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OIL PRICES AND THE ECONOMY

SINCE IT FIRST bubbled from the ground in Pennsylvania in 1859, oil has affected the economy. And since its inception in 1960, OPEC has shaped oil prices. Do oil and OPEC still have a strong hold on the economy? This article examines oil-price movements from a long-term perspective and assesses the consequences for economic activity.

It seems we have less reason to be concerned about higher oil prices today. Even though oil prices tripled over the past 18 months, they are moderate by historical standards. Given its market share, large reserves and low production costs, OPEC will remain dominant in world oil markets. Both the national and regional economies have diversified away from energy-intensive and energy-producing industries. Consequently, our economy is less sensitive to oil-price changes. Still, a dramatic and persistent increase in oil prices would slow the U.S. economy while stimulating the economies of energy-producing states.

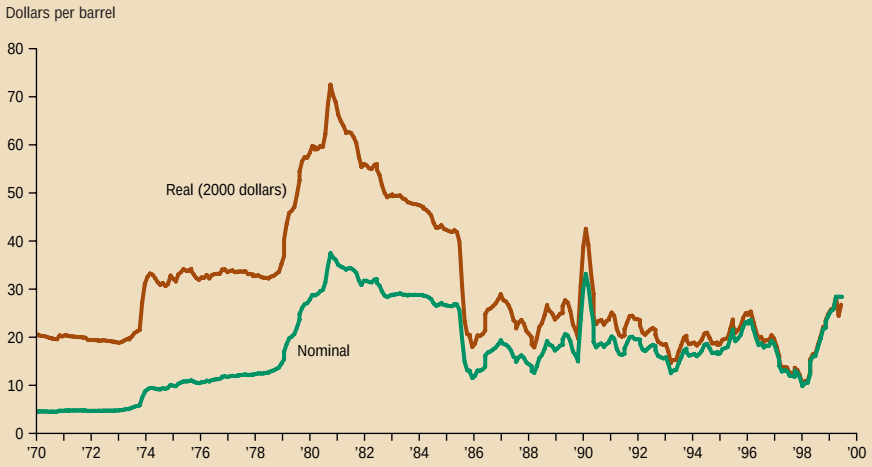
World Oil Market

OPEC has been a major factor in the recent volatility of oil prices, with help from fluctuating world demand. Prices dropped to a low of about $11 per barrel in the last week of 1998, then climbed to a 10-year high of $34 in early March of this year. The tripling of crude

INSIDE

When adjusted for inflation, crude prices today are about the same as they were in the early 1970s.

Chart 1
Oil Prices Volatile



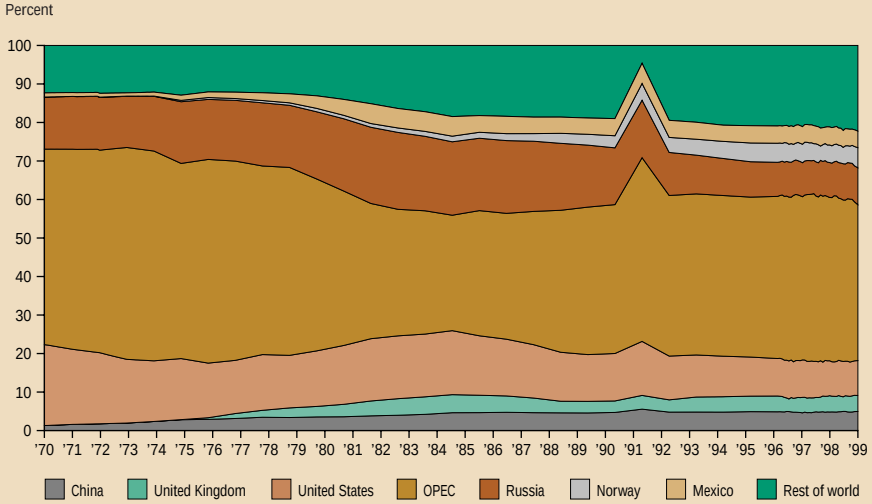
SOURCES: Department of Energy; Bureau of Labor Statistics.

oil prices over the past 18 months reflects greater-than-anticipated demand and decreased supply. Mexico, Norway, Russia and Oman agreed to cut output along with OPEC, pushing prices up. This increase resembles the 1979–1981 price hike, which led to a severe recession (*Chart 1*).

When adjusted for inflation, however, crude prices are about the same as they were in the early 1970s and much lower than in the early 1980s. Prices doubled to near $10 per barrel in early 1974. In today's dollars that is equivalent to $33 per barrel. The high of $38 reached in 1981 would be $72 today. Similarly, for gasoline prices to reach the highs of the early 1980s, they would have to average $2.55 per gallon nationally. The current national average price is about $1.50 per gallon.

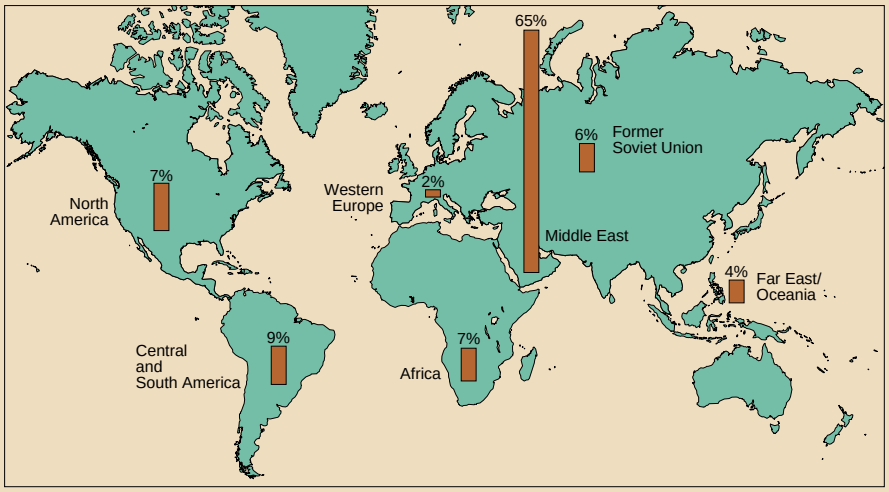
The United States is a mature oil-producing region. Our production peaked in 1970 and has been declining since

Chart 2
World Oil Production



SOURCE: Department of Energy.

Chart 3
OPEC Dominates World Oil Reserves



SOURCE: Brown and Yücel 1995.

(*Chart 2*). In 1970, U.S. production was about 20 percent of world oil output. Today U.S. output is about 10 percent. OPEC's share has also declined from about 50 percent of world output in 1970, but it is still a hefty 40 percent today. When Russia, Norway and Mexico decided to join OPEC in cutting output last year, these countries produced 60 percent of world output.

Although the United States contributes about 10 percent of world output, we consume 22 percent; hence, we import about 55 percent of what we consume. As the U.S. economy grows and domestic oil production declines, this percentage will rise. A high dependency on imported oil is not necessarily a bad thing. Japan and many European countries import 100 percent of their oil. Because a major share of world oil production comes from politically unstable parts of the world, however, imported oil may pose political and security risks. World dependence on oil from OPEC, which holds 65 percent of world reserves, will continue into the future (*Chart 3*).

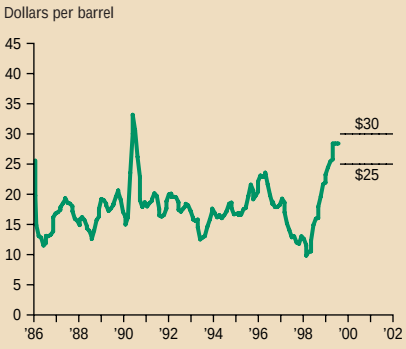
OPEC recently decided to keep the price of oil in a band that would correspond to $25–$30 per barrel for West Texas Intermediate crude oil (*Chart 4*). OPEC will increase production if prices go above $30 for 20 days and reduce production if prices fall below $25. OPEC does not consider a price above $30 sustainable because such a price leads to oil conservation and an increase in non-OPEC supply. A price below $25 is bad for OPEC finances. It is estimated that for each $1 drop in the price of oil, Saudi Arabia loses $2.5 billion in annual revenue.

Oil Prices and U.S. Economic Activity

A considerable body of economic research suggests that oil-price fluctuations have figured prominently in national economic activity since World War II. (For examples, see Hamilton 1983; Balke, Brown and Yücel 1999; and Brown and Yücel 1999). Oil's influence on the economy may be weakening, however.

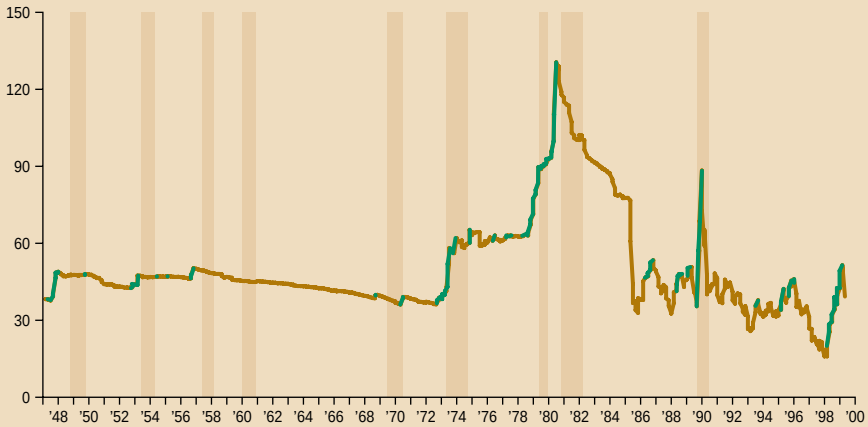
Rising oil prices preceded eight of the nine post–World War II recessions (*Chart 5*). The 1960 recession is the one exception. A small price hike preceded the recession in 1970. In the 1950s and 1960s, the economy was so sensitive to oil prices that small price increases led recessions. Since the mid-1980s, rising oil prices have not always led recessions. Oil-price fluctuations seem to have

Chart 4
OPEC Sets Oil Price Targets



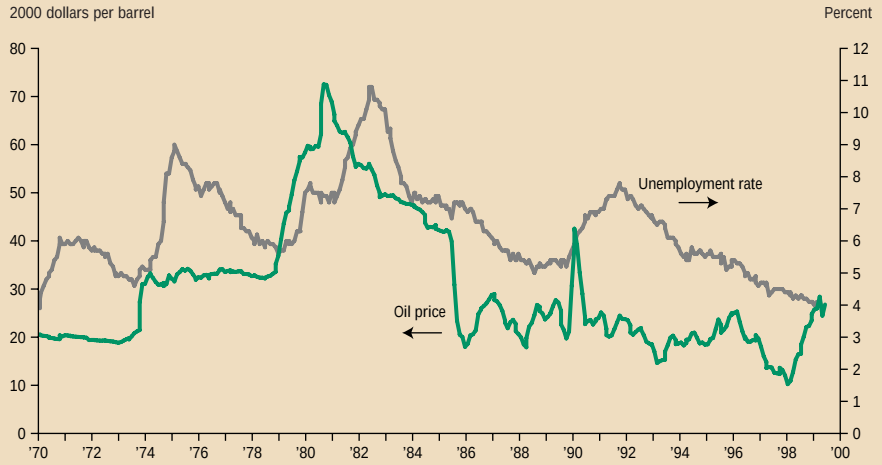
SOURCES: Department of Energy; authors' calculations.

Chart 5
Oil Prices and Recessions, 1947–2000



NOTE: Bars indicate recessions. Oil price increases that are not simply reversals of previous-year declines are shown in green.
SOURCES: National Bureau of Economic Research; authors' calculations.

Chart 6
Oil Prices and Unemployment



SOURCE: Bureau of Labor Statistics.

less effect on economic activity today than in the past.

Rising oil prices can be indicative of a classic supply-side shock (Brown and Yücel 1999), signaling increased scarcity of energy, a basic input to production. Consequently, output and productivity growth slow. The decline in productivity lessens real wage growth and increases the unemployment rate at which inflation accelerates. Under a monetary policy that maintains a constant nominal GDP, the price level rises by the amount GDP falls. If consumers expect the increase in oil price to be temporary, they will attempt to save less or borrow to smooth out their consumption. This will boost interest rates.

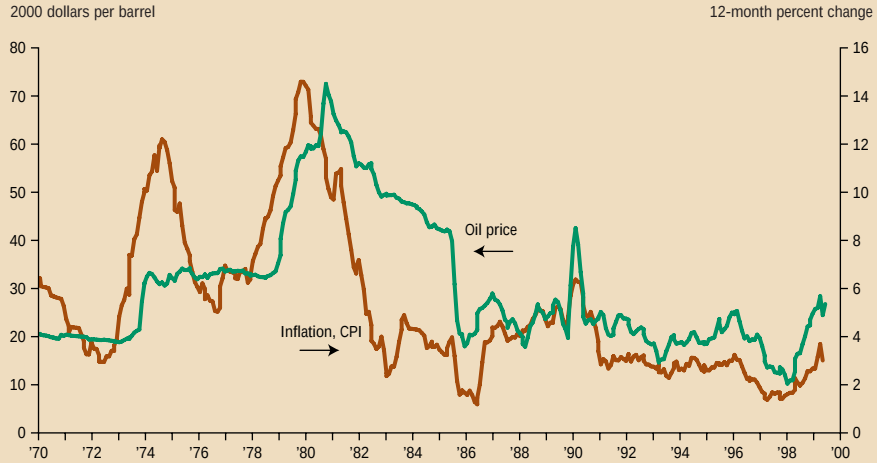
Research by Carruth, Hooker and Oswald (1998) shows a strong relationship between oil prices and the unemployment rate. Changing oil prices led movements in the unemployment rate from the 1970s through the 1990s (*Chart 6*). Unemployment declined with oil prices from 1982 through 1990 and in the late 1990s. Rising oil prices retard productivity growth and raise the rate of unemployment at which inflation accelerates. Falling oil prices stimulate productivity growth and lower the rate of unemployment at which inflation accelerates. The chart suggests this relationship weakened in the late 1990s, as the economy increasingly turned away from energy-intensive industries and toward the high-tech industries that characterize the new economy.

Economic research suggests that rising oil prices contribute to inflationary pressures (*Chart 7*). (For examples, see Balke, Brown and Yücel 1999; Brown and Yücel 1999). This relationship was obscured somewhat in the 1970s, however, when U.S. inflation appeared to lead increases in the price of oil. A rising U.S. price level put downward pressure on the real value of the dollar in international exchange. The weaker dollar boosted the dollar-denominated demand for oil and helped push oil prices upward. At the same time, OPEC sought to maintain the purchasing power of its oil exports by increasing the price.

In the early 1980s, U.S. disinflation reversed the process. Since the mid-1980s, however, movements in inflation and oil prices have roughly coincided. We have also seen a weaker link between rising oil prices and core inflation—that is, inflation in all items except food and energy. This measure of inflation is thought to provide a better signal of underlying inflationary pressure because it is less susceptible to the fluctuations associated with food and energy prices. A recent study (Hooker 2000) on oil prices and inflation shows that, since 1980, oil-price changes have had little effect on core inflation. Before 1980, though, oil shocks contributed substantially to core inflation. The weaker link suggests monetary policy may have been more effective in combating the inflationary effects of oil-price shocks in the past 20 years.

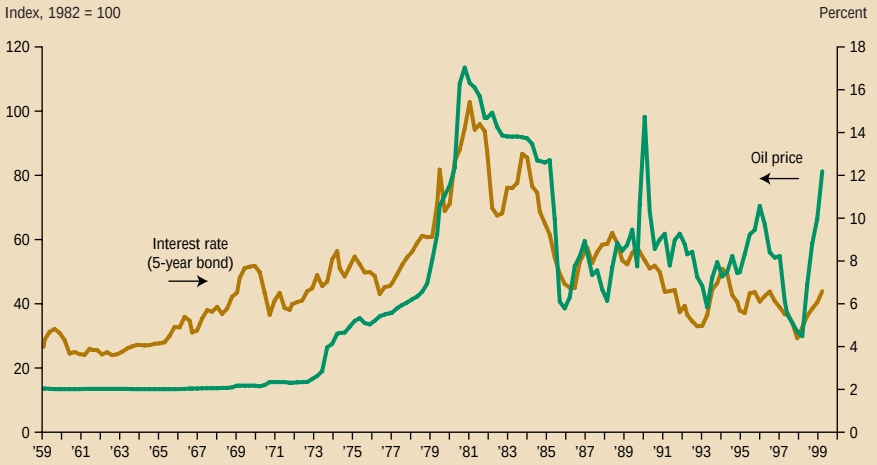
Nevertheless, rising oil prices seem to lead to higher interest rates (*Chart 8*). If consumers see oil-price increases as temporary, as is suggested by futures prices, they will also consider the loss of output and income associated with higher oil prices to be temporary. To smooth their consumption across periods

Chart 7
Oil Prices and Inflation



SOURCE: Bureau of Labor Statistics.

Chart 8
Oil Prices and Interest Rates



SOURCE: Federal Reserve Board of Governors.

The U.S. economy is about one-third less sensitive to oil-price fluctuations today than in the early 1980s.

of lower income, consumers will attempt to save less or borrow, which will boost interest rates.

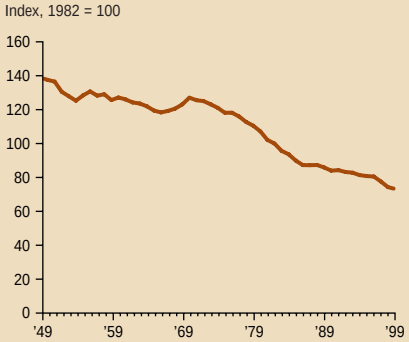
Some of the recent increases in the federal funds rate may be part of a general increase in interest rates that results from higher oil prices (Brown and Yücel 1999). To the extent the Federal Reserve does not allow the federal funds rate to rise with these increases in market interest rates, inflation would be more evident in the core measure of inflation.

One reason recent oil-price hikes may have had less negative impact on the national economy is that the amount of energy consumed in producing each dollar of GDP has declined. As Federal Reserve Chairman Alan Greenspan has said, "Today's GDP is lighter and smaller." However, this development is not new. The largest declines in energy consumption per dollar of GDP came during the 1970s through early 1980s, when oil prices were rising rapidly (*Chart 9*). The declines slowed after oil prices collapsed in 1986. Our informal calculations suggest the U.S. economy is about one-third less sensitive to oil-price fluctuations today than it was when oil prices were at their height in the early 1980s. Our calculations also suggest the U.S. economy is about half as sensitive to oil-price fluctuations as it was in the mid-1970s, when real oil prices were about the same as they are today.

Oil Prices and Economic Activity in the Southwest

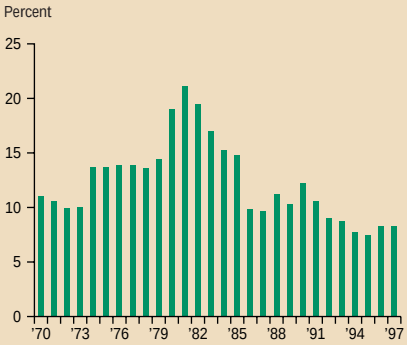
As the national economy has diversified away from energy-intensive industries, Texas has moved away from energy production. Texas' diversification is evident in its gross state product data. In 1981, the oil and natural gas sector accounted for about 20 percent of gross state product. In 1997—the most recent year for which we have data—oil and natural gas production accounted for about 8 percent of gross state product (*Chart 10*).

Chart 9
Energy/GDP Ratio Falling



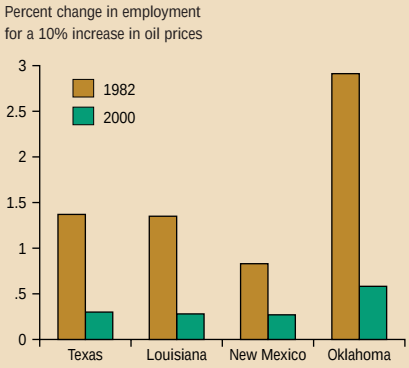
SOURCE: Authors' calculations based on data from Department of Energy and Bureau of Economic Analysis.

Chart 10
Oil Industry Less Important to Texas Economy



SOURCE: Bureau of Economic Analysis.

Chart 11
Energy-Producing States Less Helped by Rising Oil Prices



SOURCE: Brown and Yücel 1995.

Because the energy industry is less prominent in the state, Texas employment is about 75 percent less sensitive to oil-price movements today than it was in 1982. Similarly, employment in Louisiana and Oklahoma is about 80 percent less sensitive, and New Mexico employment is about 70 percent less sensitive (*Chart 11*).

We estimate that rising oil prices would have hurt economic activity in 37 states and the District of Columbia in 1982, as shown in Chart 12 (Brown and Yücel 1995). For the other 13 states, rising oil prices would have boosted economic activity in 1982.

At the present (2000), only eight states are helped by rising oil prices. Economic activity in Kansas, Mississippi, Montana, Utah and West Virginia has changed so much that these states are now hurt by rising oil prices rather than helped, as they were in 1982. More important, nearly all state economies that would have been hurt or helped by rising oil prices in 1982 are now less sensitive to oil-price increases. Diversification away from both energy-intensive industries and energy production is making the states more alike in their responses to oil-price movements.

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Mine K. Yücel

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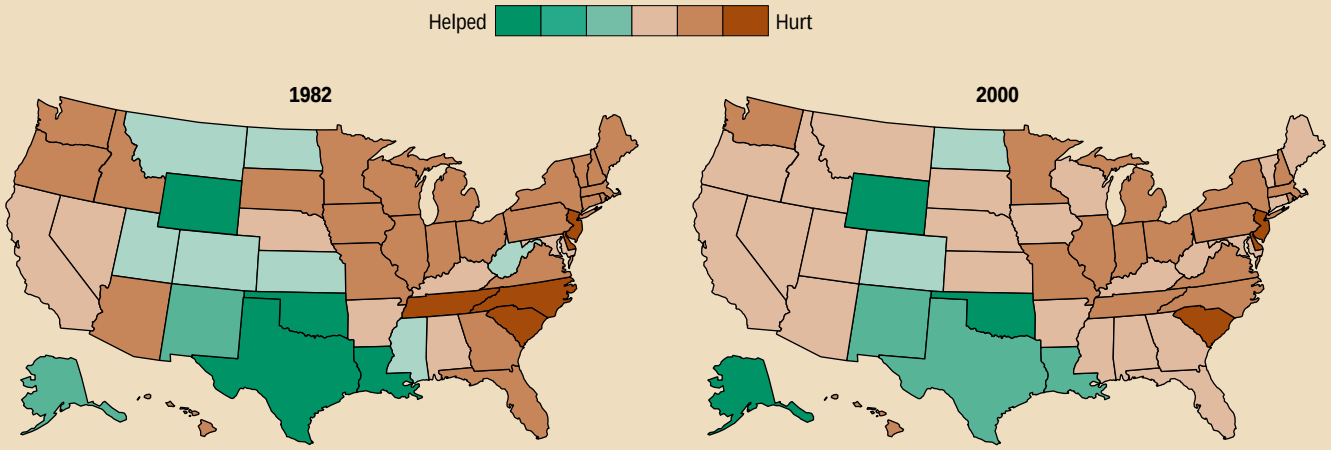
Chart 12
Oil Price Sensitivity



SOURCE: Brown and Yücel 1995.