

Houston Business

A Perspective on the Houston Economy

Variations on a Theme: Oil and 11 Urban Centers On the Gulf Coast

Oil, of course, is the common thread among these 11 metropolitan areas. Upstream oil exploration and production and oil services and machinery are concentrated in these cities. However, it is the region's vast downstream complex of refineries and petrochemical plants that makes these port cities distinctive, even in comparison with the rest of Texas and Louisiana.

Houston is the economic capital of one of the most important industrial regions of the United States. This region encompasses the Upper Texas Gulf Coast from Corpus Christi to Victoria, to Brazoria and on to Galveston–Texas City, Houston and Beaumont–Port Arthur–Orange, plus the Louisiana metropolitan areas of Lake Charles, Lafayette, Houma–Thibodaux, New Orleans and Baton Rouge.

This article examines the economy of these 11 Gulf Coast areas and compares it with that of Dallas and 14 other places in North Texas and Louisiana. Oil, of course, is the common thread among these 11 metropolitan areas. Upstream oil exploration and production and oil services and machinery are concentrated in these cities. However, it is the region's vast downstream complex of refineries and petrochemical plants that makes these port cities distinctive, even in comparison with the rest of Texas and Louisiana.

REGIONAL EXPORTS

Exports are essential to every regional economy, as they pay for regional imports and support such inherently local activity as dry cleaners and grocery stores. One way to spot export activity in any region is to look for extraordinary concentrations of industrial activity. This is often done by computing *location quotients* (*LQs*). Regarding the United States as representative of a typical place, the *LQ* for industry *i* would be computed as follows:

$$LQ_i = \frac{\text{percent share of local income earned in industry } i}{\text{percent share of U.S. income earned in industry } i}$$

If the share of income earned locally in an industry is the same as that of the United States, then $LQ_i = 1$, and local representation is simply average. It is when the local share is relatively large, $LQ_i > 1$, that we suspect exports. One rule of thumb is that if $LQ_i > 1.2$, or if there is a 20 percent greater than normal concentration of activity, we have probably spotted local export activity.

Table 1 shows selected location quotients for income earned in 1991 by the 11 metropolitan areas along the Texas and Louisiana Gulf Coast. Houston is broken out separately because more than half the income earned in these cities is earned in Houston. Several factors set Houston apart from the 10 smaller areas. Houston has a much larger role in oil and gas mining than the others, a sign of its growing national and global role in oil production and services. Houston's upstream oil industry is also reflected in exports of fabricated metal products, machinery and miscellaneous repair, welding and machine shops. Its concentration of natural gas pipeline companies stands out, as do its public utilities, wholesale trade, air transportation, holding companies, legal services and real estate—all major metropolitan phenomena.

The other important exports from Houston are refining and chemicals. The local economic effects of these capital-intensive industries spill over into heavy construction and engineering because of new facility construction and extensive and continued maintenance. Further, water transportation is integral to these downstream

industries, and the tonnage moving through the Port of Houston is dominated by oil imports, chemicals and petroleum products.

Beyond Houston, chemicals and refining similarly mark the other Gulf Coast cities. The location quotients in Table 1 show some fishing and a more modest concentration of upstream oil and gas production than is found in Houston, but it is refining, chemicals, heavy construction and port facilities that stand out most clearly. The local concentrations of individual cities can be remarkable. For example, the computed location quotient for refining is 38.5 for Lake Charles, 33.9 for Beaumont–Port Arthur–Orange and 28.1 for Galveston–Texas City. For chemicals, these ratios are 20.9 for Brazoria, 10.2 for Beaumont–Port Arthur–Orange, 7.7 for Victoria and 7.6 for Lake Charles. These downstream industries clearly play a very large role in the economy of these smaller cities.

Table 2 shows the location quotients for selected industries in 15 Texas and Louisiana cities located north of the Gulf Coast and east of a line running from Victoria to Austin, Abilene and Wichita Falls. Dallas, which accounts for slightly less than half the income generated in this region, is broken out separately.

For the region as a whole, the table shows large exports associated with upstream oil production and oil services, and strength in machinery manufacturing. In many ways, Dallas dominates this area (as it does much of the Southwest) as a regional banking, insurance and real estate center, as a focal point for wholesale and retail trade and as a communication and transportation center. Dallas and Austin have significant concentrations of electrical machinery associated with high-tech and defense manufacturing. Outside of Dallas, cities in the northeast corner of Texas (plus Austin) have a large concentration of nonelectrical machinery, and there is a strong military presence in several cities. Any indication of refining and chemicals largely disappears as we move inland from the Gulf Coast.

The difference between the industrial structures of the Gulf Coast and its northern neighbors matters. Figure 1 shows the course of total employment and construction employment in the two regions during the period 1980–93. The Gulf Coast cities were the first to feel the drop in oil prices during the regional downturn in 1981, and by 1987 they had suffered an 8.9-percent drop in total employment. Economies of the cities to the north, in contrast, never slowed until

Table 1
Location Quotients for Income Earned in Selected Industries
in 11 Gulf Coast Urban Centers, 1991

Local industries	Gulf cities	Houston	Others
Fisheries	.65	.20	1.24
Oil and gas mining	9.76	14.34	3.69
Heavy construction	3.74	4.09	3.29
Chemicals	3.17	2.25	4.39
Refining	7.82	4.02	12.87
Fabricated metal	.87	1.19	.46
Machinery	.92	1.40	.28
Public utilities	1.90	1.48	.87
Water transportation	5.93	3.19	5.95
Air transportation	1.02	1.48	.41
Pipelines	1.70	2.33	.86
Wholesale trade	1.11	1.29	.87
Holding companies	2.67	3.82	1.13
Real estate	1.74	2.50	.74
Miscellaneous repair	1.26	1.27	1.25
Legal	1.48	1.53	1.42
Engineering and management	1.14	1.43	.76

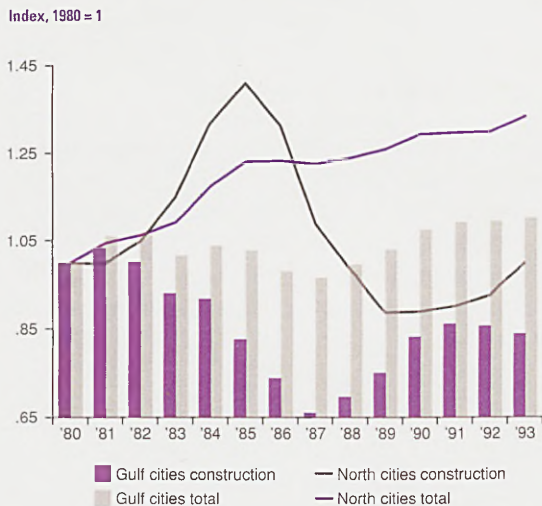
SOURCE: Bureau of Economic Analysis, Regional Economic Information System.

1985 and lost less than 1 percent of their employment base. The difference in performance from one group of cities to the next is explained by construction, as the northern cities went through a boom fueled by lending from banks and savings and loans. As the Gulf Coast recovered in the late 1980s, it was heavy construction that led the way, much of it from a boom in petrochemical expansion. In contrast, cities north of the Gulf Coast endured slow times in the late 1980s, as construction of office buildings and shopping centers collapsed.

HALF EMPTY OR HALF FULL?

The distinctive industrial mix associated with refining and chemicals—port facilities, heavy construction and engineering—largely reflects *backward industrial linkages*. Thus, most of the industrial linkages from these industries are tied to delivery of inputs or the construction and maintenance of the facility. There are very few *forward linkages* from these industries to further downstream processing or marketing. Refined products typically require no further manufacturing stages, as gasoline and fuel oil move directly into sophisticated distribution channels. In contrast, there are many forward linkages from petrochemicals into plastics, synthetic fibers and rubber products, although we find few

Figure 1
Total and Construction Employment
(North Texas and Louisiana Compared with Gulf Coast Cities)



SOURCES: Bureau of Economic Analysis, Regional Economic Information System; Bureau of Labor Statistics.

Table 2
Location Quotients for Income Earned in Selected Industries
in 15 North Texas and Louisiana Cities, 1991

Local industries	North Texas and Louisiana	Dallas	Others
Oil and gas mining	3.21	4.06	2.43
Heavy construction	.75	.52	.96
Chemicals	.72	.62	.81
Refining	.72	.90	.55
Electrical machinery	1.83	2.62	1.10
Other machinery	.97	.55	1.35
Railroads	.90	.27	1.47
Transport services	1.02	1.48	.41
Air transportation	.87	1.61	.18
Communications	1.23	1.60	.89
Wholesale trade	1.22	1.60	.89
Retail trade	1.05	1.03	1.07
General merchandise—retail	1.18	1.42	.95
Credit institutions	.92	1.31	.57
Depository and other	1.17	1.62	.76
Insurance carriers	1.03	1.42	.68
Insurance agents	1.18	1.23	1.13
Real estate	2.54	3.79	1.37
Holding companies	2.31	3.85	.88
Legal	1.16	1.46	.88
Federal military—government	1.21	.19	2.15

SOURCE: Bureau of Economic Analysis, Regional Economic Information System.

on the Gulf Coast. This lack of forward linkages is often cited as a failure of the regional petrochemical industry.

The apparent failure of petrochemicals to build local jobs is a question of viewing the glass as half full or half empty. The half-full view recognizes the industry's backward linkages as well developed and heavy construction as a powerful propulsive force in the regional economy. The concentration of engineering and design expertise in Houston, in companies such as M.W. Kellogg or Brown & Root, is a special niche in a global market.

The half-empty view of petrochemicals fails to recognize the powerful economic forces that drive intermediate chemicals closer to the end user. Gulf Coast plants produce huge quantities of uniform product in large-scale plants. As chemical manufacturing moves further downstream, products become less uniform, and facilities work in batches or cycles rather than continuously. These plants require flexibility and customer responsiveness that is often alien to large plants in large companies. Rather than forward integration from petrochemicals to plastics, it is more common to see backward integration from auto production to plastics or textiles to synthetic fibers.

Continued revisions of wage and salary employment data for Houston show that moderate job growth returned to the city last year, and this growth has continued into the spring. New jobs remain concentrated in services and local government, and the overall growth rate still lags the rest of Texas and the nation. The Beige Book results are consistent with continued moderate improvement in the local economy. The national economy's strength is reflected in Houston by increasing demand for refined products and chemicals, strong leasing of warehouse space and corporate relocations to the city that have boosted the local housing market.

RETAIL AND AUTO SALES

Retailers report good Easter sales and a spring season that will easily outpace last year's. Auto sales in March were slower than a year ago, breaking a string of seven months in which they matched or surpassed their previous-year level. March auto sales were typical of recent years, however, and March 1993 sales were unusually strong. Both retailers and auto dealers report renewed consumer confidence in Houston.

OIL SERVICES AND MACHINERY

Natural gas drilling continues to prop up the market for oil field goods and services, with companies reporting solid domestic demand and good backlogs. The major oil companies have not cut capital spending, but demand was weak from oil-producing independents, especially in West Texas and Oklahoma. Except for Canada, foreign demand remains sluggish.

Despite oil prices as low as \$14 per barrel in recent weeks, oil-directed drilling in the United States fell only slightly compared with last year, and natural gas drilling has held at high levels. Drilling in the natural gas-prone Gulf of Mexico has surged in recent weeks. Rigs and supply boats are entering the Gulf from all over the world, and day rates for offshore equipment are holding steady. Strong natural gas prices explain some of the improvement in the Gulf, but recent exploration and oil production in deep waters, combined with sudden interest in subsalt re-

gions, are providing renewed confidence in the Gulf of Mexico's long-term future.

REFINING AND PETROCHEMICALS

Low crude prices and cold weather combined to give Gulf Coast refiners an excellent first quarter, and good margins continued into April despite improving oil prices. Inventories of fuel oil were depleted by cold weather, and gasoline inventories are described as ample going into the summer driving season.

The chemical market continues to improve along with the U.S. economy, with strong demand and better prices for a number of products. Inventories are reported to be low for some base petrochemicals, but price increases remain modest and come from the very low levels of the past year. Margins for oil-based products have received additional help from weak oil prices. Despite slow improvements in these markets, several companies have announced corporate restructurings specifically aimed at chemical operations.

LUMBER AND PAPER PRODUCTS

Lumber prices have fallen with weaker demand and as lumber inventories were reduced on expectations that higher interest rates could weaken construction markets further. Prices for corrugated boxes are up, and demand for boxes and packaging material is strong.

REAL ESTATE MARKETS

Sales of both new and existing homes set all-time records in Houston for March. Rising interest rates were the primary factor, but an improving local economy, corporate relocations and stronger consumer confidence are also given some credit.

Office leasing remains slow, and vacancy rates throughout the city are unchanged. Industrial warehouse and distribution space is reported to be leasing and selling strongly, with a number of large transactions slowly tightening the market over the first quarter. In contrast, manufacturing floor space remains in serious oversupply, with vacancy rates near 50 percent.

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