

Will rising commodity prices lead to rising inflation?



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Will rising commodity prices lead to rising inflation? Not necessarily. While the recent commodity price shock does pose an upward risk to underlying inflation, we expect the effect to be small and transitory.

Real, or relative, commodity prices are determined by the Commodity Research Bureau's (CRB) spot price index of all commodities divided by the core consumer price index. They include crude oil, metals, crops, and the like, and their spike has been quite pronounced over the past year. Since the early 2000s, in fact, real commodity prices have generally moved higher (see figure 9).

Inflation in the near- to medium term, in particular the underlying inflation trends that help guide monetary policy, depends on a variety of forces, including inflation expectations and the behavior of economic activity. (Over the long term, monetary policy determines the trend of inflation.) For a more satisfying explanation of why we expect only small and transitory effects from the recent commodity price shock, we need to delve just a little deeper into the economy's structure to examine the role of commodity prices in production costs.

In the mature and diverse economy of the United States, the total number of goods produced far exceeds those that are sold to consumers as "final" output. The prices for the items in the CPI published by the Bureau of Labor Statistics (BLS), for example, represent only a small fraction of prices posted and paid in the economy.

In addition to consumer prices, there are also the prices for "intermediate" goods—the industrial materials fashioned from raw commodities that trade on global markets. But do

the prices of intermediate goods exist in a realm completely separate from consumer prices?

Certainly not, as a time-honored textbook example makes clear: Consider a loaf of bread on a supermarket shelf that sells for \$2.00. In the first stage of production, a farmer produces the wheat required to produce the loaf and sells it to the flour mill for \$0.60. The mill converts the wheat to flour and sells it to the bakery for \$1.30. In the process, the mill has added \$0.70 of value to the farmer's wheat. Subsequently, the bakery produces the loaf and sells it to the grocer for \$1.80 (in what is commonly called a wholesale transaction), adding \$0.50 of value to the bread. Finally, the consumer purchases the bread for \$2.00 (the retail transaction), which means that the retailer has added \$0.20 in value.

This final transaction's price is the only one that would enter into an index of consumer prices (such as the CPI). The rest—all prices determined in intermediate transactions—contribute to the various measures of producer prices compiled by the BLS.

We take away from this example the simple notion that consumer prices reflect the prices of all intermediate materials used in production. In our little example, wheat is considered a commodity, flour an intermediate material, and bread on the grocer's shelf the final output.

But this simple story disguises the contribution of a universal and critical input to production: the labors of men and women that transform raw and intermediate materials into materials that are useful in the next stage of production. Also, the value added by labor in each stage of production—from the farmer toiling in the fields to the cashier ringing up your bread—turns out to be far greater than the cost of materials. Furthermore,

when the relative price of a material rises, firms can often substitute for a cheaper alternative. Substituting labor for materials is not so straightforward. So what has been happening to labor costs? Figure 10 charts the recent growth in unit labor costs (the labor cost of producing a single unit of output), and it has been anemic. While strong world demand for commodities coupled with substantial supply disruptions have driven commodity prices much higher over the past year or so, weak labor market conditions in the United States coupled with strong productivity growth have led to concurrently falling unit labor costs and historically low readings of underlying inflation. With the unemployment rate at historically high levels, we do not expect resurgent labor compensation growth anytime soon.

A commodity price shock also has its own implications for economic activity and labor demand, particularly if that commodity is crude oil and energy commodities more generally. Given that substitutes for fossil-fuel-generated energy are nearly nil in just about any production process one can imagine, the natural response of a profit-maximizing firm to higher energy prices is to limit production, thereby reducing the demand for labor and suppressing market wages in the process. So, higher commodity prices act as a catalyst for both higher inflation, as businesses pass through higher production costs, and lower inflation, as compensation growth falls.

How do we sort out these complicated and opposing forces to determine whether rising commodity prices will lead to rising inflation? At the Cleveland Federal Reserve, we recently developed a historically based forecasting model to evaluate the question. The main experiment simulated a commodity price shock of similar scale to the one experienced in 2007 and 2008. The model showed only a small increase in the core CPI, about 0.3 percentage point at the worst point of the shock, and some dampening of economic activity.

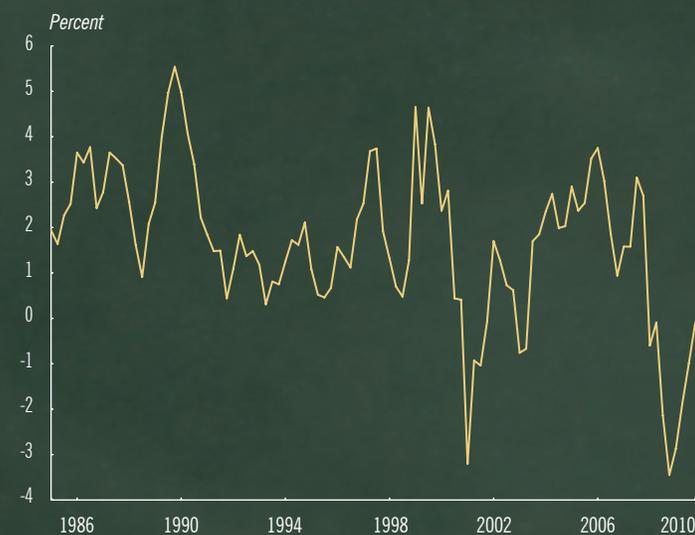
Even though changes in commodity prices can quickly hit consumer pocketbooks, their ability to bring about a sustained inflation is less robust. For commodity price shocks to generate inflation, they must rise faster than the overall level of prices for a protracted period. In that event, stable inflation expectations could be placed in jeopardy, raising the risk of a sustained inflationary period—and a tougher monetary policy environment. ♦

Figure 9. Real Commodity Prices Since 1986



Source: Commodity Research Bureau.

Figure 10. Unit Labor Costs



Source: U.S. Department of Labor, Bureau of Labor Statistics.