HOUSTON BUSINESS BRIEFS

The Mechanics of Houston's Economic Base

A useful way to describe the Houston economy is to divide it into two categories. The first category is that group of industries selling goods and services to other places, such as nearby towns and rural areas, other large cities throughout the United States or cities throughout the world. These industries make up Houston's *economic base*, sometimes called the export base or primary sector.

The second category consists of those industries that sell their goods and services only within the city in which they are located, fulfilling purely local needs. Such industries include grocery stores, Laundromats, and shoe repair shops. Industries in this second category of the economy make up the *nonbasic*, or secondary, sector.

The basic sector is important because a city lives by its exports. Among Houston's exports, for example, are oil field equipment and expertise, refined products, petrochemicals and an array of engineering and medical services. These exports pay for imports, such as autos from Detroit or financial services from New York City, and for local nonbasic industry as well. This article describes Houston's export base and details the elementary mechanics of regional growth and development.

Defining Houston's Export Base

Good data on exports and imports are regularly available for the United States as a whole, but no comparable data are collected for Houston or any other U.S. city. Thus, defining Houston's economic base requires using some simplistic economic rules of thumb. Some standard conventions from regional economics are useful in assigning industries and employment to the export base. First, all employment in mining and manufacturing is assigned to the export base. Second, other industries, such as construction and most of the service sector, present a mix of local consumption and exports that must be divided using a mechanical device such as the location quotient.

continued on page two

Houston needs help from a stronger U.S. economy, higher oil prices or a surge in exports to maintain the fast pace of recovery seen in the city since 1987.

The location quotient for industry i (LQ_i) is defined as follows:

$$(LQ_i) = \frac{\text{Percent Share of Industry } i \text{ Employment in Total Houston Employment}}{\text{Percent Share of Industry } i \text{ Employment in Total U.S. Employment}}$$

The value of LQ_i is used as an indicator of exports, imports and nonbasic industry. If $LQ_i > 1$, Houston produces a greater than typical share of industry *i*, indicating that the city not only satisfies its own needs but also exports part of its production. After local needs are met for construction or services, the part of the industry employment engaged in export activity is

$$\frac{LQ_i - 1}{LQ_i}$$

Thus, for example, if $LQ_i = 1.5$, one-third of this sector's production is exported and assigned to the economic base.

Similarly, a result of $LQ_i < 1$ indicates a smaller than typical share of industry *i* in the Houston economy, and deficiency is presumably made up through imports. The dividing line between exports and imports, $LQ_i = 1$, indicates that Houston is typical of other cities, does not import or export and just serves its own needs.

Table 1
Definition of Houston's Economic Base by Industry in 1989

Industry	LQ_i	Percent Basic
Mining	6.79	100
Manufacturing	.59	100
Construction	1.24	20
Service Industries		
Transportation, Communication, Pub. Utilities		
Electicity, Gas, Sanitation	1.79	44
Trucking and Warehousing	1.01	0
Transport and Allied Industries	1.30	22
Retail Trade	.97	0
Wholesale Trade	1.28	22
Finance, Insurance, Real Estate	1.08	0
Services		
Personal, Hotels, Other	.96	0
Business Services	1.34	25
Legal, Educational, Miscellaneous	1.25	20
Health	.87	0
Government	.81	0

Houston's Economic Base

Table 1 shows location quotients for Houston in 1989, as well as the share of employment in each sector that can be attributed to basic production. The 100-percent figures for mining and manufacturing indicate they are, by assumption, completely exported. The zero figures indicate there are no exports in these sectors and that they are made up entirely of some combination of local services and imports. Other sectors, with a figure between 0 and 100 percent, provide all of Houston's needs plus some exports.

These definitions were used to compute employment in Houston's basic and nonbasic sectors from 1985. Some location quotients varied in different years, and these changes in the basic/nonbasic definition are allowed to occur across time. Charts 1 and 2 show the result of calculating both basic and nonbasic employment monthly from mid-1985 through June 1990. Both charts clearly indicate Houston's economic turnaround in early 1987.

Chart 3 shows the year-over-year percentage increases in both of these sectors. The 15-percent annual rate of decline in Houston's economic base during some months of 1986 is part of a well-known story, but the sheer size of the rate of decline is startling. Chart 3 also indicates that recent growth in Houston's economic base has slowed to an annual rate of about 1.4 percent thus far in 1990, down from year-over-year changes that averaged more than 2 percent in the first half of 1989 and more than 4 percent for the first six months of 1988.

Total employment growth for Houston still looks strong in 1990, but it is propped up by a 3.5-percent increase in nonbasic sectors. This increase is probably a lagged response to the very strong growth in the economic base since 1987. Estimates based on this data indicate that an increase in the economic base will spur a nonbasic response that is only 40 percent complete after three months. A year or more is probably needed for local supply to catch up with the export sector. At present, the strong gains in nonbasic sectors seen to be sustained more by history than by current events. Unless basic employment picks up soon, much more modest employment growth may be on Houston's economic horizon.

Conclusions

Data limitations abound in trying to draw conclusions about Houston's economic base. Actual data on regional import and exports do not exist for Houston, but some widely used rules of thumb were applied in this article to estimate the base. The results show a healthy and stable relationship between basic and nonbasic industry since early 1987, although basic growth seems to have slowed over the first half of this year.

The slowdown in Houston's basic employment growth is centered in the manufacturing sectors. Fairly strong percentage gains are still apparent in mining and in those parts of the legal, educational, miscellaneous and transportation service sectors that can be counted as basic. The regional slowdown in manufacturing mirrors the U.S. slowdown that has occurred over the past year, which is widely forecast to continue for the next few quarters. Houston needs help from a stronger U.S. economy, higher oil prices or a surge in exports to maintain the fast pace of recovery seen in the city since 1987. ❖

Chart 1
Houston's Economic Base Employment

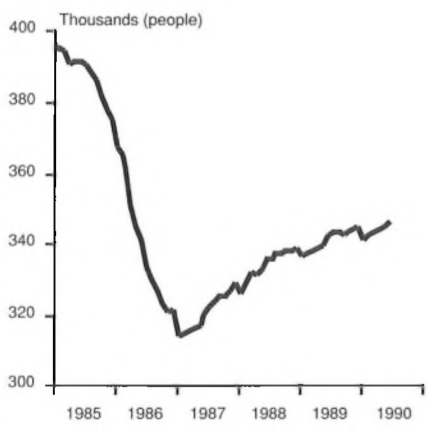


Chart 2
Houston's Nonbasic Industry Employment

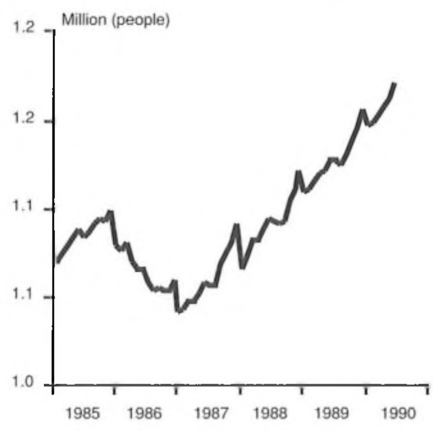
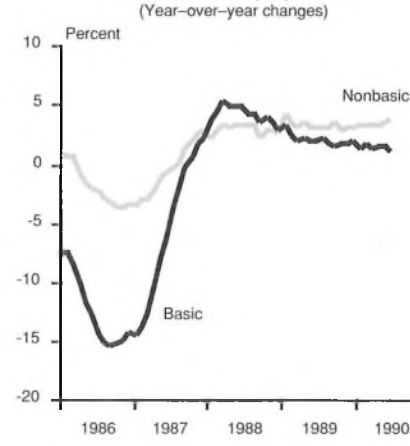


Chart 3
Houston Employment
(Year–over–year changes)



Houston Beige Book
July 1990

Many areas of the Houston economy fail to show the strong growth pattern apparent in 1988 and 1989, but Houston continues to outperform the United States and much of the Southwest. Some Houston manufacturing firms report modest slowdowns in demand and softening prices, but they continue to operate at a very high level. The oil sector remains uniformly strong, with refiners in particular earning very healthy margins. Auto sales and retail sales are still on a positive course. Houston's real estate markets continue to improve, but transaction prices in apartments and office buildings are still far below those required to trigger extensive new construction.

Oil Field Equipment

The number of working rigs in Texas and the United States continued to rise modestly in recent weeks, showing considerable stability in the face of volatile oil prices over the first half of this year. Oil service firms continue to report slight improvements in recent weeks, although business is well ahead of last year.

Going into this year, drilling plans were based on a price of $15 to $16 per barrel for West Texas Intermediate crude. Falling oil prices throughout the spring and summer failed to penetrate this level, which explains the relative stability in the number of working rigs. In addition, the horizontal drilling boom has changed operating rules for rigs working in areas such as the Austin Chalk, making current prices less of an immediate consideration.

Contacts with oil service firms following the Iraqi invasion of Kuwait indicated no plans were changed by the resulting jump in oil prices, nor were plans likely to change unless the course of events provides proof that these prices will stay up for some time. The cutbacks in oil services in the 1980s mean any major effort to expand drilling would quickly run into shortages of materials and personnel.

Offshore activity has not improved compared to last year, as natural gas prices remain low and below expectations. Compared to North Sea activity, Texas Gulf Coast utilization rates and day rates for rigs are seriously depressed.

Chemicals and Refining

Petrochemical producers continue to report very strong demand, and they are operating at high levels of capacity. Recent movement in prices and inventories are mixed, but the industry generally continues to report very strong and profitable margins.

Similarly, refiners are operating at very high levels. The decline in oil prices through much of the spring and early summer generated excellent margins for gasoline and other energy products.

Metals

The steel industry postponed price increases scheduled to occur July 1, 1990, which helped local metal fabricators. These fabricators indicated sales had slowed in recent months as their national markets, especially those throughout the rest of the southern United States, cooled off. Nonferrous metals are operating at or near capacity, as they have for several months.

Retail Sales

This sector continues to do very well in Houston as major stores and some specialty stores report sales gains of 8 percent to 10 percent over last year. Inventories of summer stock have already cleared out, and fall merchandise is coming on line early. Purchasing plans for fall and Christmas remain very ambitious.

Real Estate

The Houston office and apartment markets continue to report improving rents and occupancy rates. However, transaction prices for these properties remain far too low to trigger widespread local construction. Building a few offices and a considerably larger number of apartments now makes sense in Houston if the market is well chosen.

Residential construction continues to be dominated by properties costing more than $100,000. Sales and starts now total about 3,500 more than the past six months. The sales total almost matches the performance of Houston during the first six months of last year, but the start total is up sharply from last year as the inventory of new homes was effectively zero entering 1990. ❖

For more information, call Bill Gilmer at (713) 652–1546. For a copy of this publication, write to:

Bill Gilmer
Houston Branch
Federal Reserve Bank of Dallas
P.O. Box 2578
Houston, Texas 77252