
FRBSF WEEKLY LETTER

November 16, 1990

Oil in the West

The invasion of Kuwait by Iraq in early August, and the doubling of oil prices, has returned attention to oil's role in the economy. While past oil shocks have demonstrated that higher oil prices are detrimental to national economic growth, those past experiences also have shown that the effects of higher oil prices are very uneven across regions of the country. In this *Letter*, we look at some of the implications of higher oil prices for the nine western states that comprise the Twelfth Federal Reserve District.

Importers and exporters

One measure of a region's exposure to oil price shocks is the extent to which it is a net importer or net exporter of oil. An area that produces more oil than it consumes stands to gain when prices rise since higher oil prices transfer income from oil importing regions to oil exporting regions. Of the District states, only Alaska is a net exporter, producing 738 million barrels in 1988 while consuming only 43 million barrels of oil products.

Although only net exporters may be expected to benefit from higher oil prices, the degree to which other states are harmed by higher oil prices is determined in part by their dependence on net oil imports. In 1988, the western states other than Alaska consumed just over one billion barrels of oil products while producing 389 million barrels of crude oil. On a per capita basis, the region (outside of Alaska) had net imports of 14.9 barrels per person, 1.5 barrels above the average for the nation. California had below average net imports (at 9.2 barrels per person), whereas the other states had net imports ranging from 19 barrels per person in Arizona to 39 barrels per person in Hawaii.

Production

Dependence on net imports provides one measure of the potential effect of higher oil prices, but a closer look at both the production

and consumption sides is necessary to evaluate the full impact. In general, changes in oil prices can affect an oil-producing region's economy by changing oil wealth and output.

The first effect, changes in oil wealth, is potentially important in Alaska and California. Higher oil prices provide windfall gains to oil producers. In Alaska, these gains have an immediate effect on the state's finances since a one dollar per barrel increase in oil prices raises \$150 million in annual oil revenues for the state.

Higher oil profits also can benefit the producing region to the extent that those profits remain in the region. However, in both California and Alaska, oil production is dominated by publicly traded major oil companies. Higher oil company profits appear as higher earnings and dividends to stockholders who do not necessarily reside in those areas. Profits, therefore, need not be regionally concentrated.

Higher oil prices also can boost a region's oil industry and supporting industries by encouraging new oil exploration and development activity. Boosted activity can spill over into other sectors of the economy, creating jobs and income. This effect is not likely to be large in the West, however. The 50 active drilling rigs in California and 12 in Alaska on October 22 represented a negligible increase from the 45 and 11 rigs active in the two states, respectively, a year earlier.

This limited response by the District's energy sector has two causes. First, because oil wells are long-term investments, expectations about long-run prices are more important than current prices in the investment decision. Consequently, until oil companies are convinced that prices will remain substantially above the level of the past several years, they will be unwilling to invest in significant new capacity.

THE WESTERN ECONOMY

The Western Economy is a quarterly review of economic conditions in the Twelfth Federal Reserve District. It is published in the *Weekly Letter* on the third Friday of February, May, August and November.

FRBSF

Second, California and Alaska are not likely to increase production sharply because the West has relatively old and well-developed reserves. For example, during the entire period since 1972, California's annual production has varied little—from a high of 1.1 million barrels per day in 1985 to a low of 0.9 million barrels per day in 1975. Moreover, California's untapped proven reserves are located largely offshore, in environmentally sensitive areas. Alaska's current fields, notably Prudhoe Bay, have seen declining production. Its most promising new area—the Alaska National Wildlife Refuge—has unknown reserves, and drilling there would generate environmental challenges. In any case, it would take years to develop the fields and to establish the necessary transportation infrastructure.

Consumption

Although positive production effects are not likely to be extensive in the western region, consumption effects will be noticeable. In the nine states, total oil consumption in 1988 was 24.4 barrels per person, just slightly below the 25.5 barrels per person national average. Per capita consumption in Arizona, California, Idaho, Oregon, and Utah was below the national average, ranging from 19 to 25 barrels per person, while Hawaii (39 barrels), Nevada (30 barrels), Washington (28 barrels), and Alaska (81 barrels) exceeded the national average.

Differences in the composition of consumption, however, are important in determining the relative burden of higher oil prices on consumers in the District states. Three categories of consumption account for most oil use: motor gasoline, distillate oil, and aviation fuel.

Per capita gasoline consumption in the District was almost identical to the national average. Consumption ranged from 7 barrels per person in Hawaii to 14 barrels per person in Nevada, but most states were close to the 11.5 barrel national average. California, the most populous state and, consequently, the largest user of gasoline in the region, consumed 11.3 barrels per person in 1988. Thus, the effect of higher oil prices on gasoline expenditures would be about the same in the West as in the rest of the country.

Distillate consumption was below the national average of 5 barrels per person, although large variation in consumption exists in the western states. High use of heating oil yielded distillate

fuel consumption of 5 to 7 barrels per person in Idaho, Oregon, Nevada, and Washington, and nearly 17 barrels per person in Alaska. The other District states, in contrast, face less of an increase in expenditures than does the rest of the country because of their lower reliance on heating oil.

Western consumption of aviation fuel exceeded 3 barrels per person in 1988. This figure is over a barrel per person higher than the national average because of longer average travel distances. Alaska reported consumption of 30 barrels per person, Hawaii had 9 barrels per person, and Nevada had 4.6 barrels per person in aviation fuel consumption. This higher aviation fuel consumption was an important factor boosting total oil consumption in many of the western states. Because the higher cost of jet fuel is split between passengers and airline companies, the region would be adversely affected only if higher transportation costs were to reduce total travel.

Although these three categories account for most oil consumption in the District, residual fuel oil consumption is important in Alaska and Hawaii. Particularly in the case of Hawaii, this oil is largely used to generate electricity and, since there are few alternatives available, consumers in Hawaii are especially vulnerable to higher oil prices.

Conclusions

Higher oil prices yield winners and losers. With the exception of the Alaskan State government, however, winners are not concentrated geographically. Higher oil revenues are distributed across the nation to owners of oil stocks, and the effects of higher oil prices on production, exploration, and development of new oil are relatively small in the West.

The effect on consumers is not likely to be much different in the Twelfth District than in the rest of the nation. Because their consumption of gasoline is about the same, higher gasoline prices will affect most states' consumers about the same as the average consumer in the nation. Lower reliance on oil for industry uses and heating will give most western states outside of the Pacific Northwest an advantage relative to the other states in the nation, but that gap is likely to be fairly small. Higher aviation fuel prices could harm the West if travel were curtailed, but if the visitor industry were not materially affected, most of the costs would be imposed on airline company stockholders and passengers throughout the nation.

Ronald H. Schmidt
Senior Economist

Carolyn Sherwood-Call
Economist

DISTRICT INDICATORS
(Seasonally Adjusted)

	90Q3	90Q2	90Q1	89Q4	89Q3	89Q2	89Q1	88Q4	% CHANGE FROM: 90Q2	89Q3
AGRICULTURE										
U.S. CROP PRICES, 1985=100	117.1	118.1	118.7	115.2	113.0	115.1	116.2	112.6	-0.86	3.62
DISTRICT CROP PRICES, 1985=100	112.4	112.9	130.4	117.3	114.3	122.9	120.9	112.4	-0.45	-1.68
FARM CASH RECEIPTS, MILLION \$	N/A	2365.2	2332.0	2534.2	2425.5	2511.8	2431.5	2473.5	N/A	N/A
CATTLE ON FEED, 1985=100	88.1	90.1	90.4	90.4	92.6	90.5	93.4	96.2	-2.23	-4.85
CATTLE PRICES, CALIFORNIA, \$/CWT.	N/A	65.9	63.6	62.4	62.7	61.8	61.7	60.1	N/A	N/A
FORESTRY										
LUMBER PRODUCTION, MILLIONS BOARD FEET	1472.7	1714.4	1765.9	1811.1	1771.6	1716.0	1648.0	1768.7	-14.10	-16.87
NORTHWEST LUMBER INVENTORY, MIL. BOARD FEET	2551.3	2617.0	2606.8	2518.3	2549.9	2440.5	2419.4	2568.8	-2.51	0.05
U.S. LUMBER PRICES, 1986=100	130.1	132.0	130.3	128.1	123.8	119.5	123.4	122.4	-1.38	5.15
ENERGY										
SPOT PRICE OF OIL, \$/BARREL	26.2	17.8	21.8	20.3	19.3	20.5	18.5	14.8	47.73	35.94
U.S. RIG COUNT	1015.8	1017.5	909.5	1017.6	904.7	807.1	753.4	912.3	-0.17	12.27
DISTRICT RIG COUNT	76.2	71.3	56.2	70.3	75.6	66.7	62.0	72.8	6.74	0.74
FUEL MINING EMPLOYMENT, 1985=100	80.4	80.3	79.5	79.3	80.8	79.7	77.8	78.8	0.13	-0.45
U.S. SEISMIC CREW COUNT	125.2	128.4	126.1	128.0	131.3	129.9	137.3	152.9	-2.52	-4.63
MINING										
MINERAL PRICES, 1986=100	133.5	125.6	123.3	125.5	131.8	134.3	147.4	147.7	6.30	1.31
METAL MINING EMPLOYMENT, 1985=100	202.2	200.9	200.9	190.9	187.7	182.7	176.3	168.5	0.65	7.70
CONSTRUCTION										
NONRESIDENTIAL AWARDS	1575.1	1585.6	1732.6	1458.0	1666.0	1519.3	1439.0	1361.0	-0.66	-5.46
RESIDENTIAL PERMITS	22758	25989	32741	33475	30509	31304	31065	35414	-12.43	-25.41
WESTERN HOUSING STARTS, THOUSANDS	29.4	31.2	30.7	29.3	35.2	37.7	29.6	33.0	-5.88	-16.65
CONSTRUCTION EMPLOYMENT, THOUSANDS	1032.4	1042.3	1052.3	1029.0	1013.9	1003.2	983.7	968.3	-0.94	1.83
MANUFACTURING										
WAGES, CALIFORNIA, \$/HOUR	11.5	11.4	11.3	11.3	11.2	11.1	11.0	11.0	1.08	2.82
EMPLOYMENT, THOUSANDS	3124.7	3140.1	3163.0	3151.2	3151.9	3152.9	3148.0	3142.1	-0.49	-0.86
DURABLES, 1985=100	102.0	103.1	104.0	103.6	104.0	104.1	104.0	103.6	-1.01	-1.89
CONSTRUCTION DURABLES, 1985=100	108.8	111.2	114.0	111.1	111.3	110.9	111.6	111.5	-2.11	-2.20
AEROSPACE, 1985=100	113.5	115.8	116.6	116.1	115.8	115.3	113.8	115.1	-1.99	-2.04
ELECTRONICS, 1985=100	94.3	94.5	95.2	94.8	94.7	95.2	95.7	99.8	-0.22	-0.41
SEMICONDUCTOR ORDERS, MILLIONS \$, NOT S.A.	1192.0	1309.7	1227.7	1197.9	1166.3	1300.0	1300.0	1066.0	-8.98	2.20
WHLS/RETAIL TRADE EMPLOYMENT, THOUSANDS	4862.8	4830.6	4809.9	4755.0	4718.7	4681.8	4654.9	4598.2	0.67	3.05
RETAIL SALES, PACIFIC DISTRICT, MIL. \$	24969	24865	24685	23961	23815	23417	22730	22000	0.42	4.85
SERVICES EMPLOYMENT, THOUSANDS										
HEALTH CARE, 1985=100	125.3	123.8	122.6	120.6	118.9	117.7	116.9	115.7	1.19	5.32
BUSINESS SERVICES, 1985=100	113.6	113.6	113.0	110.3	109.8	109.4	108.8	123.8	-0.04	3.41
HOTEL, 1985=100	134.8	133.8	133.7	131.9	128.7	127.1	126.2	125.2	0.71	4.73
RECREATION, 1985=100	129.3	128.2	126.6	128.5	125.9	125.9	125.1	109.1	0.89	2.74
FINANCE, INSUR. AND REAL ESTATE EMPLOYMENT										
	1278.7	1268.7	1265.5	1256.1	1244.6	1232.7	1227.4	1223.4	0.79	2.73
GOVERNMENT EMPLOYMENT, THOUSANDS										
FEDERAL GOVERNMENT	634.5	657.1	626.9	623.1	619.0	625.2	624.8	620.8	-3.43	2.51
STATE AND LOCAL	2834.5	2784.5	2758.7	2731.8	2700.3	2663.6	2644.8	2619.9	1.80	4.97

Data are weighted aggregates of available 12th District state data and are expressed as monthly rates unless otherwise noted. District Indicator data are constructed by FRBSF research staff from public and industry sources.

Opinions expressed in this newsletter do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco, or of the Board of Governors of the Federal Reserve System. Editorial comments may be addressed to the editor (Barbara Bennett) or to the author. . . . Free copies of Federal Reserve publications can be obtained from the Public Information Department, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 974-2246.

San Francisco, CA 94120
P.O. Box 7702

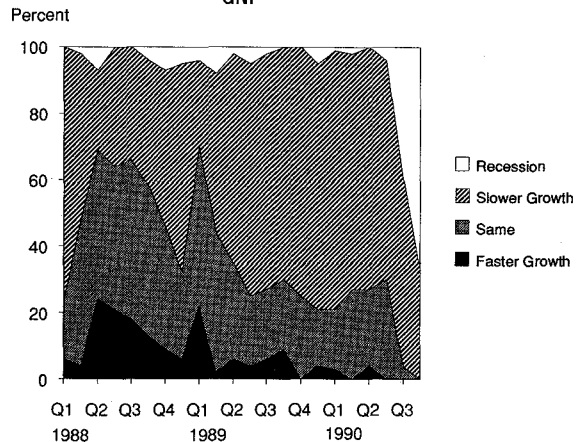
San Francisco Bank of Federal Reserve Research Department

PERSONAL INCOME ANNUALIZED PERCENT GROWTH RATES

	ANNUALIZED PERCENT GROWTH RATES					ANNUAL GROWTH		
	90Q1	89Q4	89Q3	89Q2	89Q1	1990*	1989	1988
ALASKA	8.8	-8.2	14.2	27.3	11.7	8.8	10.5	4.4
ARIZONA	9.4	7.5	5.7	5.7	11.3	9.4	7.5	5.5
CALIFORNIA	12.0	4.9	8.7	7.3	7.7	12.0	7.1	7.7
HAWAII	6.5	9.2	11.6	12.5	8.9	6.5	10.5	9.1
IDAHO	15.6	20.0	-3.5	6.1	18.6	15.6	9.9	9.2
NEVADA	12.6	14.4	9.8	12.1	16.4	12.6	13.1	11.8
OREGON	7.0	12.7	3.6	9.7	6.3	7.0	8.0	9.1
UTAH	6.9	11.7	4.9	10.3	6.5	6.9	8.3	6.5
WASHINGTON	11.4	10.6	7.8	8.6	14.0	11.4	10.2	7.4
12TH DISTRICT	11.3	6.6	8.0	8.0	8.9	11.3	7.9	7.7
U.S.	8.0	8.3	4.5	6.9	8.7	8.0	7.1	6.7

* Year-to-date

Twelfth District Business Sentiment Index* GNP



* The index is constructed from a survey of approximately 75 business leaders in the 12th Federal Reserve District.

NON-AGRICULTURAL EMPLOYMENT ANNUALIZED PERCENT GROWTH RATES

	ANNUALIZED PERCENT GROWTH RATES					ANNUAL GROWTH		
	90Q3	90Q2	90Q1	89Q4	89Q3	1990*	1989	1988
ALASKA	0.6	3.4	2.8	-3.1	7.0	2.3	5.7	3.2
ARIZONA	3.6	1.4	4.6	5.2	2.3	3.2	3.0	1.6
CALIFORNIA	2.1	1.7	2.5	3.1	2.1	2.1	2.4	4.3
HAWAII	-0.5	3.1	1.9	3.4	5.5	1.5	5.5	3.7
IDAHO	2.3	-1.3	9.2	7.0	5.9	3.4	6.1	5.1
NEVADA	7.6	0.1	9.6	8.9	8.9	5.8	8.5	7.9
OREGON	0.5	2.1	6.7	2.4	3.2	3.1	3.4	5.2
UTAH	2.4	7.6	4.0	4.0	3.7	4.7	4.7	3.9
WASHINGTON	2.0	2.1	6.0	6.0	5.0	3.4	5.9	4.3
12TH DISTRICT	2.2	1.9	3.7	3.7	3.0	2.6	3.3	4.2
U.S.	0.4	2.3	2.6	2.0	1.8	1.8	2.3	3.1

* Year-to-date

UNEMPLOYMENT RATES AVERAGE QUARTERLY DATA

	AVERAGE QUARTERLY DATA					ANNUAL AVG.		
	90Q3	90Q2	90Q1	89Q4	89Q3	1990*	1989	1988
ALASKA	6.9	7.1	7.1	6.7	6.4	7.0	6.7	9.2
ARIZONA	5.3	5.3	4.8	4.6	5.4	5.1	5.2	6.3
CALIFORNIA	5.5	5.2	5.1	5.1	5.0	5.3	5.1	5.3
HAWAII	2.5	2.6	3.1	2.6	1.8	2.7	2.5	3.1
IDAHO	5.8	5.9	5.0	5.0	5.1	5.6	5.1	6.1
NEVADA	4.6	4.9	4.5	4.8	5.3	4.6	5.0	5.1
OREGON	5.8	5.0	5.1	5.5	5.7	5.3	5.7	5.8
UTAH	4.5	4.7	4.3	4.1	4.0	4.5	4.2	4.9
WASHINGTON	4.9	5.2	5.5	6.2	6.3	5.2	6.2	6.2
12TH DISTRICT	5.3	5.2	5.1	5.1	5.1	5.2	5.2	5.5
U.S.	5.6	5.3	5.3	5.3	5.3	5.4	5.3	5.5

* Year-to-date