

CPI Inflation: Running on Motor Fuel

The Bureau of Labor Statistics (BLS) reports two main consumer price index (CPI) inflation indicators: a headline index, which includes all items in the consumer's shopping basket, and another index that includes all items except food and energy (core inflation). The headline index was designed to track changes in the average price of goods and services purchased by consumers. Headline indexes are commonly used to measure changes in the cost of living, particularly for use in escalating wages, pension benefits, and other contracts. For example, Social Security benefits, government bonds, and portions of the U.S. tax code are indexed using the headline CPI. The core CPI measure reduces variability in monthly data by eliminating the components that are "noisy" (energy is, food was quite volatile in the early 1970s when the concept of core inflation was first introduced, but actually was one of the least volatile components since 1980).

Although food and energy prices have moved in the same direction recently, partially due to the increased use of grains in energy production, fluctuations in the price of motor fuel (mainly gasoline) have caused most of the monthly noise and year-over-year fluctuations of headline CPI inflation over the past four years. Motor fuel is just one category in the energy component—the others are gas (piped), electricity, fuel oil, and other fuels—but motor fuel is a special case, as the chart shows.

The chart plots three series: (i) headline CPI, (ii) the standard measure of core CPI (which excludes food and energy), and (iii) the CPI excluding just motor fuel. The plots for core CPI and the CPI excluding motor fuel look very similar. A gap of about 1 percentage point opened up briefly in the second half of 2008, but the gap is small compared with gaps using headline CPI. Motor fuel prices have been so volatile that they strongly influence overall headline CPI inflation despite their small weight in the overall index—averaging about 4.7 percent during the past 4 years.

From January 2007 through January 2011, the standard deviation (SD) of monthly changes in headline inflation was 5.2 percent at an annual rate. As noted in the past, excluding food does not make meas-

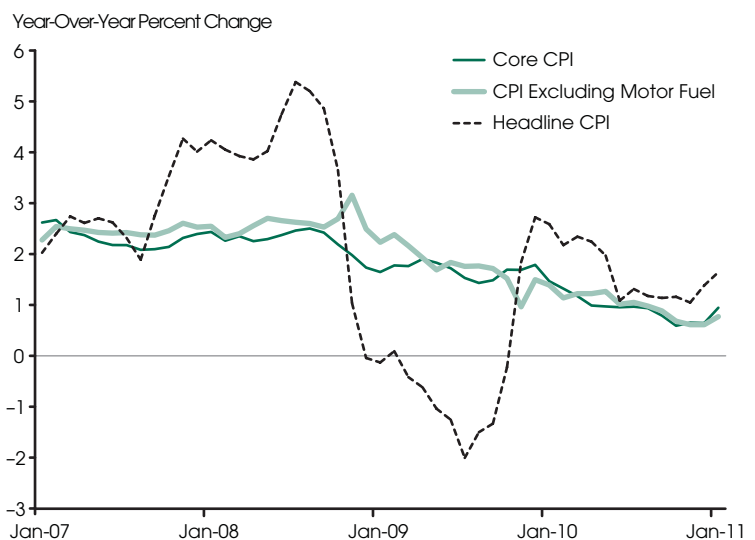
ured inflation less volatile.¹ Excluding just food, the SD of the monthly CPI inflation actually rises to 6.0 percent at an annual rate. In contrast, if one excludes only motor fuel, the SD of monthly inflation falls to 2.0 percent at an annual rate.

The data shown in the chart are 12-month moving averages, to further filter the noise from monthly inflation rates. Year-over-year changes should not be considered noise. They may be temporary, and, in general, the Fed does not want to overreact to transitory factors that tend to be self-correcting. The problem, of course, is estimating which factors will or will not self-correct over the relevant horizon. Recent year-over-year fluctuations in the CPI due to motor fuel are persistent. Over the past 4 years, the average annual inflation rate in the CPI has been 0.3 percentage points higher than the CPI excluding motor fuel.

—William T. Gavin

¹ See Gavin, William T. and Mandal, Rachel. "Predicting Inflation: Food for Thought." Federal Reserve Bank of St. Louis, *Regional Economist*, January 2002, pp. 5-9; <http://research.stlouisfed.org/publications/regional/02/01/Inflation.pdf>.

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NOTE: I thank Brent H. Meyer of the Federal Reserve Bank of Cleveland for sending the disaggregated data used to compute the CPI excluding motor fuel. See www.clevelandfed.org/research/data/us-inflation/mcpi.cfm.