moving average (MA).¹⁵

¹⁵ Moving averages are used to reveal underlying patterns or trends that can otherwise be hidden by a substantial amount of month-to-month variation in price movements.

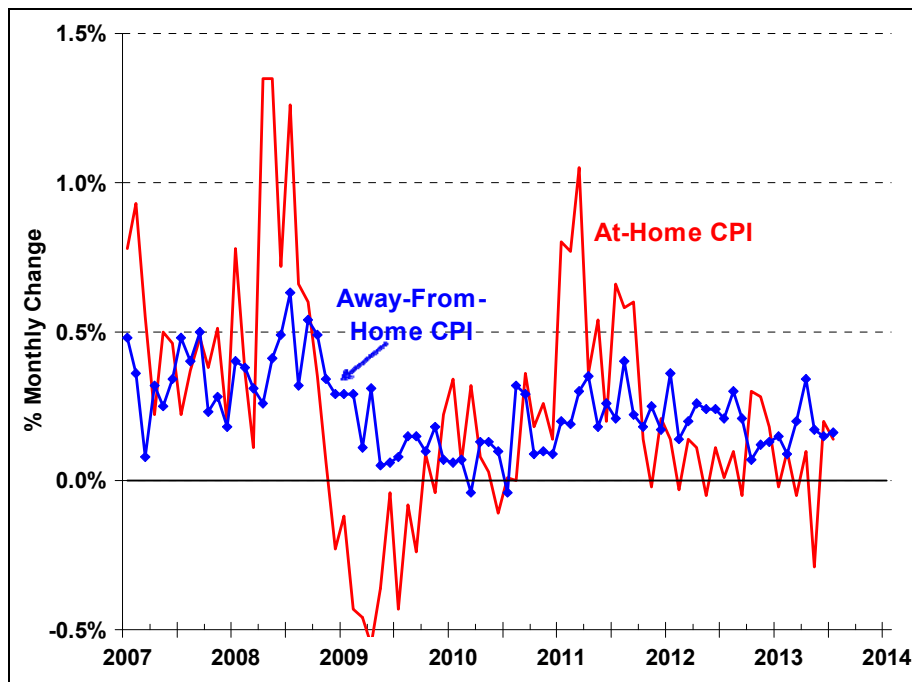
The 11-month MA series reveals more clearly four pronounced inflationary-deflationary trends for retail food prices:

1. a strong upward inflationary trend that began at the end of 2005 and persisted through June 2008—in line with the demand-driven price rises in global markets for agricultural commodities as well as for energy, transportation, and raw materials;
2. a severe deflationary price pattern from late 2008 until mid-2009, driven by the U.S. and global financial crisis of 2008 and its aftermath;
3. another upward trend into early 2011 as U.S. and global economic conditions slowly improved, and,
4. finally, a decline in inflationary pressure in mid-2011 into 2013 where monthly food price inflation appears to have leveled off—due in part to continued sluggish economic growth, stagnant wages, and persistently high unemployment which combined to weaken consumer purchasing power.

At-Home versus Away-from-Home Food Price Inflation

As shown earlier (**Figure 6**), At-Home food prices are substantially more volatile than Away-from-Home food prices (see also **Table 1**). This volatility is apparent, even when using a shorter time period (**Figure 13**).

Figure 13. Monthly Retail Food Price Inflation, At-Home vs. Away-from-Home



Source: Historical data, adjusted for seasonality, are from BLS, CPI August 2013.

Notes: The percent change is calculated from the CPI for successive months. Multiply any given month's value by 12 to approximate the annual inflation rate experienced during that particular month, without compounding.

When displayed in terms of monthly price changes, the pattern exhibited by At-Home food price inflation (**Figure 13**) appears very similar to the pattern for All-Food price inflation (**Figure 11**), although the At-Home food price movements are more extreme. In contrast, monthly Away-from-Home price inflation is much more stable. Note that both At-Home and Away-from-Home monthly price inflation show a distinct downturn beginning in July 2008 and running into early 2009, followed by a steady recovery into 2011. However, the monthly Away-from-Home price inflation does not show the same declining trend that started in mid-2011 for At-Home monthly price inflation.

Supply-Side Influences on Food Price Inflation

The demand-side influences of income growth (and decline) and the global financial crisis that emerged in late 2008 have already been discussed. On the supply side, food price inflation is the result of dynamic forces that occur both at the farm where the raw agricultural ingredients for retail food items are produced, and along the marketing chain as the farm output is transformed and moved to the retail customer. An array of costs are layered on top of the price of the raw agricultural commodity, including handling, transportation, storage, and processing, as well as the insurance, financing, and advertising costs necessary to move the product to the retail customer.

The relative importance of these marketing costs varies widely for different retail food products depending on the degree of processing and transformation (i.e., cleaning, packaging, shipping, advertising, etc.). As a result, economic forces such as higher energy costs or increased labor rates do not impact all food categories equally. More highly processed food products, where the farm-level commodity value contributes a small share to the final price, are less influenced by farm-level price changes than are those food products that have very little marketing and processing as part of the final retail product—e.g., eggs, fresh meat, and certain fruit and vegetables.

Annual Price Movements by Major Food Categories

The food price inflation is not felt evenly across all food groups, but varies widely in terms of both the timing and the relative magnitude of inflation. However, the pattern displayed for At-Home food prices in **Figure 13** are for the most part, replicated across the individual food groups of **Table 4**.

- In 2008, at-home food prices inflation of 6.4% was the highest since 1990.
- In 2009 and 2010, most food groups experienced very modest price inflation (0.5% and 0.3%, respectively), several categories experienced price deflation.
- Food price inflation turned upward sharply across most food categories in 2011.
- Food price inflation returned to its long-run trend of about 2.5% in 2012 with the notable exception of beef and poultry products, and fats and oils which were up sharply. High feed costs and lack of pasture during 2012 (due to a severe drought across the Plains States and Cornbelt) contributed to substantial declines in livestock and poultry populations, and cut into cattle feedlot and chicken grow-out profit margins, thus sparking concerns—but not shortages—at the retail level.
- Until feed supplies show tangible signs of rebounding, livestock, dairy, and poultry sectors will be hesitant to expand. As a result, tight animal product

supplies in 2012 and 2013 are expected to support most animal product prices in the 2% to 4% range in 2014.

Table 4. The Food-at-Home CPI by Category Since 2008

Category	Weights ^a		Annual Percent Change						
	%	%	2008	2009	2010	2011	2012	2013F	2014F
Food at Home	100%		6.4	0.5	0.3	4.8	2.5	1.5 to 2.5	2.5 to 3.5
1-Cereal & Bakery Products	14.3%		10.2	3.2	-0.8	3.9	2.8	1.5 to 2.5	2.0 to 3.0
Cereals and products ^b		5.5%	10.1	3.4	-1.9	4.4	2.5	Na	Na
Bakery products ^c		8.8%	10.3	3.0	-0.4	3.7	3.1	Na	Na
2-Meats; Poultry; & Fish	22.7%		4.2	0.5	1.9	7.4	3.6	1.5 to 2.5	2.5 to 3.5
Beef & veal		6.6%	4.5	-1.0	2.9	10.2	6.4	2.0 to 3.0	2.5 to 3.5
Pork		4.2%	2.3	-2.0	4.7	8.5	0.3	0.0 to 1.0	2.0 to 3.0
Poultry		4.1%	5.0	1.7	-0.1	2.9	5.5	3.0 to 4.0	3.0 to 4.0
Fish & seafood		3.5%	6.0	3.6	1.1	7.1	2.4	2.0 to 3.0	2.5 to 3.5
3-Eggs	1.3%		14.0	-14.7	1.5	9.2	3.2	2.0 to 3.0	2.0 to 3.0
4-Dairy & Products	10.5%		8.0	-6.4	1.1	6.8	2.1	1.0 to 2.0	2.5 to 3.5
Milk		3.5%	6.0	-13.2	3.6	9.2	1.1	Na	Na
Cheese		3.3%	12.1	-5.2	0.7	6.2	2.2	Na	Na
Ice Cream		1.6%	5.1	2.0	-0.8	7.2	3.1	Na	Na
Other		2.1%	7.7	-2.4	-0.7	3.3	2.9	Na	Na
5-Fruits & Vegetables	15.0%		6.2	-2.1	0.2	4.1	2.9	2.0 to 3.0	2.5 to 3.5
Fresh fruits		6.1%	4.8	-6.1	-0.6	3.3	1.0	2.0 to 3.0	2.5 to 3.5
Fresh vegetables		5.4%	5.6	-3.4	2.0	5.6	-5.1	2.5 to 3.5	2.0 to 3.0
Processed fruits & veg.		3.5%	9.5	6.6	-1.3	2.9	3.8	1.0 to 2.0	2.5 to 3.5
6-Non-alcoholic Beverages	11.0%		4.3	1.9	-0.9	3.2	1.1	0.0 to 1.0	2.5 to 3.5
Juices & non-alc. drinks		8.2%	4.4	2.6	-1.4	1.8	1.1	Na	Na
Coffee, tea, & other		2.7%	4.2	-0.9	0.1	14.7	1.7	Na	Na
7-Sugar & Sweets	3.5%		5.5	5.6	2.2	3.3	3.3	0.0 to 1.0	2.0 to 3.0
8-Fats & Oils	3.1%		13.8	2.3	-0.3	9.3	6.1	0.0 to 1.0	1.5 to 2.5
9-Other Foods ^d	19.9%		5.2	3.7	-0.5	2.3	3.5	1.5 to 2.5	2.0 to 3.0
Froz./frz-dried foods		3.5%	4.3	2.8	-1.7	1.5	1.2	Na	Na
Snacks		3.8%	8.1	6.7	1.6	3.5	6.5	Na	Na

Sources: Historical data, adjusted for seasonality, for 2008 to 2012 are from BLS for the U.S. City Average (CPI-U). The 2013 and 2014 forecasts are from ERS, USDA, as of August 23, 2013.

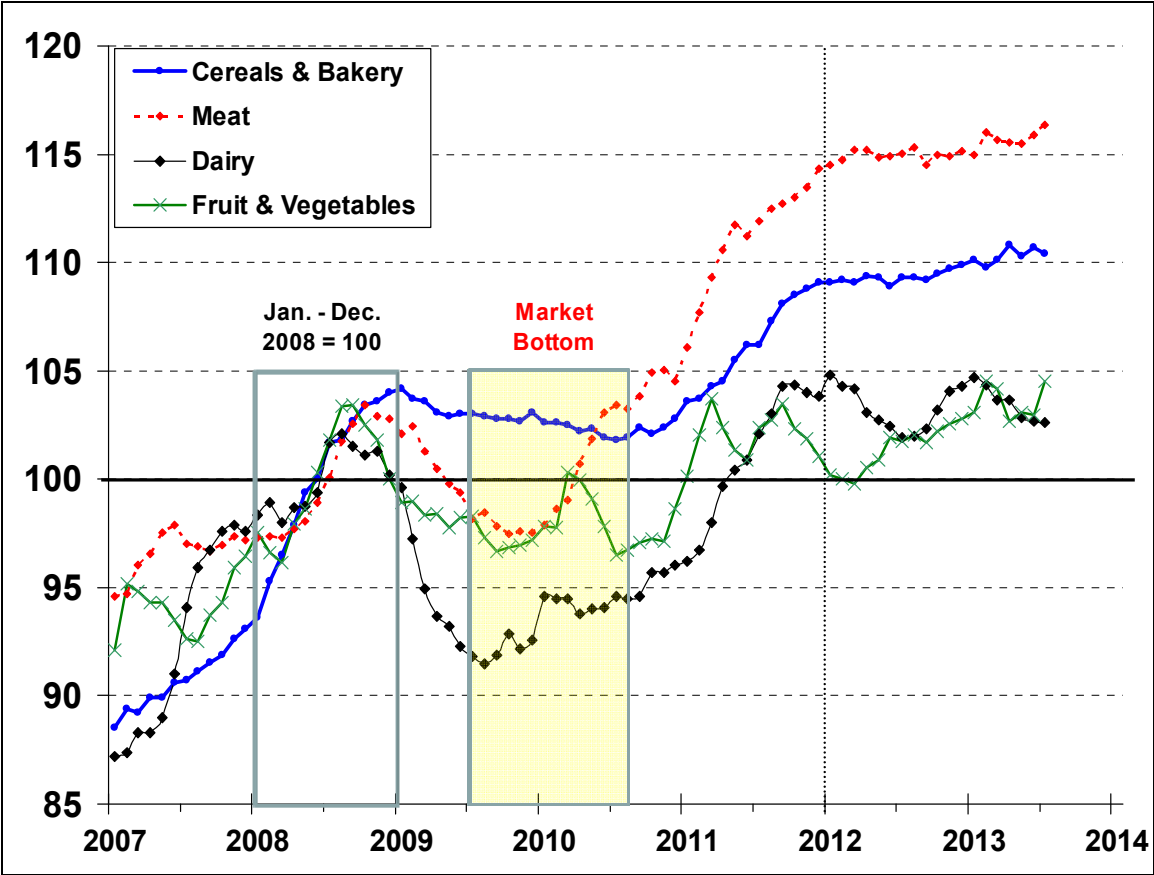
- Weights are "as a percent of total at-home food expenditures" based on BLS 2009-10 weights, December 2012.
- Flour and prepared flour mixes, breakfast cereals, rice, pasta, and cornmeal.
- Bread, fresh biscuits, rolls, muffins, cakes, cupcakes, cookies, and other bakery products.
- Includes soups, spices, seasonings, condiments, sauces, baby food, and other miscellaneous foods.

Monthly Price Movements by Major Food Categories

Annual averages can cloud over substantial inter-year price movements. As a result, it is worthwhile to glance over the monthly price indexes by major food group to get a better sense of the general pattern of retail food price movements across the various food groups.

- A “common theme” across the various food product prices in the following charts is a sharp deflationary move associated with the fiscal crises of 2008 and subsequent recession, followed by slow but sustained upward price trend since 2010, and finally fairly flat price movement since 2012.
- Also, evidence (as presented in the following charts) suggests that highly processed foods more consistently adhere to steady, stable upward price trends dependent on general economic conditions. In contrast, prices for less-processed retail food products—such as eggs, milk, and fresh fruits and vegetables—respond far more quickly to changes in both farm commodity prices and economic conditions and have followed farm prices downward in the early months of 2009, then upward sharply from late 2010 into 2012 before leveling off or declining.

Figure 14. Monthly Retail Price Indexes: Various Major Food Groups



Source: Seasonally adjusted monthly CPI data, BLS, August 2013.

Monthly price indexes (**Figure 14**) for the four principal food groups—cereals and bakery products; meats (including beef, pork, poultry, and seafood); dairy products (including milk, cheese, ice cream, and other); and fruits and vegetables (including fresh as well as processed)—reveal variations of the “common theme” of price movement.¹⁶

- The cereals and bakery product price index and the meat price index show the strongest increase since 2008, rising nearly 19% and 17%, respectively, by 2012.
- The dairy price index rose through 2007 and into 2008, then declined sharply through 2009 before moving steadily upward from mid-2009 until 2012.
- The fruit and vegetable price index has shown considerable volatility, as a general upward pattern has been punctuated by significant deflationary movements during 2007, 2009, 2010, and late 2011.

Animal product prices (**Figure 15**) show very similar patterns with the notable exception of eggs and milk which underwent severe deflationary period from mid-2008 through 2009. Steady U.S. economic growth coupled with relatively tight animal product supplies are expected to sustain retail prices for most animal products in 2014.

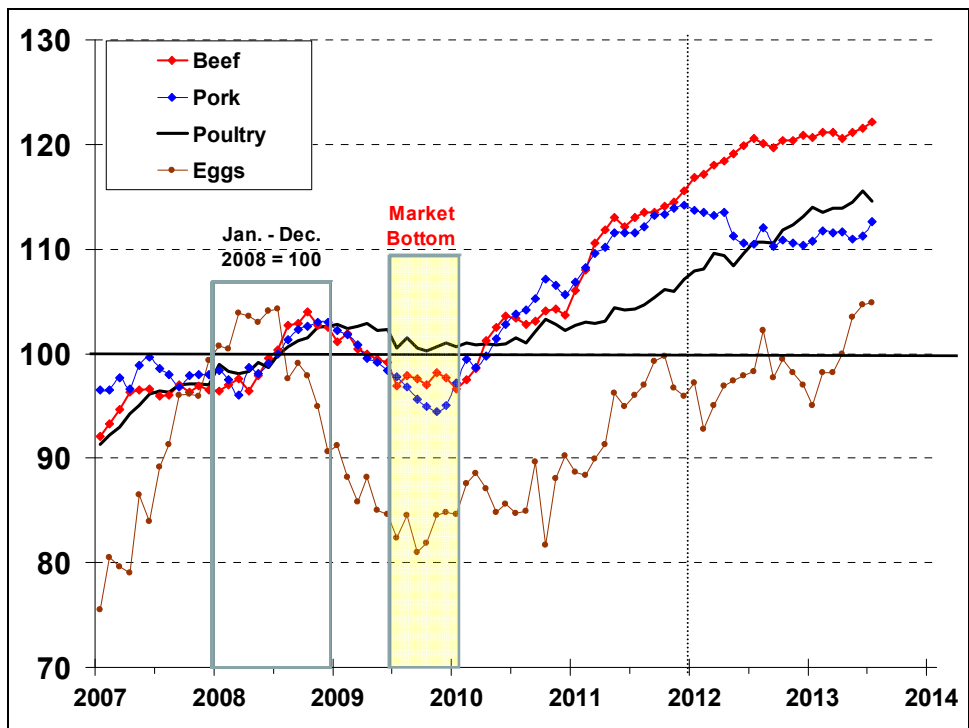
- Beef and pork prices have shown considerable strength since early 2010 although pork prices have tailed off since late 2010. Drought-related declines in cattle populations are expected to support beef prices through 2014.
- Poultry prices have been more stable and have ticked upward since late 2010.
- Perhaps the most dramatic and volatile of the individual animal product price indexes has been eggs (**Figure 15**), which rose 35% from January 2007 to January 2008, then fell over 20% by July 2009. A production decline from 2006 to 2007 coupled with strong exports tightened U.S. egg supplies and pushed prices sharply higher in 2007. Stronger egg production by mid-2008 coupled with the global economic crisis dampened prices starting in the latter half of 2008. General economic growth has pulled egg prices upward steadily since mid-2009, just surpassing their mid-2008 peak in June 2013.

The components of the dairy group (**Figure 16**) followed distinctly different patterns.

- The price index for fresh milk showed a sharp escalation in early 2007 (up 20% on the year), followed by a sharp drop-off in 2008 including a 22% fall from July 2008 to August 2009, before trending higher. The milk price pattern for the 2007-2009 period was very similar to the egg price pattern for that period, and for the same principal reasons—initially tight supplies and expensive feed costs, followed by increased supplies and a sharp drop in demand. A resumption of U.S. and global economic growth (albeit slow) has helped sustain price increases since late 2009; however, the dairy price index has yet to return to its 2008 level.
- In contrast, highly processed ice cream showed a fairly steady upward rise from mid-2007 before slowing in early 2009, then growing sharply in late 2010 with the improving general economy before plateauing by mid-2012.

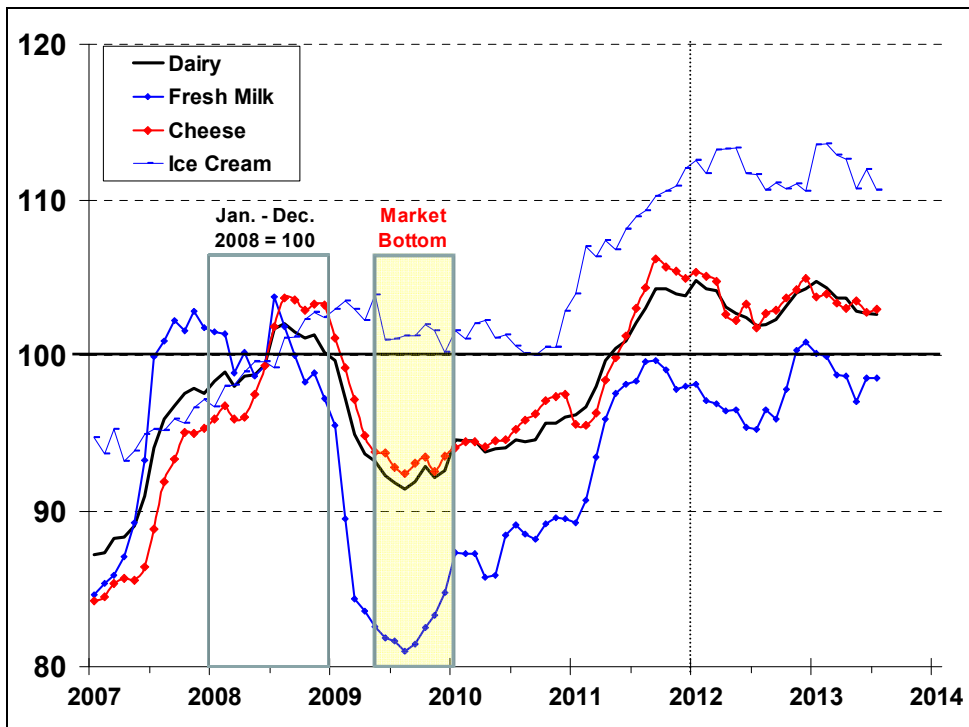
¹⁶ Note that these statistics (based on the change in monthly price indexes) differ from the statistics reported in **Table 4**, where the inflation rates are calculated using the difference from annual averages rather than monthly averages.

Figure 15. Monthly Retail Price Indexes: Beef, Pork, Poultry, and Eggs



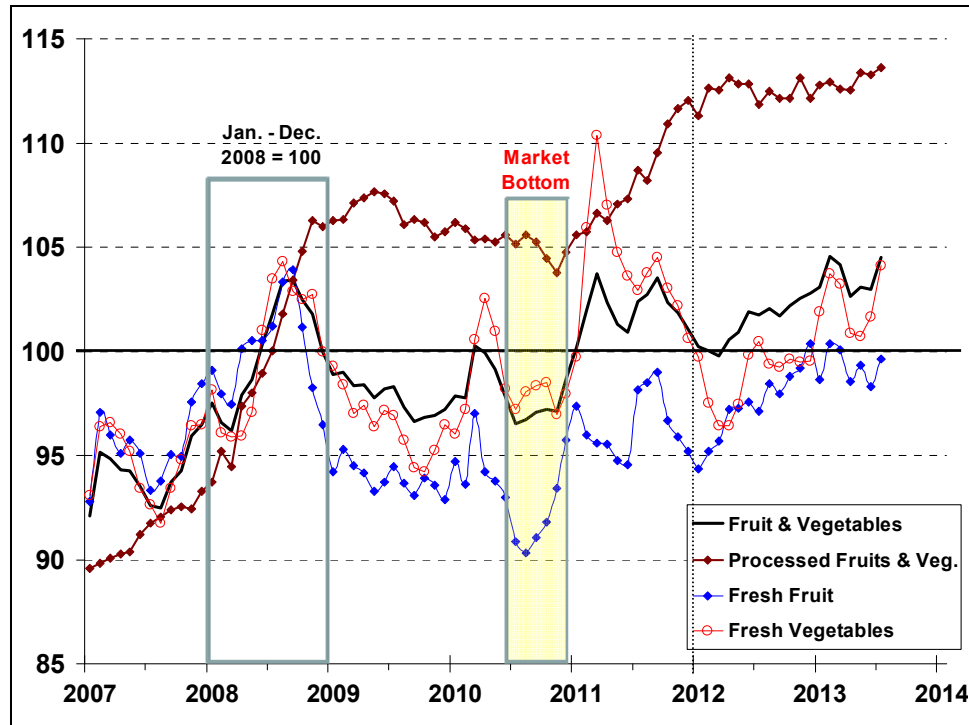
Source: Seasonally adjusted monthly CPI data, BLS, August 2013.

Figure 16. Monthly Retail Price Indexes: Dairy, Fresh Milk, Cheese, and Ice Cream



Source: Seasonally adjusted monthly CPI data, BLS, August 2013.

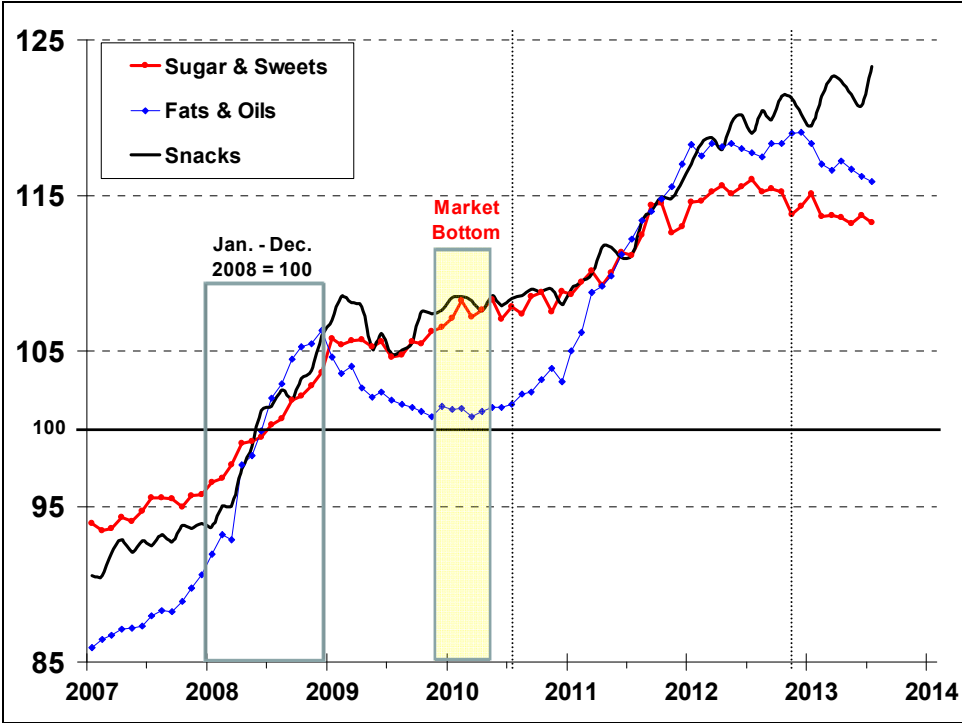
Figure 17. Monthly Retail Price Indexes: Fruits and Vegetables



Source: Seasonally adjusted monthly CPI data, BLS, August 2013.

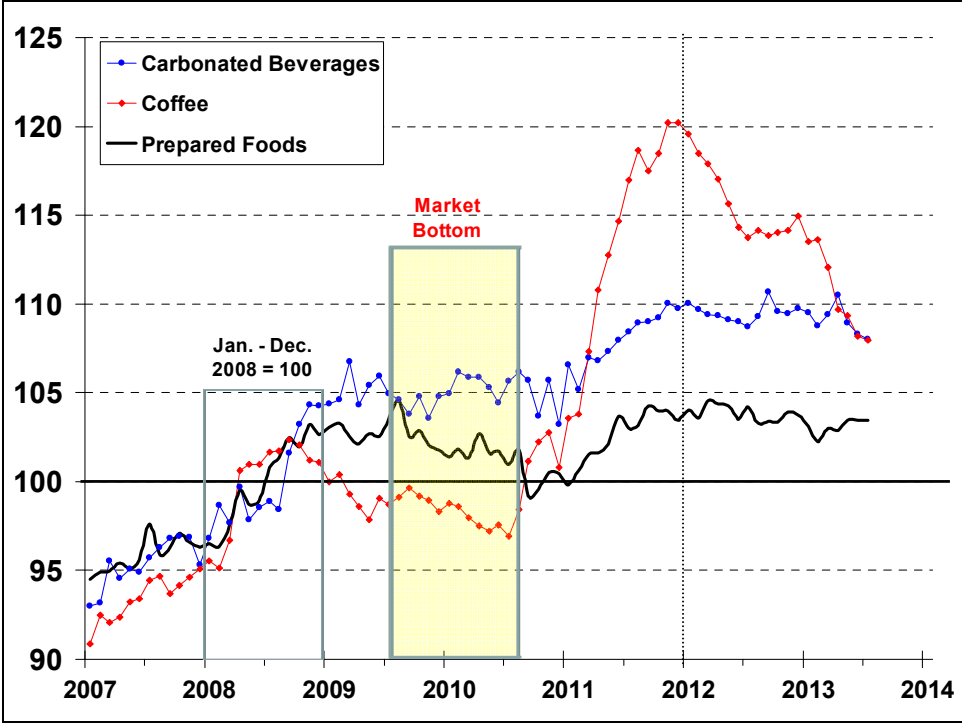
- Similar to ice cream, the price index for processed fruits and vegetables (**Figure 17**) rose steadily through 2008, before leveling off, then ticking upward again since late 2010.
- In contrast, the price indexes for both fresh fruit and fresh vegetables exhibited volatile, slightly upward patterns into mid-2008 before declining through mid-2010. Since then, the fresh fruit and vegetable indexes have exhibited volatile price movements with no real trend into 2012.
- The price index for highly processed snacks (**Figure 18**) rose sharply through 2008 before falling back somewhat in 2009, then trending higher into 2012.
- The sugar and sweets price index had a similar pattern, although with a somewhat slower rise into 2012.
- The fats and oils price index showed more volatility rising rapidly through 2008, then fell back through 2010 as the global market for oils became over-supplied, in part due to the fall-off in demand (related to the global financial crisis) in lesser-developed countries, where fats and oils are still treated as luxury goods. A resumption of global economic growth in late 2010 has pulled the fats and oils price index upward since early 2010, with a sharp uptick through 2011 before leveling off in 2012 and declining slightly in 2013.

Figure 18. Monthly Retail Price Indexes: Sugar, Fat & Oils, and Snacks



Source: Seasonally adjusted monthly CPI data, BLS, August 2013.

Figure 19. Monthly Retail Price Indexes: Coffee, Carbonated Beverages, and Prepared Foods



Source: Seasonally adjusted monthly CPI data, BLS, August 2013.

- Similar to other highly processed food products, the prepared-food group (which includes frozen and freeze-dried prepared foods) and the carbonated beverages indexes tend to follow the swings in consumer demand as reflected by the general economy. Both indexes rose steadily through the first half of 2008 (**Figure 19**), then declined slightly into mid-2010 before ticking upward again with the global economic recovery.
- Carbonated beverages have shown greater price inflation since 2010 compared with prepared foods which are more dependent on the U.S. market. The slow U.S. economic recovery has kept prepared food demand in check.
- Coffee prices, which are closely linked to international supply and demand conditions, rose sharply in 2008, then descent through mid-2010 with the international financial crises and recession. However, coffee prices experienced very rapid price inflation from mid-2010 until 2012 when prices declined sharply.

Effect of Retail Price Changes

As stated earlier in this report, lower-income consumers who spend a significant share of their household budget on food are likely to be impacted more severely by rising food prices, to be more responsive to price changes, and to be forced to make more difficult budgetary tradeoffs than high-income consumers with lower food budget shares.

The United States has several domestic programs that are designed to help consumers meet their household food and nutrition needs during periods of economic downturn when household purchasing power is diminished. In addition, the United States has a history of providing significant international food aid during periods of famine or food shortages throughout the world. Both domestic and international U.S. food assistance programs are directly influenced by food price inflation.

Price Inflation Escalator Clauses Often Respond With a Lag

Many wages and salaries, as well as federal programs (including several domestic food assistance programs), are linked to price inflation through escalation clauses in order to retain their purchasing power. For households where income does not keep up with price inflation, declines in purchasing power are both real and immediate. However, even for households with escalation clauses that adjust incomes or benefits for price inflation, there is a time lag between the time the price inflation is measured and the time when the wage or program benefit is adjusted upward to compensate. As a result, for households with incomes or federal benefits linked to price inflation escalators, higher prices can cause a short-term decline in real purchasing power. This is most meaningful when prices are accelerating. When prices are falling, as during a deflationary period, consumers with fixed incomes realize gains in real income (provided that they are not subject to wage cuts or layoffs).

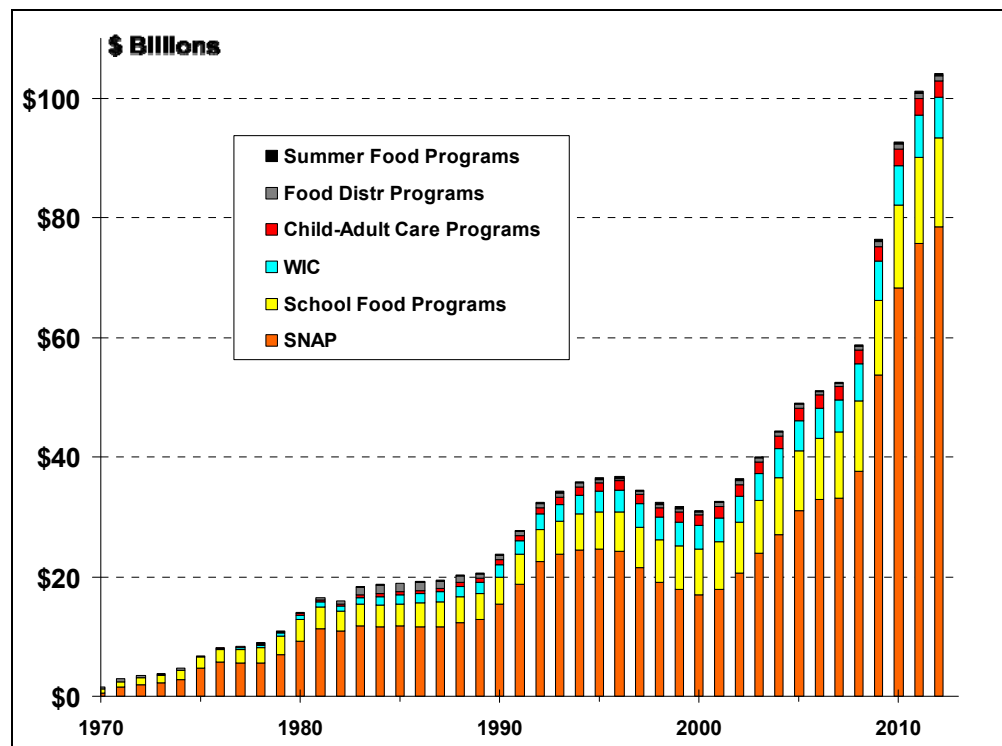
Declining Inflation vs. Deflation

Deflation describes a period where prices are actually declining in absolute value. In contrast, declining price inflation describes a period where prices continue to rise, but at a slower pace than in the preceding periods.

Federal Spending for Domestic Food Assistance Programs¹⁷

The U.S. Department of Agriculture (USDA) administers several domestic food and nutrition programs that provide a nutritional safety net for millions of low-income households, as well as schoolchildren and nutritionally vulnerable groups such as pregnant and/or lactating mothers.¹⁸ The past decade has seen a tremendous expansion in use of USDA's food and nutrition assistance programs—federal expenditures totaled \$104.1 billion in FY2012 and marked the 12th consecutive year in which food and nutrition assistance expenditures exceeded the previous historical record.¹⁹ Since FY2000, expenditures for food and nutrition assistance have more than tripled.

Figure 20. Annual Outlays for USDA Food and Nutrition Programs Since 1970



Source: USDA, Food and Nutrition Service, Program Data, downloaded on Sept. 13, 2013.

USDA's expenditures for food and nutrition assistance programs can be grouped into five main categories (1) the Supplemental Nutrition Assistance Program (SNAP), (2) School food programs (including the National School Lunch Program and the School Breakfast Program), (3) the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), (4) the Child and Adult Care Food Program, and (5) food distribution programs including Nutrition Services

¹⁷ For more information on the domestic food and nutrition programs discussed in this section, please contact Randy Alison Aussenberg, CRS Analyst in Social Policy (7-8641, raussenberg@crs.loc.gov).

¹⁸ See CRS Report R42353, *Domestic Food Assistance: Summary of Programs*, by Randy Alison Aussenberg and Kirsten J. Colello.

¹⁹ ERS, USDA, *The Food Assistance Landscape*, FY2012 Annual Report, Economic Information Bulletin No. 109, March 2013, at <http://www.ers.usda.gov/publications/eib-economic-information-bulletin/eib109.aspx>.

Incentive Program (NSIP), Food Distribution on Indian Reservations (FDPIR), Commodity Supplemental Food (CSFP), and the Emergency Food Assistance (TEFAP). SNAP is the largest of these programs and accounted for 73% of federal food and nutrition assistance spending in FY2012. SNAP provides monthly benefits for eligible participants to purchase food items at authorized food stores.

A substantial portion of spending on food and nutrition assistance programs is in the form of entitlements (i.e., mandatory spending) whereby eligibility and participation rates govern outlays. For mandatory programs, food price inflation leads to more spending on domestic assistance efforts. Increasing prices encourage those who are eligible, but not participating, to enroll. They also translate directly (albeit with a time lag) into higher benefit payments and per-meal subsidies for “entitlement” programs in which benefits are indexed to food-price inflation. However, many of these programs also include discretionary components where outlays are determined through the annual appropriations process. Increasing prices place pressure on appropriators to provide more funding to support caseloads for “discretionary” programs like the WIC program.

The 2008-2009 global economic crisis—with its higher unemployment, income loss, and lower effective household purchasing power—following on the heels of higher retail prices, brought on higher participation rates and greater costs for domestic food aid programs. Although the U.S. economy resumed growth during 2010, unemployment ranks have been slow to follow. This is reflected in high SNAP participation levels, which hit an all-time high of 47.8 million (or 15.2% of the U.S. population) in December 2012.²⁰ SNAP monthly benefit costs have grown from \$2.4 billion in May 2006 to a peak of \$6.5 billion in November 2012, with average per-person monthly benefit spending rising from \$93 to \$135.73.

Other domestic food assistance programs also have seen increased participation (and costs). The number of lower-income children receiving free or reduced-price school lunches has been consistently over 31 million schoolchildren (during the school year) since 2008.²¹ Total outlays for the national school lunch, school breakfast, and special milk programs totaled \$14.8 billion in FY2012.²² WIC participation peaked at 9.2 million women, infants, and children in 2010,²³ while the total cost (food and administration) has crept upward to a high of \$7.2 billion in FY2011.²⁴

Supplemental Nutrition Assistance Program (SNAP, formerly Food Stamps)

The SNAP, with over \$78.4 billion in outlays in FY2012,²⁵ is the largest of the federally supported domestic food assistance programs.²⁶ SNAP benefits normally are indexed annually

²⁰ USDA, Food and Nutrition Service (FNS), Supplemental Nutrition Assistance Program, September 6, 2013, at <http://www.fns.usda.gov/pd/snapmain.htm>.

²¹ USDA, FNS, Program Data—Child Nutrition Tables, Sept. 6, 2013, at <http://www.fns.usda.gov/pd/cnpmain.htm>.

²² USDA, FNS, Program Data—Child Nutrition Tables, “Federal Cost of School Food Programs,” Sept. 6, 2013, at <http://www.fns.usda.gov/pd/cncosts.htm>.

²³ USDA, FNS, WIC Program, “Monthly Data—National Level: October 2007–January 2011,” at http://www.fns.usda.gov/pd/37WIC_Monthly.htm.

²⁴ USDA, FNS, WIC Program, “Annual Data—National Level: FY1974–FY2011,” August 30, 2012, at <http://www.fns.usda.gov/pd/wisummary.htm>.

²⁵ USDA, FNS, Supplemental Nutrition Assistance Program, “National Level: Annual Summary, FY69 through FY2010,” at <http://www.fns.usda.gov/pd/SNAPsummary.htm>.

²⁶ See CRS Report R42505, *Supplemental Nutrition Assistance Program (SNAP): A Primer on Eligibility and Benefits*, by Randy Alison Aussenberg.

(each October) for changes in the cost of USDA's least costly food plan, the "Thrifty Food Plan" (TFP). However, the increases are lagged by three months in reflecting rising food costs—they were (by law) based on prices from the immediately previous June. Thus there is a three-month gap between the calculation of the price inflation index in June and its use to adjust SNAP benefits in October.

In recognition of the lag in the inflation index for SNAP benefits, increased food needs, and reduced income, the 2009 American Recovery and Reinvestment Act (ARRA; P.L. 111-5) provided additional support for domestic food assistance programs: an estimated \$11.5 billion for FY2009-FY2010 and \$20.8 billion through FY2019.²⁷ SNAP was the primary recipient of this new money, most of which will be used to pay for added benefits, loosened eligibility standards, and administrative costs.

However, these increased SNAP benefits were reduced as part of P.L. 111-226 (a law providing funding for education jobs and Medicaid) and were further reduced by child nutrition reauthorization legislation (the Healthy, Hunger-Free Kids Act of 2010; P.L. 111-296).²⁸ As a result of these cuts, in November 2013 SNAP benefits will revert to what basic SNAP law directs (i.e., as calculated using annual food-price inflation).

Child Nutrition

Federally supported child nutrition programs (e.g., the National School Lunch Program, the School Breakfast Program, the Special Milk Program, Child and Adult Care Food Program, and the Summer Food Service Program) and initiatives reach almost 32 million children. In FY2012, federal spending on these programs totaled nearly \$18.1 billion, the second-largest federal commitment to domestic food assistance.²⁹ The basic goals of federal child nutrition programs are to improve children's nutrition, increase lower-income children's access to nutritious meals and snacks, and help support the agricultural economy.

Federal payments for meals and snacks served to children are indexed every July to food-price changes reflected in the Food-Away-from-Home component of the CPI over the 12-month period ending each May. Commodity support (some 23 cents per meal in 2011) also is indexed annually based on the Bureau of Labor Statistics' Producer Price Index for five major food components (cereal and bakery products, meats, poultry and fish, dairy products, processed fruits and vegetables, and fats and oils).

The WIC Program

Unlike the SNAP and child nutrition programs, which receive mandatory funding, the WIC program is funded from discretionary sources. Spending depends on annual appropriations, based largely on estimates of participation and the cost of the food packages that are purchased with WIC vouchers. In FY2012, \$6.8 billion was spent on WIC including \$4.8 billion in food costs

²⁷ For more information, see CRS Report R40160, *Agriculture, Nutrition, and Rural Provisions in the American Recovery and Reinvestment Act (ARRA) of 2009*, coordinated by Jim Monke.

²⁸ For more information see CRS Report R41374, *Reducing SNAP (Food Stamp) Benefits Provided by the ARRA: P.L. 111-226 and P.L. 111-296*, by Randy Alison Aussenberg, Jim Monke, and Gene Falk.

²⁹ USDA, FNS, Program Data—Child Nutrition Tables, at <http://www.fns.usda.gov/pd/cnpsmain.htm>.

and \$1.9 billion in nutrition service and administrative costs.³⁰ The average monthly food cost per participant was \$44.99.

The value of benefits is not indexed to inflation, per se. Rather, WIC vouchers are redeemable at whatever the participating retailer charges for the items covered by the vouchers, which differ according to the type of recipient (e.g., pregnant mother, infant, and child). As a result, the cost of WIC vouchers reflect food price changes without the time lag built into other inflation-indexed nutrition programs. Just as important, WIC vouchers are highly specific as to the food items they cover and have a relatively heavy emphasis on certain types of food—for example, dairy items and infant formula are major components.

In recent years, the cost of WIC food vouchers has varied a great deal, largely because of changes in dairy-related food prices. The average per-participant monthly cost of vouchers has ranged from \$33.06 in FY2000 to \$46.67 in FY2011. However, the annual percentage increase has actually declined in some years (FY2005 and FY2006) and increased substantially in other years (6.6% for FY2004, 5.3% for FY2007, and 12.6% in 2011). Given this significant volatility, it is difficult to produce specific estimates of the effect of food price inflation on WIC program costs.

Although WIC spending is discretionary, Congress has historically shown a willingness to appropriate whatever amounts are necessary to meet costs imposed by increased participation or food costs.

Additional Commodity Assistance Programs

USDA operates several additional food assistance programs targeting low-income or vulnerable populations. The Emergency Food Assistance Program (TEFAP) and meal service programs under the Older Americans Act (e.g., “meals-on-wheels” and meals served to seniors in congregate meal settings) provide key food assistance support for vulnerable groups. The Commodity Supplemental Food Program (CSFP) provides foods purchased by USDA to low-income infants and children up to age six, low-income pregnant and postpartum women, and to low-income senior citizens. The Senior Farmers’ Market Nutrition Program (SFMNP) provides coupons to low-income seniors that can be exchanged for fresh, nutritious, unprepared, locally-grown fruits, vegetables, and herbs at farmers’ markets, roadside stands, and community-supported agriculture programs. Like the WIC program, these programs are discretionary, and rising need and higher food prices have placed pressure on appropriators to add to federal funding.

Foreign Food Aid

USDA’s international food and nutritional assistance activities are funded by discretionary appropriations—e.g., foreign food assistance under the Food for Peace Act (P.L. 480)—and by using the borrowing authority of the Commodity Credit Corporation under the export credit guarantee program and market development programs.³¹ Average annual spending on U.S. international food aid programs over the decade FY2002-FY2011 was approximately \$2.2 billion.

³⁰ USDA, FNS, WIC Program Data at <http://www.fns.usda.gov/pd/wicmain.htm>.

³¹ For more information, see CRS Report R41072, *International Food Aid Programs: Background and Issues*, by Charles E. Hanrahan.

Food aid usually takes the form of basic food grains such as wheat, sorghum, and corn, and vegetable oil. Because foreign food aid is a budget value and not a food volume, its effective “purchase power” for acquiring U.S. agricultural commodities in domestic wholesale markets for delivery to foreign countries is diminished by food price hikes without additional appropriations. Also, higher energy costs increase the shipping costs to move food purchases and food aid to foreign countries further limiting the budgetary purchase power of food aid dollars. Unlike some domestic nutrition programs, foreign food aid is not adjusted to account for changing costs.

U.S. food aid also has certain delivery requirements that add to the programs vulnerability to general price inflation. Ocean transport of government-generated shipments is governed by the Cargo Preference Act, P.L. 83-644 (August 26, 1954). This act contains permanent legislation concerning the transportation of waterborne cargoes in U.S.-flag vessels. An amendment to the act in 1985 increased from 50% to 75% the volume of U.S. agricultural commodities financed under U.S. food aid programs that must be shipped on U.S.-flag vessels. The Commodity Credit Corporation pays the additional freight charges and the Maritime Administration (MARAD) of the Department of Transportation reimburses the CCC for the “excess” ocean freight costs incurred by complying with the additional 25% requirement. Excess costs are incurred because freight rates on U.S.-flag vessels are generally higher than on foreign commercial ships.

There is growing interest from the Administration, but also from the international development community, for the United States to switch its food assistance program over to cash rather than kind. Such a switch would avoid the costly effects that domestic food price inflation has on the food aid budget, while sidestepping completely the obligation to ship food aid on more expensive U.S.-flagged vessels. In response to these and other issues, the Administration, in its FY2014 budget submission to Congress, proposed major changes in the funding and structure of both emergency and development food aid programs (Food for Peace Title II).

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