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ENERGY HIGHLIGHTS

Federal Reserve Bank of Dallas April 1983

Oil Price Cut Stalls Texas Recovery

The cut in OPEC's benchmark price to $29 per barrel is good news for the U.S. economy as a whole. Falling oil prices are likely to result in lower production costs and higher profits for most industries. These factors should augment the current national recovery. The lower oil prices, however, should depress the energy producing sectors of the economy and make energy producing states worse off relative to the nation. Because energy is such an important part of the Texas economy, the outlook for a recovery in Texas is worsened in 1983 by falling oil prices.

In recent recessions, the Texas economy remained relatively buoyant due to the strength of the energy sector. This buoyancy was present at the beginning of the 1981-82 recession while oil prices were rising, but the energy industry experienced the same sluggishness as the rest of the economy after the price of oil peaked in September 1981. Texas industrial production and employment declined at faster rates than in the United States throughout 1982.

The oil price decline should have a mixed impact on Texas. Reductions in oil prices especially aid large energy-intensive industries, such as petrochemicals. But such gains are likely to be offset by the weakness in energy-producing industries and their suppliers. Because drilling, oil and gas production, and energy services industries account for 28.2 percent of total industrial production in Texas (contrasted with 6.2 percent for the nation), their slump should result in a continued drag on industrial production and employment in Texas.

To examine the net effects of the oil price decline on Texas, a simple model has been used to project trends based upon estimated historical relationships among four variables: the U.S. Industrial Production Index, the Texas Industrial Production Index (TIPI), Texas nonagricultural employment, and the cost of domestic crude oil to refineries. Projections of TIPI and employment in Texas were obtained using the assumption that U.S. industrial production grows 2 percent in 1983 from average levels in 1982 and that the OPEC benchmark price remains at $29 per barrel through the end of 1983.

The results of the simulation (Charts 1 and 2, respectively) indicate that a drop in oil prices causes TIPI and employment to fall. TIPI continues to fall for several months, even though the price remains constant for the remainder of the year, because the full

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A U.S. Economic Recovery Could Solidify World Oil Prices

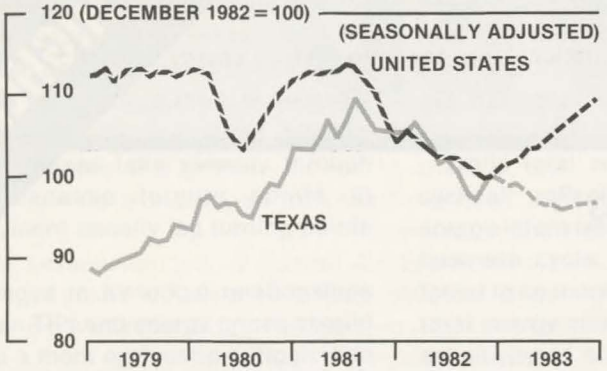
The most recent OPEC accord establishes a $29 per barrel price for the benchmark Saudi Arabian Light Crude. Even though some analysts are expecting a further decline in world oil prices, increased U.S oil consumption, resulting from lower prices and an expanding economy, could have a major role in solidifying world oil prices at or near current levels.

Reduced U.S. oil consumption over the past four years can be explained in part by long-term adjustment to higher oil prices (Chart 3) following the Iranian revolution and the decontrol of domestic crude. But because the downward trend in oil consumption slowed through 1982, this long-term adjustment may be nearly complete. In any case, an econometric estimate of the relationship of oil consumption to oil prices and GNP indicates that a $29 benchmark price and a 4 percent increase in real GNP from fourth quarter 1982 to fourth quarter 1983 could boost daily oil consumption in the fourth quarter of 1983 by .75 to 1.19 million barrels (5-8 percent) over its value a year earlier. A lower oil price or a greater increase in economic activity could be expected to further stimulate U.S. oil consumption.

Interestingly, economic recovery appears to contribute more to a resurging oil demand than do lower prices. As shown in Chart 4, oil consumption varies about its trend with about the

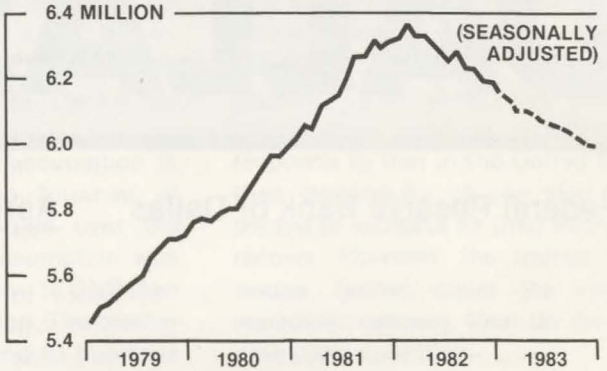
(Continued on back page)

Chart 1
INDUSTRIAL PRODUCTION INDEX



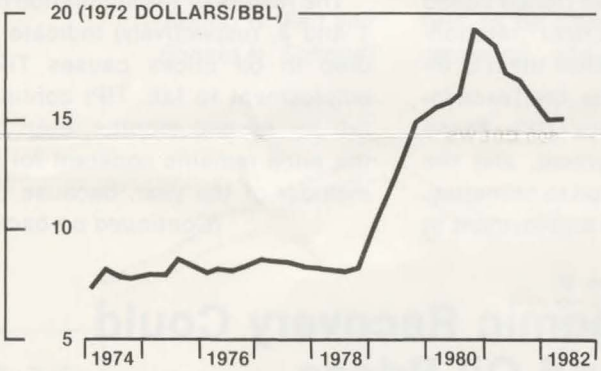
NOTE: 1983 values are projected.
SOURCES: Board of Governors, Federal Reserve System.
Federal Reserve Bank of Dallas.

Chart 2
TEXAS NONAGRICULTURAL EMPLOYMENT



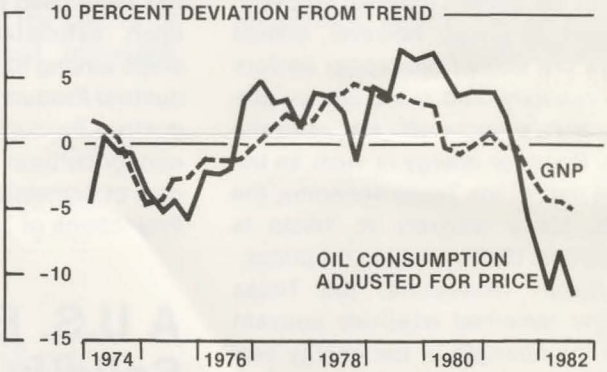
NOTE: 1983 values are projected.
SOURCES: Texas Bureau of Labor Statistics.
Federal Reserve Bank of Dallas.

Chart 3
U.S. REFINER ACQUISITION COST OF CRUDE OIL



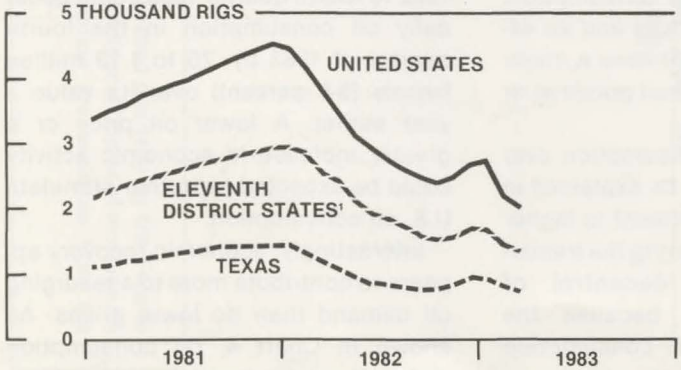
SOURCES: U.S. Department of Energy.
Board of Governors, Federal Reserve System.
Federal Reserve Bank of Dallas.

Chart 4
OIL CONSUMPTION OVER THE BUSINESS CYCLE



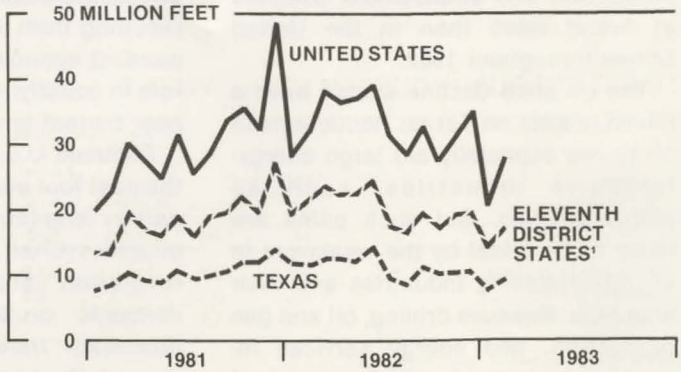
SOURCES: U.S. Department of Energy.
Board of Governors, Federal Reserve System.
Federal Reserve Bank of Dallas.

ROTARY DRILLING RIGS RUNNING



1. Louisiana, New Mexico, Oklahoma, and Texas.
SOURCE: Hughes Tool Company.

FOOTAGE DRILLED
(Excluding service wells, stratigraphic and core tests)



1. Louisiana, New Mexico, Oklahoma, and Texas.
SOURCE: American Petroleum Institute.

ENERGY BRIEFS

Expectations of falling world oil prices weakened the national and Eleventh District energy industries.

- The U.S. rig count fell below 2,000 for the first time since 1977. It is now more than 50 percent below the all time high of 4,530 reached in December 1981 and more than 25 percent below the recent surge to 2,768 in December 1982.
- The U.S. seismic crew count continued to decline through February. Except for a small seasonal increase in June 1982, the count has fallen in every month since September 1981.
- Prospects remain poor for oil field equipment manufacturers. Inventories of oil field tubular goods, according to a recent survey, are capable of supporting 1.2 to 1.7 years of drilling activity at current operating rates.
- A $5-per-barrel reduction in the official OPEC price of oil will increase U.S. refinery margins. U.S. refinery acquisition costs, however, will only fall by $1 to $2 per barrel, because less than a fourth of the oil reaching U.S. refiners has been purchased on par with the official benchmark price.
- The Texas and U.S. refinery production indexes fell in the fourth quarter of 1982. The Texas index fell 12 percent during this period, while the U.S. index dropped 3.7 percent.
- Texas employment figures for oil field machinery, petroleum refining, and oil and gas extraction all experienced slight declines in February. Over the last year Texas, employment in oil field machinery and oil and gas extraction dropped 40 percent and 3.8 percent respectively, while employment in petroleum refining posted a 6.2-percent increase.

CRUDE OIL PRODUCTION AND NATURAL GAS EXTRACTION

	Percent change from four quarters earlier				Daily average 1982:Q4
	1982				Thousands of
Oil	Q1	Q2	Q3	Q4	barrels
Texas	-3.6	-2.2	-4.0	-1.7	2,507
District states[1]	-2.1	-0.5	-0.8	0.3	4,410
United States	0.8	1.2	1.5	1.1	8,675
Gas					Millions of cubic feet
Texas	-4.2	-8.1	-9.1	-10.6	16,160
District states[1]	-3.0	-7.1	-11.2	-12.9[2]	39,442[2]
United States	-2.7	-8.7	-11.4	-8.8	50,633

1. Louisiana, New Mexico, Oklahoma, and Texas.
2. Preliminary figures.

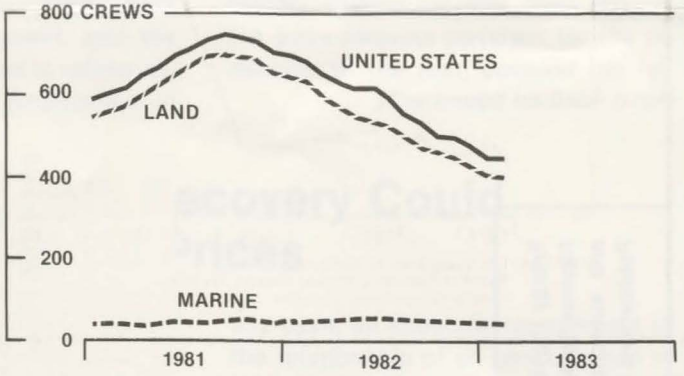
SOURCES: American Petroleum Institute.
Texas Railroad Commission.
U.S. Department of Energy.
Federal Reserve Bank of Dallas.

TEXAS ENERGY INDUSTRY EMPLOYMENT

	Percent change from preceding month			Number of employees February 1983	
	1983			Thousands of	Percent change from Feb.
Industry	Dec.	Jan.	Feb.	persons	1982
Oil and gas extraction	2.6	-2.9	0.5	279.4	-8.9
Petroleum refining	1.0	6.4	0.7	43.8	5.8
Oil field machinery	1.3	-3.8	-1.4	48.8	-44.5

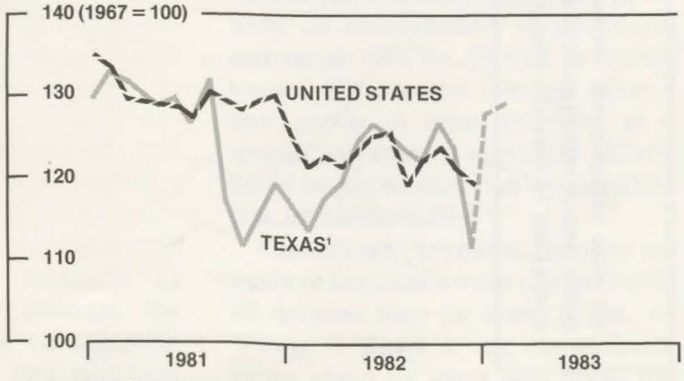
SOURCE: U.S. Bureau of Labor Statistics.
Federal Reserve Bank of Dallas.

SEISMIC CREW COUNT



SOURCE: Society of Exploration Geophysicists.

REFINERY PRODUCTION



1. Preliminary after December 1982.

SOURCES: Board of Governors, Federal Reserve System.
Federal Reserve Bank of Dallas.

Texas Recovery (cont.)

effects of the drop in price take time to work through the system. Near the end of the year the energy industry stabilizes and TIPI begins to rise as the positive influence of the U.S. recovery dominates the oil price effect. Employment in Texas falls steadily through 1983, because turning points in employment usually lag turning points in TIPI.

Changes in historical relationships between TIPI and energy prices should lead to a more optimistic outlook than shown in the Charts. Resources should shift out of energy into other industries and reduce the importance of the sluggish energy industry. Nevertheless, Texas will probably not rebound as strongly as the nation. Texas, which was at one time considered almost recession-proof due to its oil revenues, now finds the energy sector threatening to stall a recovery.

—Robert G. Feil and Ronald H. Schmidt

World Oil (cont.)

same frequency as GNP but with a greater amplitude. That is, when adjusted for oil price, the oil-consumption-to-GNP ratio is itself cyclical, falling when GNP falls and rising when GNP rises.

While total energy consumption is cyclical, reflecting the fortunes of energy-intensive industries over the business cycle, oil consumption was found to be more sensitive to GNP than total energy consumption. The greater sensitivity of oil demand to business conditions can be traced to differences in variable costs. Oil-intensive facilities in a given industry generally have higher operating costs and lower fixed costs than similar facilities in which energy conservation measures have been taken or coal is used. As demand for a given product decreases, those plants within the industry having the highest operating costs are the first to be closed, and the last to be reopened when demand increases. This results in highly cyclical industrial oil consumption.

As the economy expands, additional U.S. oil consumption will be satisfied through increased imports, boosting demand for oil on international markets. To the extent that the situation in other industrial countries corresponds to that in the United States, their demand for oil can also be expected to increase as their economies recover. However, the United States seems farther down the road to economic recovery than do the other developed countries.

A critical test for the most recent OPEC accord is already underway. Demand is at a seasonal low during the spring months. But Saudi Arabia has agreed to absorb some production cuts to defend the $29 price against temporary decreases in demand for OPEC oil. And by the end of May, increasing U.S. oil consumption, bolstered by the emerging recovery, should help solidify the $29 price.

—Stephen P. A. Brown

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