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Houston Business

A Perspective on the Houston Economy

Diversification of Houston Industry:

Have the U.S. and Houston Economies Become More Alike Since the '80s?

The oil boom created the illusion of Houston as a one-industry town, dominated by oil exploration. History shows, however, that other industries, such as chemicals, refining, business services and heavy construction, took the economic lead in the city's past.

In the early 1980s, Houston was engulfed in the oil boom and overwhelmed by a spiraling rig count and boomtown mentality. As the center of a global search for oil, the city was expected to grow as long as the price of oil rose—presumably forever. Then came the oil price collapse, and nearly a quarter of a million wage and salary jobs disappeared from the city between 1982 and 1986.

Houston is now back, bigger than ever, returning more than a year ago to its prior peak levels of employment. Although oil and gas mining is now stable and healthy, it did not lead the city's recovery to new employment records.

The standard answer to what spurred Houston's recovery is diversification, implying that the Houston economy has become more like that of the United States. This article provides a close-up view of diversification in Houston and other Texas cities by using an index that measures how a place is like or unlike another. The results are surprising, and for Houston they suggest a role that remains as unique and distinctive as ever.

Diversification in Houston did not mean becoming more like the United States, but to a great extent Houston simply built on economic strengths it exhibited well before the oil boom—refining, chemicals, business services and heavy construction.

No single measure can capture all aspects of diversification. Houston's recent growth in aerospace and medical services is lost to the measure discussed herein due to classification. Yet, the index does dispell the notion of Houston as a one-industry city, and it highlights several industries that took the lead in the city's recent past.

DISSIMILARITY INDEX

The following index measures how the economy in a local area such as Houston differs from the U.S. economy:

$$I = \sum_{i=1}^{n} \frac{(s_i - s_i^*)^2}{s_i^*},$$

where s_i = local share of employment in industry i,
s_i^* = U.S. share of employment in industry i and
n = number of different industries.

Here, the U.S. economy represents the standard for a highly diversified place, as industrial strengths and local exports of one region average out with the industrial weaknesses and imports of others. The more the industry mix of a locality differs from that of the United States, the larger the index will grow. The list of large industrial contributors to the index provides insight into the economic role played by the local area.

Figure 1 shows this index for Harris and Dallas counties from 1969 to 1988. The index is based on approximately 70 private-sector industry groupings, and the data are from U.S. Census Bureau *County Business Patterns*. Except for the mid-1970s, the Harris County index has been quite stable, with a value near 40; the Dallas County index also has been very stable but at a value nearer to 20, indicating a local economy much nearer the norm for the United States than that of Houston.

Data since 1988 that are fully comparable are not yet available. In fact, the closest available figures were nonagricultural wage and salary employment for the Houston metropolitan area rather than for Harris County, and these data were for a smaller number of industry categories that were biased toward Houston's strengths. Even without comparable index values, these data continue to show no tendency for Houston to become more like the United States. Data for Harris County only have been extended through 1990 in Figure 1, based on these alternative definitions.

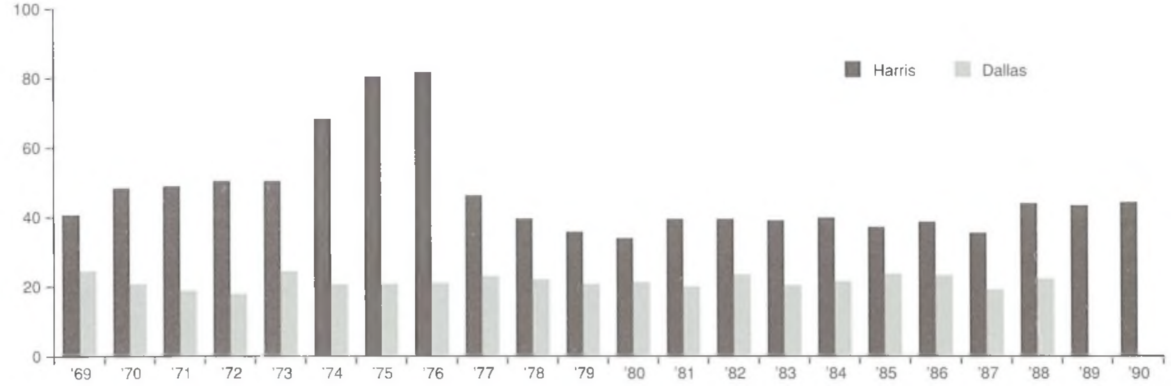
HOUSTON'S INDUSTRY MIX

According to this index, the five industries that most distinguished Houston from the United States in 1988 were mining, heavy construction, petroleum refining, business services, and water transportation. These five industries also topped the list at the peak of the boom in 1982, as well as at the trough in 1986. Indeed, all have led Houston industry since 1973, and only water transportation was missing from the top five before 1973.

Mining. Mining did not become the industry that most distinguished Houston from the United States until 1977. Before 1973, refining took that distinction, then heavy construction took the lead after 1973. Surprisingly, mining has become much *more* important in setting Houston apart from the nation since 1982. This is because mining activity shrank everywhere after 1981 but much less in Houston than elsewhere. The oil industry consolidated many of its operations in metropolitan areas as the rig count declined. This consolidation was not unique to Houston, nor did Houston benefit more from this process than did other cities.

The practical result of consolidation, however, is that the numerator of the index value for mining in Houston grows and the denominator shrinks. The index is simply telling us—quite correctly—that oil exploration does more today to make

Figure 1
Dissimilarity Index Based on Industry Mix, Harris and Dallas Counties Compared with the United States



SOURCE: U.S. Census Bureau, *County Business Patterns*.

The recent performance of the Houston economy has been slow but stable. Between December 1990 and July 1991, Houston added only 8,700 wage and salary jobs. Aside from the extraordinarily high employment gains for Houston last year, this gain is still less than half the number of jobs added during the December–July period of 1988 or 1989. This period typically reflects 40 percent to 45 percent of job growth for the year, which means the current pace puts Houston on course for about 22,000 new jobs, or a 1.3 percent increase. Although the national recovery may boost the second-half growth rate, low natural gas prices and eroding chemical margins will slow growth even further.

RETAIL SALES

Retail sales were strong in August, up a solid 10 percent to 15 percent over August 1990. This increase followed a strong July, marking the first time since last winter that sales held strong for two consecutive months. The seasonal shift from summer to fall was smooth for most retailers, and plans for the holiday season will be aggressive this year.

Auto sales in Houston are down about 7 percent on a year-to-date basis. August was off only 4 percent from last year, but this decline meant we failed to match the slowdown that came on the heels of last year's invasion of Kuwait. Houston's results remain better than the nation's (which was off 14 percent in August) but do not compare favorably with stronger local sales in general retailing or with sales of new and existing housing.

CHEMICALS AND REFINING

Margins for some petrochemicals narrowed sharply or disappeared in August. Bulk commodity petrochemicals are in oversupply. While the slow national economy contributes to this oversupply, new capacity on the Gulf Coast and around the world has recently added to the problem. Extensive chemical construction remains under way, but eroding profits mark the end of new plant announcements.

The market for gasoline improved in early August, and demand returned to levels just below last year's. The improved market, combined with some refinery accidents, drew down inventories and helped margins considerably. Gulf Coast refineries have announced several large-scale construction projects to produce additives for cleaner-burning gasolines. Refiners have requested permits to begin moving some of these octane-enhancing compounds into the Middle West via product pipelines.

OIL AND NATURAL GAS

By early September, the Texas rig count was down 21 percent from last year's levels, with nearly 60 percent of the drop accounted for by the fall in horizontal drilling in Railroad Commission District 1. Drilling in adjacent District 3 has taken up some of the slack, but only five or six successful companies remain at work in the area. Offshore drilling continues to fall sharply in Texas and Louisiana.

Employment cutbacks continue among Houston energy companies. International demand for oil services is very strong but not strong enough to offset the domestic losses. For the first time since the oil bust, Houston energy companies have added workers for the past 18 months. Expecting strong natural gas prices, and given ample profits by the Persian Gulf crisis, drilling budgets increased. The reality of natural gas at $1.25 per thousand cubic feet imposed the recent retrenchments.

REAL ESTATE

Investment in Houston real estate slowed sharply, down about 40 percent from last year, but it remains one of the nation's more active markets. Except for some remaining opportunities in suburban office buildings, bottom-fishing activity has largely moved out of Houston for cities like Phoenix and Denver.

Building activity generally continues at levels comparable to last year's. Houston apartments are a good example of the credit crunch impact, according to one respondent. Few areas in Houston have seen new apartment construction since 1985, and most can now justify construction based on current rents. Despite this justification, no acceleration in apartment construction is apparent. New and existing housing sales continue to track last year's results, and inventories remain low except in homes priced more than $150,000. Demand for industrial space has slipped, but this sector is most affected by national economic conditions.

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Houston's industry mix unique than ever before.

Heavy Construction. The large engineering and construction firms in Houston are mixed in several classifications, especially heavy construction and miscellaneous services, and these firms are another key component of Houston's diversity. In fact, heavy construction caused the surge in Houston's index from 1974 to 1976, as seen in Figure 1. Houston-based firms such as CRSS, Brown and Root and M.W. Kellogg perennially top the list of the world's great construction firms.

Refining and Chemicals. Refining and chemicals led the list of industries that contributed most to this index until 1973, then shrank rapidly as local employment in the industry shrank. Price controls and diminished demand for gasoline closed refining capacity in the 1970s; very high productivity growth cut into employment in those plants that remained open. Over the past few years, the contribution of refining and chemicals to the dissimilarity index has been growing again, but their contribution remains small compared with mining or heavy construction.

Business Services. Before Spindletop, Houston was an administrative center for cotton produced north of the city and lumber milled to the east. After Spindletop, the city became the administrative center for the oil industry. Business services were continually overrepresented in Houston from 1969 to 1988, and they have been a strong source of growth in Houston's recent economic recovery.

THE DISSIMILARITY INDEX FOR OTHER TEXAS CITIES

Table 1 lists the largest county in five large Texas metropolitan areas. For each county, we calculated the dissimilarity index for selected years between 1969 and 1988.

Table 1
Dissimilarity Index: Selected Texas Counties, 1969–88

Year	Harris	Dallas	Bexar	Tarrant	El Paso
1969	37.2	24.5	30.8	131.2	114.1
1975	80.5	24.0	24.1	32.1	112.9
1979	35.7	20.8	30.0	44.0	80.1
1982	39.4	23.4	27.3	28.2	109.0
1988	43.9	18.4	26.1	39.0	105.9

SOURCE: U.S. Census Bureau, *County Business Patterns*.

Dallas County is the center of a highly diversified regional distribution network, and wholesale trade, retailing and transportation services are overrepresented. Insurance carriers and electronics firms are also concentrated in Dallas County throughout 1969–88. Bexar County serves a similar regional role but on a smaller scale. If the index included public employment, the large military employment in Bexar County would make it appear far more specialized.

Tarrant County (which includes Fort Worth) and El Paso County each show a strong concentration in a single industry. Transportation equipment dominates the index for Tarrant County and tends to be centered on the defense-related aerospace industry. The large index value for 1969 reflects production for the Vietnam War. Similarly, in El Paso County the index is dominated by low-wage apparel operations, with 60 to 80 points of the index attributable to this one industry.

The Dallas/Fort Worth Airport straddles the line between Dallas and Tarrant counties and was not reported consistently in the data source. Therefore, air transportation is omitted from the index for these two counties in Table 1. But if allocated to Dallas, D/FW adds about 4 points to the index. Allocating air transportation to Tarrant County adds about 20 points to the index. (Tarrant County's larger index value reflects its smaller size relative to Dallas County.)

CONCLUSION

The dissimilarity index provides an interesting and thought-provoking perspective on Houston. The oil boom created the illusion of Houston as a one-industry town, dominated by oil exploration. History shows, however, that other, albeit oil-related, industries—chemicals, refining, business services and heavy construction—took the economic lead in the city's past. Each of these industries also played an important role in Houston's recent revival.

There are important elements of Houston's diversification that do not show up in our index. Strong growth at the Texas Medical Center and the aerospace complex that developed in conjunction with the Johnson Space Center are not well represented by the data available. We examined private employment only. People working for the Johnson Space Center and many of those working for the Texas Medical Center are considered federal or state government employees. Other classification problems hurt as well. However, these technical and engineering jobs, which engage in further aspects of applied technology, nicely complement the rest of Houston's economic base.