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Houston Business
A Perspective on the Houston Economy

Urban Oil Consolidation: An Update

The consolidation process continues to favor urban areas, especially Houston with its large pool of workers and its knowledge base. Among oil cities, Houston now dominates every segment of the industry by a very wide margin.

The April 1996 edition of *Houston Business* took a detailed look at the geographic implications of a shrinking number of oil workers, particularly among cities that traditionally have been centers of oil-related activity. This article follows up on the earlier work, updating tables that originally appeared in 1996. Readers interested in the history of the consolidation process or the rationale for large concentrations of urban oil workers are referred to the original article.[1] Data sources, as well as the interpretation of data, are also discussed there. The 1993 *County Business Patterns* that provided much of the basis for the 1996 article is updated here, although the latest information available is for 1997 due to lags in publication.

SUMMARY UPDATE

Table 1 shows U.S. employment in the oil industry by sector and demonstrates that the industry continued to shrink through 1999. For purposes of recent comparison, the two most relevant dates are 1990 and 1997, peak years in the oil cycle because the domestic rig count topped 1,000 working rigs during both years. Despite returning to peak levels of activity in 1997, the industry had 50,000 fewer workers than in 1990, reflecting productivity gains from technology and improved management. The decline in the number of jobs after 1997 may partly reflect long-term trends in consolidation, but most of the shrinkage is the result of weak oil prices and the collapse of drilling activity in 1998–99.

The 1996 article proposed a list of 29 oil cities derived from several sources, and we have since

Table 1
U.S. Employment in Oil Production, Services and Machinery (Thousands of jobs)

Year	Producers	Services	Machinery	Total
1982	266.0	434.5	112.9	813.4
1987	199.3	196.8	36.4	432.5
1990	191.9	198.3	42.5	432.7
1997	143.8	190.3	46.8	380.9
1999	133.1	156.0	42.9	332.0

SOURCE: Bureau of Labor Statistics.

narrowed that list to 12 cities that can be more easily tracked over time. These 12 cities, shown in Table 2, consistently account for well over 90 percent of the oil jobs of the original 29 cities. The most striking feature shown in the table is the dominance of Houston in every segment of the industry. For the first time since we have been doing these calculations, Dallas fell out of the No. 2 position among oil cities, displaced by both New Orleans and Oklahoma City. Midland–Odessa followed Dallas at No. 5.

These 12 cities collectively have been favored by the industry relative to the rest of the nation (*Table 3*). The share of oil jobs in these 12 metropolitan areas grew from 33.9 percent to 43.2 percent between 1990 and 1997, with the most important urban gains coming among the knowledge-intensive industry segments—producers, headquarters and exploration services.

Table 4 highlights Houston's continuing rise among the 12 cities. Even compared with the other large oil cities, Houston has dominated the job consolidation process, growing from a 35.6 percent share to a 42.4 percent share during 1990–97. Houston's role as the primary knowledge loop for the oil industry and its large technical labor force provide a significant lure for oil and natural gas companies. Again, decision-making and knowledge-intensive segments have been most prone to consolidate, and Houston has been by far the preferred consolidation site.

Finally, Figure 1 plots the share of U.S. employment held by Houston producers, oil services and oil machinery industries under Bureau of Labor Statistics definitions. The data are monthly after 1997, showing the effects of the 1997–98 cyclical downturn in drilling and the slow improvement in drilling activity through the first quarter of 2000. In the spring of 1999, both domestic and international drilling dipped to the lowest levels of the last 60 years.

The downturn clearly hurt Houston's oil machinery segment, with local machinery employment falling faster than in the rest of the United States. Houston's share of machinery employment fell from more than 40 percent to less than 35 percent before beginning to recover. Both local oil service and producer segments held up better than in the United

Table 2
Number of Jobs in 12 Leading Oil Cities in 1997

	Producers	All services	Drilling	Exploration	Other	Headquarters	Machinery	All oil jobs
Houston	16,884	16,471	3,682	3,670	9,119	23,748	11,393	68,496
New Orleans	5,663	5,185	1,102	82	4,001	2,065	435	13,348
Oklahoma City	4,952	5,274	1,794	213	3,267	1,810	1,055	13,091
Dallas	4,306	1,776	858	651	267	3,765	2,185	12,032
Midland–Odessa	2,884	4,839	909	335	3,595	2,016	385	10,124
Denver	3,919	1,204	415	292	497	3,798	20	8,941
Lafayette	881	6,566	1,191	205	5,170	770	712	8,929
Tulsa	2,495	1,253	486	115	652	3,750	1,160	8,658
Fort Worth	1,098	653	195	80	378	2,738	1,793	6,282
Bakersfield	903	3,847	1,162	6	2,679	850	175	5,775
Los Angeles	1,430	1,414	113	15	1,286	1,007	139	3,990
New York	101	193	175	0	30	1,209	0	1,503
Total 12 oil cities	45,516	48,675	12,082	5,664	30,941	47,526	19,452	161,169
United States	106,325	162,293	44,825	9,313	104,144	76,251	28,098	372,967
12 cities:								
Percent U.S.	42.8	30.0	27.0	60.8	29.7	62.3	69.2	43.2
Houston:								
Percent oil cities	37.1	33.6	30.5	64.8	29.5	50.0	58.6	42.4

NOTE: Differences in sources and definitions account for the variances in 1997 U.S. job figures reported in Table 1 and Table 2.
SOURCES: *County Business Patterns*; authors' calculations.

Table 3
Twelve Oil Cities as a Share of U.S. Oil Employment (Percent)

Sector	1987	1990	1997
All oil	35.7	33.9	43.2
Producers	21.0	22.9	42.8
Headquarters	58.2	47.6	62.3
All services	26.3	29.4	30.0
Drilling	23.1	27.6	27.0
Exploration	40.6	60.7	60.8
Other	26.9	26.3	29.7
Machinery	66.6	66.9	69.2

SOURCES: *County Business Patterns*; authors' calculations.

Table 4
Houston Jobs as a Share of 12 Oil Cities (Percent)

Sector	1987	1990	1997
All oil	34.6	35.6	42.4
Producers	27.0	25.9	37.1
Headquarters	34.7	36.8	50.0
All services	30.0	33.0	33.6
Drilling	30.7	37.8	30.5
Exploration	39.5	45.0	64.8
Other	27.3	27.2	29.5
Machinery	54.4	54.7	58.6

SOURCES: *County Business Patterns*; authors' calculations.

States overall, however, and gained significant market share during the downturn.

CONCLUSION

The trends observed in the 1996 article remain quite strong. The industry's employment base continues to shrink, driven over the long term by significant advances in technology, such as three-dimensional seismic, horizontal drilling and subsea completions. It is now possible to do more work with fewer people. The consolidation process continues to favor urban areas, especially Houston with its large pool of workers and its knowledge base. Among oil cities, Houston now dominates every segment of the industry by a very wide margin. A second tier of oil cities consists of New Orleans, Oklahoma City, Dallas and Midland–Odessa, but these are now too small—measured as oil centers—to be regarded as potential rivals to Houston.

—Robert W. Gilmer
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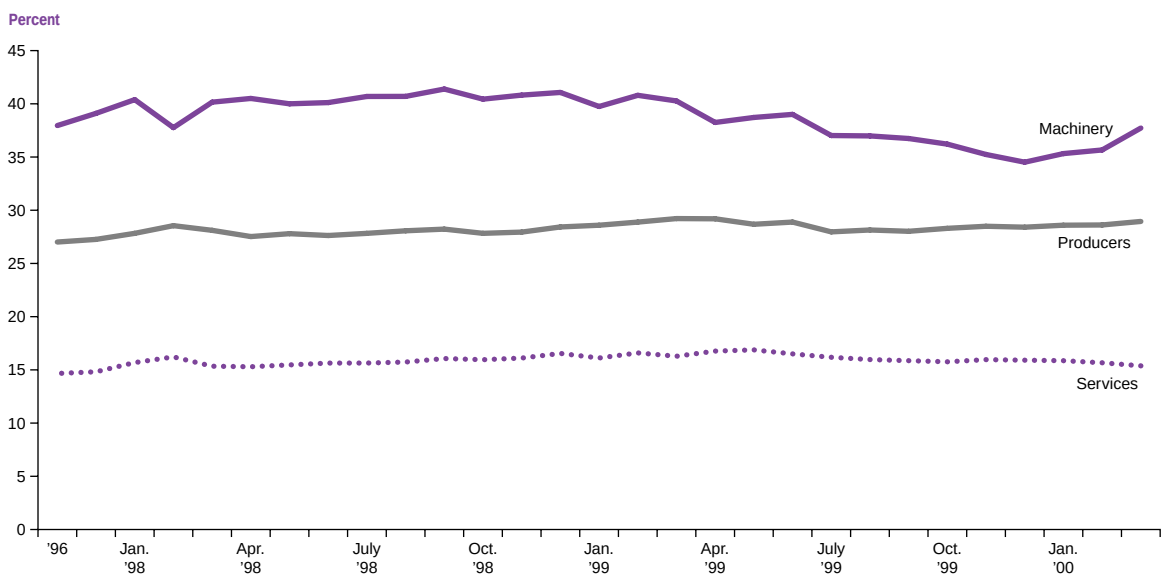
**David Kang will enter Harvard University to study economics in the fall.*

NOTE

[1] Gilmer, Robert W., and Jun Ishii (1996), "The Oil Industry and the Cities: Consolidation in the Oil Extraction Industry," Federal Reserve Bank of Dallas *Houston Business*, April, 1–7. This article is available on the Internet at www.dallasfed.org, under the Publications section.

Figure 1
Houston as a Share of U.S. Oil Production, Services and Machinery, 1996 to Present



SOURCE: Bureau of Labor Statistics.

The Houston economy continues to expand, with job growth running at a 2.6 percent annual rate for the first half of this year. Oil and manufacturing employment have yet to pick up strongly, a normal lag behind rising drilling activity, but these sectors should contribute strongly to job growth in the second half of the year. The Houston Purchasing Managers Index has been over 60 throughout the second quarter, indicating solid growth and particularly reflecting strength in oil and manufacturing.

CRUDE OIL AND NATURAL GAS PRICES

The price of West Texas Intermediate crude held steady near $30 per barrel for most of the last two months, with OPEC having committed to increase crude supplies if prices stayed above that level for 20 days. OPEC reneged on that commitment in early June, then provided only 710,000 barrels per day of additional production following its June meeting. Prices bounced up to $32–$33 per barrel, then fell back to $28 as Saudi Arabia surprised the market with a unilateral offer to raise production by another 500,000 barrels per day.

Natural gas prices fell below $4 per thousand cubic feet, as cool weather in the Midwest and Northeast reduced the need for natural gas to generate electricity. Fears of electrical power outages and brownouts this summer have been greatly reduced. Although natural gas storage is 20 percent below last year's levels, storage has been steadily refilling over the past several weeks.

GASOLINE AND REFINING

Spot wholesale gasoline prices peaked at $1 per gallon in mid-June and have since fallen back to 87 cents. Gasoline inventories are still low, but the driving season has not been as strong as expected, perhaps due to consumer resistance to higher gasoline prices. Growing inventories of gasoline, along with crude and natural gas, led some respondents to point to the end of the current bull market for petroleum.

Refiners enjoyed excellent margins throughout the last two months, and they operated at high levels to take advantage of the profits.

PETROCHEMICALS

Ethylene and propylene producers have enjoyed strong demand and low inventories for several months, allowing them to pass through much of the higher feedstock costs and to protect their margins. Plastics producers farther downstream have had less success in passing along their higher costs. In the past few weeks, however, growing inventories have changed the picture for ethylene and propylene producers, limiting their ability to pass through price hikes. Increased production capacity and slower economic growth were both cited as reasons for higher inventory levels.

OIL SERVICES AND MACHINERY

Domestic drilling is growing faster than was generally anticipated. The domestic rig count recently hit 950, and offshore drilling in the Gulf of Mexico now exceeds the last peak period in early 1998. International drilling has been expanding since January but remains at relatively low levels. The weak international drilling market means that U.S. capacity geared to supply overseas markets remains idle. The weak market also hurts pricing. For example, day rates for offshore rigs in the Gulf remain relatively low because foreign rigs stand ready to move to the United States for work. Finding enough capable workers is cited as the biggest constraint on further activity.

FINANCIAL SERVICES

Respondents continued to be optimistic based on their performance so far this year and on the near-term outlook. Several noted that the recent dip in interest rates had increased activity, as borrowers rushed back into the market to take advantage of lower rates. Most comments, however, centered on the strong continued consumer demand, the ability to lend in the face of rising rates and the lack of deterioration in loan quality. Real estate lending experienced the slowest growth, but overall loan growth is very favorable.

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