

Research Department  
Federal Reserve  
Bank of  
San Francisco

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## OPEC, Inflation, and Monetary Policy

The recent declines in energy prices will have important effects on the economy. In this *Letter*, their impact on output, inflation, and interest rates will be addressed along with their implications for monetary policy. A decline in energy prices reduces the usefulness of the money supply and interest rates as indicators of future inflation and output, but as we will show, it simultaneously provides monetary policy with a wider menu of macroeconomic outcomes from which to choose.

### Fuel price declines

At its Winter conference, OPEC officially agreed for the first time to reduce the price of its Saudi marker crude oil. The five-dollar reduction to twenty-nine dollars per barrel, along with similar price cuts in other categories of OPEC oil, contrasts sharply with the experience of the last decade when posted oil prices rose dramatically. The solid line in Chart 1 plots the percentage change of an index of *real* energy prices, that is, the ratio of energy prices to the aggregate level of prices of all goods and services. This producer price index for fuel and power includes the prices of gasoline, heating fuels, natural gas, and electricity.

In the two decades before 1973, the frequent negative values shown by the solid line meant a decline in real energy prices of nearly twenty percent. Relative energy prices then reversed course, rising sharply in the middle and again in the late 1970s. Although the recent declines in energy prices are not negligible, they pale in comparison to the increases brought about by the quadrupling and subsequent doubling of oil prices associated with OPEC-1 in 1974 and OPEC-2 in 1979.

Chart 1 also shows the percentage change in the aggregate price level, as measured by the GNP deflator. Rises and falls in this measure of inflation, especially in the 1970s, tend to

be positively associated with rises and falls in real energy-price growth.

We compare the course of energy costs with an indicator of the economy's strength by comparing the index of real energy prices with the level of unemployment in Chart 2. The chart shows that large increases in the unemployment rate came on the heels of the steep rises in energy prices that occurred in the 1970s. It is generally believed that the large oil price increases were an important cause of the subsequent increases in unemployment and in the rate of inflation. The question naturally arises, then, whether the recent *negative* oil price shock will lower unemployment and inflation.

### Lower inflation

Lower energy prices contribute directly and indirectly to lower inflation. Fully one-third of the twelve percentage point decline in consumer price inflation that occurred between the late 1970s and the six-month period ending February of this year is due directly to lower energy prices because the price of energy is a component of the Consumer Price Index. This happened despite the large increase in natural gas prices that accompanied their deregulation.

The fall in energy prices also reduces the cost of producing many products and thereby reduces inflation indirectly. These reductions "percolate" through various stages of the production process, finally showing up in the cost of finished goods. The effect on final prices is greatest for the output of industries that are more energy-intensive, such as chemicals and metals.

A perhaps more important indirect effect is that of lower energy prices on labor costs. Cost-of-living-adjustment (COLA) clauses in many existing labor contracts partially tie wage increases to recent price changes. Even where workers are not covered by

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COLAs, wage and salary negotiations often take recent price increases into account. Because labor costs constitute two-thirds of total production costs, the feedback effect of lower energy costs on wage increases can be important. It can also occur fairly rapidly since about half of workers covered by COLAs in major agreements have their wages adjusted quarterly while most of the other half, and most non-union workers, have their wages adjusted annually.

A model of the economy developed by the Department of Commerce suggests that wage growth slows by approximately half as much as the inflation rate after only one year. Over the longer run, the model suggests that wage growth slows by about the same amount as the inflation rate. Thus, a pronounced oil price decline is capable of having a sizeable impact on wage growth. And since wage growth is an important determinant of the underlying, or core, inflation rate, oil price declines may lead to lower inflation rates over the longer run as well.

### **Higher output**

Lower energy prices are likely to strengthen real demand by households, business, and government. Business will increase production to satisfy increased real volumes of sales, and, in the process, use more of the economy's resources (including labor). Eventually, it will reduce unemployment.

Households will spend less of their income on foreign oil and have more left to spend on domestically produced output. Lower energy prices will increase consumers' total real spending power since wages and salaries will often fall at a slower rate than overall consumer prices in the near-term. Over the longer term, real wages will be higher than otherwise because business will have increased its use of capital and energy in production and thereby enhanced labor productivity.

Greater consumer demand for business products and lower energy costs will stimu-

late business investment in new plant and equipment. At the same time, real government expenditure is also likely to rise above what was previously contemplated as the same dollar amount of expenditures would now go further.

### **Misleading money indicators**

Although lower oil prices are generally good for the economy, they may alter the short-run relationship of the money supply to prices and to output. Monetary aggregates are used by the Federal Reserve as a guide to monetary policy because of their relation to income and spending. Large changes in oil prices, however, may reduce the aggregates' value to making monetary policy because oil price declines may lead to lower inflation... and higher output than would otherwise emerge even with no change in money growth or in the growth of nominal income.

Unfortunately, changes in oil prices may also reduce the value of interest rates as economic indicators. Because nominal interest rates consist of a real rate and an inflation premium, their reaction to lower oil prices must be studied in two parts. To the extent that current inflation weighs heavily in determining the inflation rate expected in the near future, slowing inflation will reduce the inflation premium and thereby, nominal rates. Lower prices will also increase the real supplies of money and credit (at given nominal growth rates), and thereby put downward pressure on real interest rates. The decline in real rates, however, may be partially offset by the effect of increased investment directly associated with lower energy prices. A sufficiently strong investment response means a greater demand for investment monies that could result in a higher (than otherwise) real interest rate. In the wake of lower oil prices, then, the net change in real and nominal rates is ambiguous.

Thus, even with unchanged money supply growth, we may see either higher or lower real nominal interest rates associated with

Chart 1:  
FUEL PRICES AND INFLATION

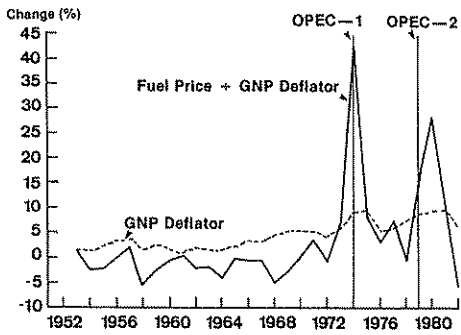
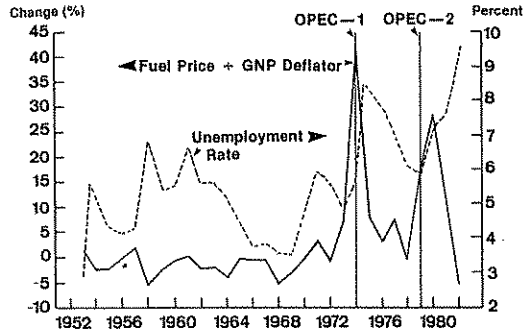


Chart 2:  
FUEL PRICES AND UNEMPLOYMENT



higher output. Neither real nor nominal interest rate movements alone would signal the easing or tightening of monetary policy. The movements also would not tell whether future output will be higher or lower.

Moreover, output may rise even if money growth slows moderately in response to the lower oil prices. High real interest rates are believed to have slowed the U.S. economy over the past few years. However, while some view the current high real rates to be an impediment to vigorous recovery, the recent energy price declines suggest that recovery may start with historically high real interest rates and continue with both output and real rates rising. If investment rises due to energy price declines, rising rates may be signalling stronger credit demand and not only weak supplies.

**Monetary policy options**

The sharp increase in energy prices in the 1970s presented monetary policymakers with a fundamentally new policy problem: simultaneously rising inflation and unemployment. Lower oil prices, as we have shown, could mean lower inflation and higher output than otherwise even if monetary policy remains unchanged.

Lower oil prices reduce the inflation rate during the transition period marked by the reverberation of falling prices throughout the economy. Once a new price level is attained, an inflation rate closer to the underlying rate will be re-established. Inflation at this core rate is largely determined by growth in labor compensation and will dominate over the intermediate-run, as it did between 1976 and 1978. In the shorter run, consumer price inflation may fall dramatically because energy costs and nominal interest rates make up a large part of consumption expenditures.

However, the economy's response to the positive oil supply shock of the early 1980s may not be a simple, scaled-down mirror image of the negative shock of the early

1970s. In the last decade, various factors constrained the rise in inflation. Consumer real demand was restrained by substantial reductions in both real wages and real financial wealth when oil prices rose in the early 1970s. Nominal wages responded slowly to higher prices, and regulatory ceilings on nominal interest rates effectively produced negative real returns on important assets.

Today, inflation may be more responsive to oil shocks. The deregulation of financial institutions and the shorter length of private sector labor contracts may have speeded the economy's responsiveness to shocks. With the advent of new financial instruments, real asset returns are kept closer to market levels. Wages and the prices in deregulated industries such as transportation may now respond more quickly.

These changes suggest that, in response to a positive supply shock such as a sharp drop in energy prices, real wages may not rise as much now as they fell during the 1970s. To the extent that market rates were already being earned on assets before the latest oil price decline, real returns will probably not rise now the way they fell a decade ago. As a result, such increased flexibility would generate greater inflation reduction (and larger output gain) than previous experience would have suggested.

In sum, the current shock offers the chance to lower the underlying inflation rate. The prospects for so doing may be even greater with a drawn-out, moderate inflation reduction than with a sharp drop and subsequent rebound. If so, temporarily faster money growth may be desirable both because it will hasten the economy's recovery and because it will lessen the current downward pressure on inflation. Later, money growth must be slowed to achieve a lower underlying inflation rate.

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**BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT**

(Dollar amounts in millions)

Selected Assets and Liabilities	Amount Outstanding 6/15/83	Change from 6/8/83	Change from year ago	
			Dollar	Percent
<b>Large Commercial Banks</b>				
Loans (gross, adjusted) and investments*	162,856	- 260	2,958	1.8
Loans (gross, adjusted) — total#	141,346	- 107	2,238	1.6
Commercial and industrial	44,142	- 202	665	1.5
Real estate	56,200	39	- 1,123	- 2.0
Loans to individuals	23,730	50	399	1.7
Securities loans	2,659	- 197	502	23.3
U.S. Treasury securities*	8,257	42	1,726	26.4
Other securities*	13,252	- 196	- 1,006	- 7.1
Demand deposits — total#	44,138	3,024	4,124	10.3
Demand deposits — adjusted	30,336	922	2,925	10.7
Savings deposits — total†	67,191	- 382	36,290	117.4
Time deposits — total#	64,274	- 113	- 31,139	- 32.6
Individuals, part. & corp.	58,148	48	- 27,560	- 32.2
(Large negotiable CD's)	17,992	- 229	- 17,132	- 48.8
<b>Weekly Averages of Daily Figures</b>	<b>Week ended 6/15/83</b>	<b>Week ended 6/8/83</b>	<b>Comparable year-ago period</b>	
<b>Member Bank Reserve Position</b>				
Excess Reserves (+)/Deficiency (-)	116	147		29
Borrowings	641	72		8
Net free reserves (+)/Net borrowed(-)	- 525	75		21

\* Excludes trading account securities.

# Includes items not shown separately.

† Includes Money Market Deposit Accounts, Super-NOW accounts, and NOW accounts.

Editorial comments may be addressed to the editor (Gregory Tong) or to the author . . . Free copies of this and other Federal Reserve publications can be obtained by calling or writing the Public Information Section, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 974-2246.