



Policy Brief

Stanford Institute for Economic Policy Research

How Sticky Are U.S. Consumer Prices?

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The degree to which prices are “sticky,” or slow to adjust to equilibrate markets, is a central question in economics. Monetary policy in the United States and Europe is predicated on the idea that firms adjust prices only infrequently. Because prices are sluggish to respond to shocks, the thinking goes, Central Banks should try to dampen business cycles. A contrary view, held by the most recent recipients of the Nobel Prize in Economics (Finn Kydland and Ed Prescott), holds that prices are fairly flexible, so that business cycles are efficient responses to changes in technology, taxes, and regulations. In this view, Central Bank efforts to offset shocks are unnecessary at best and harmful at worst.

Until recently, empirical work has found that prices are typically set for a year at a time. But these older studies covered only a narrow set of goods or firms. Examples include cover prices of magazines, L.L. Bean catalog prices, the prices of a single product at each of 200 firms, and several hundred prices at select stores of a Chicago supermarket chain.

The U.S. Bureau of Labor Statistics (BLS) collects much more comprehensive data. Each month, the BLS surveys the prices of about 85,000 items. Roughly 400 BLS employees collectively visit around 20,000 retail outlets a month, mainly across 45 large urban areas. The outlets consist of grocery stores, department stores, auto dealerships, hospitals, etc. This survey covers about 70 percent of the CPI based on BLS consumer expenditure weights. (The remaining 30 percent consists of shelter, for which the BLS conducts a separate survey of homeowners and landlords.)

The BLS selects outlets and items based on household point-of-purchase surveys, which furnish data on where consumers purchase commodities and services. BLS field agents have detailed checklists describing each item to be priced — its outlet and unique identifying characteristics. The agents price each item for up to five years, after which the item is rotated out of the sample. Thus the BLS tracks the price of a precise

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item at a particular outlet. This longitudinal data is well suited for examining the issue of how frequently individual prices change.

What Do the CPI Micro Data Show?

Table 1 presents summary statistics from 1988 to 2003. The BLS data exhibit much more price flexibility than presumed from earlier studies. The median duration of a price is about 4 months rather than 12 months: Half of price changes occurred after 4 months or less, and half after more than 4 months. The price changes are weighted by the importance of the item and the duration of the price, so that the low median duration does not reflect overweighting of items with frequent price changes. Prices seldom change for some goods and services; e.g., postage stamps, newspapers, men’s haircuts, and taxi fares. But prices of gasoline, fresh produce, and airfares change in most months. Even if one excludes the volatile food and energy categories, the median is still in the neighborhood of 5 months for core CPI items.

Table 1
Median Months Between Price Changes

All Goods and Services	4.1
Transportation	1.6
Apparel.....	2.4
Home Furnishings.....	2.4
Food	4.8
Recreation.....	10.2
Other.....	10.6
Medical Care.....	18.0

Source: U.S. Bureau of Labor Statistics.

The Table also reports the median duration for selected categories of consumption. Transportation categories (airfares, new cars, gasoline) are at the flexible end of the spectrum, as are apparel and home furnishings. Home furnishings encompass most utilities, furniture, kitchen appliances, and kitchenware, among other items. Food is in the middle of the distribution, as more flexible fresh produce is offset by stickier processed foods and by menu prices at restaurants. Prices for recreation (tickets

to movies and sporting events) are relatively sticky. The “other” category includes sticky items such as telephone services, cosmetics, cigarettes, and (close-to-home) college tuition. At the sticky extreme is medical care; e.g., drug prices and fees for doctor visits, medical procedures, and hospital stays.

An important contributor to this price flexibility is product turnover — for example, due to product upgrades in consumer electronics or new car model changeovers. About 1 in 7 price changes are associated with the replacement of an item with a new item at the outlet. About 3 percent of items turn over each month, and about 30 percent do so at least once in the average year. These replacements are not simply changes in product size or quantity, as prices are standardized for size and quantity. Product turnover might spur other prices to change, as competing products respond to the entry of new competitors.

The price flexibility seen in Table 1 calls into question the need for countercyclical policies at the horizon of one or two years, as currently attempted by the Federal Reserve Board in the United States. Interestingly, recent studies in Euro Area countries (Austria, Belgium, Finland, France, Germany, Italy, Netherlands, Portugal, and Spain — all but Greece, Ireland, and Luxembourg) find that prices change every 7 or 8 months. Evidently, prices in the Euro Area do not change as frequently as they do in the United States, but do change more frequently than the prior conventional wisdom.

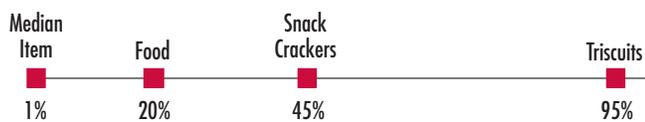
Sticky ‘Regular’ Prices?

One skeptical reaction to this evidence is to say many price changes reflect pre-programmed periodic price discounts, rather than true price flexibility. For example, suppose Cheerios are discounted by 5 percent the first weekend of every month in the Menlo Park, Calif., Safeway. Such temporary sales would lower the median time between price changes, but would not indicate more rapid price responses to macroeconomic shocks. The archetypal case for this rejoinder is Triscuits at Dominick’s grocery stores in the Chicago area. Scanner

data indicate that Triscuits frequently go on sale but return to a relatively sticky “regular” price. Whereas Triscuit prices change about once a month, regular Triscuit prices change about once a year.

Fortunately, BLS price collectors label each price a “regular” or “sale” price, with the latter indicated on the product, tag, or shelf. Thus the BLS data can be used to systematically investigate the prevalence of temporary sales. It turns out that the Triscuit example is not representative. As the nearby graphic illustrates, Triscuits, with 95 percent of their price changes due to temporary sales, are not even representative of snack crackers (45 percent of price changes due to temporary sales). Temporary markdowns are less frequent still for food overall (20 percent of price changes). And for the median item, temporary price discounts are associated with only 1 percent of price changes. Temporary sales are rare for medical care, insurance, college tuition, and many other categories.

Figure 1
% of Price Changes Due to Temporary Sales



‘Real’ Rigidities?

Another rejoinder is that, although firms change their prices frequently, they are reluctant to move their prices very far from the prices of competing products. A common rationale for such real rigidity is that a product will rapidly lose market share if its relative price rises, but will not rapidly gain market share if its relative price falls. According to this hypothesis, the Fed must try to smooth out business cycles because real rigidities prevent markets from clearing quickly.

Once again the BLS micro data can inform the debate. According to the real rigidity story, relative price changes should be small. When firms change their relative prices, they should change them by a small amount to avoid big declines in profitability. The BLS data do not bear out

this prediction. The average absolute price change is over 10 percent, and at least 8 percent for regular price changes. Firms seem willing to change their relative prices by large amounts compared to the size of business cycle shocks.

Rational Inattention to Macro Shocks?

Another possibility is that price flexibility applies more to idiosyncratic shocks than to common shocks. Perhaps managers are busy paying attention to conditions in their own individual markets, so they pay little attention to the smaller shocks that hit all markets. A Wal-Mart moving in down the street is more important to a Target store than whether the Fed cut the federal funds rate by a quarter of a percentage point. The fact that individual price changes are so large — plus or minus 10 percent multiple times a year, compared to the overall inflation rate of 2 percent or so per year — is consistent with micro shocks dwarfing macro shocks. Current research is actively pursuing this idea of “micro flexibility and macro rigidity,” and the BLS micro data will likely prove a useful testing ground.

Summary

The notion that prices change infrequently underpins U.S. monetary policy. Newly available data on thousands of consumer products suggest prices change two or three times a year, rather than once a year as previously believed. Business cycles may be less an artifact of sticky prices than of real shocks. If so, then the Fed should be less pursuant of countercyclical policies.

About the Author

Pete Klenow received his Ph.D. from Stanford University, where he is currently Professor of Economics and Senior Fellow at SIEPR. He is also a Research Associate of the National Bureau of Economic Research, for whom he organizes conferences on Economic Growth. He is on the Board of Editors of the American Economic Review and the Review of Economic Dynamics. Klenow specializes in macroeconomics, with emphasis on productivity and prices across firms, countries, and time. His recent work documents patterns of pricing in the CPI micro data, and draws implications for business cycles and monetary policy.



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