



# HoustonBusiness

*A Perspective on the Houston Economy*

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## The Texas Triangle as Megalopolis

*If the Triangle cities are really a megalopolis, divided into four parts by geography and history, their complementarity implies we can add the four together and approximate what would have developed in that other reality with a long river or saltwater bay.*

The January issue of *Houston Business* proposed that the Texas Triangle metro areas of Austin, Dallas/Fort Worth, Houston and San Antonio exist as distinct cities largely because of Texas geography. With a long, navigable river reaching the heart of the state or a deep saltwater bay or other inlet making Waco or Temple a seaport, many of the roles played by the Triangle cities could have been combined at a single location. Combining Houston's port, Dallas' inland distribution function, San Antonio's reach into deep South Texas and northern Mexico, and even the state's political capital into one place could have produced a Third Coast megalopolis to rival New York, Los Angeles and Chicago.

The previous article also suggested that the Triangle cities did not develop independently, as proximity forced

them to seek out roles that complemented economic strengths developing elsewhere in the Triangle.<sup>1</sup> Where one city was strong, the others would be weak, so the cities' mature industrial structures could fit together neatly, like pieces of a puzzle, with little overlap. A comparison of the cities' strengths indicated such industrial complementarity exists, and statistical tests strongly confirmed the apparent complementarity is no illusion.

This article looks at the same puzzle, but from a different angle. If the Triangle cities are really a megalopolis, divided into four parts by geography and history, their complementarity implies we can add the four together and approximate what would have developed in that other reality with a long river or saltwater bay. If our hypothesis is reasonable, we should be able to compare the industrial structure of the combined Triangle cities to New York, Los Angeles and the other top U.S. metro areas, and its place in the hierarchy of U.S. cities should be comparable. When we're finished, we would know whether the combined

**Table 1**  
**Economic Characteristics of Texas Triangle and Major U.S. Metro Areas, 2001**

	Population		Personal income		Per capita income (dollars)	Cost of living (U.S. = 100)
	Millions	Rank	Billions of dollars	Rank		
New York	21.3	1	872.7	1	40,949	n/a
Los Angeles	16.7	2	508.2	2	30,360	140.9
<b>Texas Triangle</b>	<b>13.2</b>	<b>3</b>	<b>433.4</b>	<b>3</b>	<b>32,897</b>	<b>96.7</b>
Chicago	9.3	4	331.3	4	35,751	n/a
Washington	7.8	5	302.7	6	38,915	112.3
San Francisco	7.1	6	326.8	5	45,778	183.0
Philadelphia	6.2	7	216.2	7	34,750	121.1

NOTE: All metro area population and income figures are based on the consolidated metro area definition. This includes the Texas Triangle definition, except for Austin and San Antonio, for which an MSA definition is used. The cost-of-living figures use the best possible fit, using primary metro area data, for example, for Los Angeles and Philadelphia.

SOURCES: Bureau of Economic Analysis; American Chamber of Commerce Research Association.

Texas Triangle cities would constitute a megalopolis.

### Comparisons

Table 1 lists the nation's six largest metropolitan areas, ranked by population and total personal income in 2001: New York, Los Angeles, Chicago, Washington, San Francisco and Philadelphia.<sup>2</sup> The combined Texas Triangle metro areas rank as No. 3 when inserted into the list, with 13.2 million people, behind Los Angeles (16.7 million) and ahead of Chicago (9.3 million). The top cities are the same whether ranked by population or personal income, although Washington and San Francisco switch places, with Washington one place ahead based on population and San Francisco ahead on personal income.<sup>3</sup>

Table 1 shows wide disparity in per capita income for the metro areas. San Francisco and New York stand at the top of the list, and the Texas Triangle and Los Angeles are at the bottom. Where reasonable comparisons could be found, cost-of-living indexes are shown.<sup>4</sup> They strongly suggest that high per capita income and a high cost of living are related, and high living costs may play a

role in elevating local income levels. Even aside from the cost-of-living figures, however, we see that per capita income in the Texas Triangle is not that much different from Philadelphia, Chicago and Los Angeles.

To look at the industrial structure of the nation's largest metro areas, we turn to the location quotient ( $LQ_{ij}$ ), defined as it was in the January article.

$$LQ_{ij} = \frac{\text{percent share of income earned in industry } i \text{ in city } j}{\text{percent share of income earned in industry } i \text{ in the United States}}$$

If  $LQ_{ij}$  is greater than 1, it indicates a larger than normal concentration of activity in the city (with "normal" based on a typical place in the United States) and that industry  $i$  is a likely source of exports. If  $LQ_{ij}$  is less than 1, the industry is not well represented in the city, and the goods or services the industry produces are probably imported. For goods and services that are inherently local—dry cleaners and grocery stores, for example—the location quotient is typically close to 1, as the goods or services are neither exported nor imported. (Exports and imports are defined as goods and services that leave or enter the metro area, not necessarily

those that cross international borders.)

Table 2 lists all location quotients greater than 1.15 for the Texas Triangle and the six largest U.S. metro areas, indicating industries that are 15 percent or more overrepresented in the metro area compared with a typical place in the United States. The list is based on wages, salaries and employer-paid benefits in 2000, using the Standard Industrial Classification system, in use until last year. About 60 industries were available in the Texas Triangle, for example.<sup>5</sup> The list gives us a good idea of these cities' exports, important in defining the local economy because exports generate the income to pay for imports and support local activity.

### Major Metro Profiles

Export industries in the Texas Triangle include oil (oil extraction, oil refining, commodity chemicals), sophisticated corporate services (engineering and management services, business services), transportation (air transportation, water transportation, transportation services), communications and wholesale trade. Financial strength is limited to

**Table 2**  
**Export Sectors in Major U.S. Metro Areas, as Indicated by Location Quotients**

**Texas Triangle.** Oil and gas extraction (7.49); heavy construction (1.73); electronic and other electric equipment (1.54); chemicals and allied products (1.21); petroleum and coal products (2.22); water transportation (1.32); transportation by air (1.71); transportation services (2.52); communications (1.41); electric, gas, and sanitary services (2.15); wholesale trade (1.31); real estate (1.31); holding and other investment companies (1.54); business services (1.17); miscellaneous repair (1.19); engineering and management services (1.20).

**New York.** Other forestry and fishing (4.19); apparel and other textiles (1.63); printing and publishing (1.70); chemicals and allied products (1.76); local and interurban transportation (1.98); communications (1.37); apparel and accessory stores (1.42); depository and nondepository institutions (1.47); security and commodity brokers (4.95); insurance carriers (1.28); insurance agents, brokers and services (1.20); real estate (1.15); holding and other investment offices (2.74); private households (1.33); motion pictures (1.58); legal services (1.62); educational services (1.33); social services (1.29); museums, botanical and zoological gardens (1.62); engineering and management services (1.18).

**Los Angeles.** Furniture and fixtures (1.43); other transportation equipment (1.95); instruments and related products (1.84); miscellaneous manufacturing industries (1.42); apparel and other textiles (2.71); petroleum and coal products (1.37); water transportation (1.87); transportation services (1.63); food stores (1.61); apparel and accessories (1.25); home furniture and furnishings stores (1.24); real estate (1.48); private households (1.90); auto repair and services (1.17); miscellaneous repair services (1.21); amusement and recreation services (1.90); motion pictures (8.91); legal services (1.25); engineering and management services (1.70); local government (1.19).

**Chicago.** Primary metal industries (2.10); fabricated metal products (1.53); electronic and other electrical equipment (1.37); miscellaneous manufacturing industries (1.22); food and kindred products (1.29); printing and publishing (1.41); chemicals and allied products (1.17); petroleum and coal (1.30); rubber and miscellaneous plastics (1.37); transportation by air (1.48); transportation services (1.49); wholesale trade (1.28); depository and nondepository institutions (1.28); security and commodity dealers (1.16); insurance carriers (1.30); holding and other investment companies (1.18); business services (1.17); legal services (1.53); museums, botanical and zoological gardens (1.82); membership organizations (1.19); engineering and management services (1.41).

**Washington.** Other forestry and fishing (13.1); business services (1.55); legal services (1.77); educational services (1.40); social services (1.17); membership organizations (2.19); engineering and management services (1.94); federal civilian government (4.78); military (1.99).

**San Francisco.** Industrial machinery (3.52); electronic and other electric equipment (3.36); instruments and related products (3.34); petroleum and coal products (2.20); water transportation (1.21); apparel and accessories (1.58); home furniture and furnishings stores (1.39); security and commodity brokers (1.50); business services (2.20); engineering and management services (1.36).

**Philadelphia.** Chemicals and allied products (3.66); local and interurban transportation (1.26); apparel and accessories (1.20); miscellaneous retail (1.16); depository and nondepository institutions (1.40); insurance carriers (1.49); insurance agents, brokers and services (1.43); hotels and other lodging (2.30); health services (1.21); legal services (1.46); educational services (2.12); social services (1.43); engineering and management services (1.15).

NOTE: Location quotients are shown in parentheses; only LQs greater than 1.15 are shown.

SOURCE: Author's calculations.

real estate and investment companies.

The most striking aspect of the Texas Triangle list is that it has only 16 export industries. This compares with the 54 for the cities separately: six in Austin, 14 in Dallas/Fort Worth, 15 in Houston and 19 in San Antonio.<sup>6</sup> The collapse in the number of export industries is the result of many of them serving only the Triangle re-

gion. The industries that remain after combining the Triangle cities into a single metro area are true national industries, reaching outside the state to the rest of the nation. This fall in the number of industries is one more indication of the deep-seated economic interdependence among the four metro areas.

The *LQs* work well in identifying a predictable list of

national industries for the largest U.S. metro areas: apparel and financial services in New York; movies, amusements and transportation services in Los Angeles; primary and fabricated metals in Chicago; government in Washington; high tech in San Francisco; and health care and pharmaceuticals in Philadelphia.

Corporate services are an important feature common to

**Table 3**  
**Metro Area Participation in Exports, by Industry**

(1 = this metro area exports that good or service, 0 = exports do not occur from this metro area)

	Texas Triangle	New York	Los Angeles	Chicago	Washington	San Francisco	Philadelphia	Total cities
Engineering and management services	1	1	1	1	1	1	1	7
Legal services	0	1	1	1	1	0	1	5
Petroleum and coal products	1	0	1	1	0	1	0	4
Business services	1	0	0	1	1	1	0	4
Chemicals and allied products	1	1	0	1	0	0	1	4
Apparel and accessory stores	0	1	1	0	0	1	1	4
Electronic and other electric equipment	1	0	0	1	0	1	0	3
Water transportation	1	0	1	0	0	1	0	3
Transportation services	1	0	1	1	0	0	0	3
Security and commodity brokers	0	1	0	1	0	1	0	3
Real estate	1	1	1	0	0	0	0	3
Holding and other investment offices	1	1	0	1	0	0	0	3
Depository and nondepository institutions	0	1	0	1	0	0	1	3
Insurance carriers	0	1	0	1	0	0	1	3
Educational services	0	1	0	0	1	0	1	3
Social services	0	1	0	0	1	0	1	3
Total industries	9	11	7	11	5	7	8	58

SOURCE: Author's calculations.

the largest metro areas, with engineering and management services the only export from all cities. Five cities export legal services and four export business services. Financial services are strong in Chicago and New York, while Philadelphia and San Francisco show strength in some financial services. Washington, Los Angeles and the Texas Triangle show little or no strength in financial services other than in real estate.

In manufacturing, both petroleum refining and chemicals are found in four cities. Silicon Valley gives San Francisco a strong tech sector, evidenced by exports of instruments, electrical machinery and nonelectrical machinery. The Texas Triangle and Chicago also export electrical machinery.

Water transportation and transportation services are important in two cities, as well as the Texas Triangle. Air transportation emerges as an export only in Chicago and the Triangle.

Four cities are meccas for

retail apparel shopping (New York, Philadelphia, San Francisco and Los Angeles) and two for retail home furnishings (Los Angeles and San Francisco). The Texas Triangle and Chicago are centers for wholesale trade.

Does the Texas Triangle fit in this group as an exporter? Table 3 lists all the industries that are exported from three or more of the seven cities. A 1 in the table means the city exports goods or services from that industry; a zero indicates it does not. The totals on the right side of the table indicate how many cities export each industry, and the totals across the bottom show how many industries each city exports.

The Texas Triangle does not appear out of place on this list. It exports nine of these common urban exports, exceeded by 11 in Chicago and New York. Philadelphia exports eight, Los Angeles and San Francisco seven, and Washington-Baltimore five. The Triangle's lack of financial strength

hurts its numbers, as depository and nondepository institutions, security and commodity brokers, and insurance carriers all fail to make the list. Given the number of well-known Texas law firms, it is surprising that legal services are not exported. Also, legal services tend to complement management, engineering and business services, which are strong in the state.

The bottom line, however, is that a combined Texas Triangle provides a wide-ranging complement of sophisticated urban exports on a national basis. Even after regional exports are canceled out, the number and composition of Texas Triangle exports compare favorably with those of the nation's largest metro areas.

#### What It Means

The Texas Triangle cities can be seen as parts of what might have been a single giant metro area in the heart of the state had history and geogra-

phy been different. Still, the proximity of the pieces—Houston, Dallas/Fort Worth, Austin and San Antonio—forced them to specialize in such a way that they strongly complement each other. That complementarity allows us to add them together for a reasonable approximation of what the single Texas megapolis might have looked like had geography only cooperated.

Adding the pieces of the four metros dramatically shortens the list of metro exports. Individually, the four metros have 54 export industries, but combined, the Texas Triangle has only 16. These remaining industries are national industries, and those that disappear have sales that occur only within the Triangle. This last observation is the flip side of the previous article's conclusion: The cities are economic complements, with strength in any one city matched by weakness elsewhere. Growth in one city stimulates growth in complementary industries, many of which will be located elsewhere in the Triangle.

There is no question that the Texas Triangle cities have developed their own personalities. Dallas and Houston are conservative and highly business-oriented; San Antonio is a more relaxed mix of agriculture, the military and tourism. Austin is music, high tech and university life, set against the backdrop of state politics. These personality differences, along with sibling rivalries, breed their own intercity squabbles.

Dallas has long pumped itself up with the myth that it has no economic reason to exist and that it lives by its wits alone, despite the fact that its niche as a distribution and

regional financial center could not be more secure. Houston has pined for diversification away from oil. San Antonio has been accused of being *too* relaxed, allowing other urban rivals—especially Houston and Dallas—to steal growth that rightfully belongs in South Texas. Austin has leveraged its distinctive charm to find itself at the peak and trough of every speculative bubble that has moved through the state in the past 30 years.

Our results suggest that the personality differences are probably meaningless in terms of their ability to greatly affect the state's economic development. At best, they are peripheral. At worst, the family rivalry is a waste of resources in an uphill battle against deeply rooted economic fundamentals. Good news in Dallas or San Antonio is good news for the rest of the Triangle cities. And because of the division of economic roles across the Triangle, it is generally futile for one of the cities to go head-to-head with another one in its area of economic strength. From this perspective, it is difficult to see these cities as real economic rivals at all, and a strategy of cooperative, statewide development programs makes much more sense than competition within the region.

—Robert W. Gilmer

### Notes

- <sup>1</sup> "The Simple Economics of the Texas Triangle," *Houston Business*, January 2004.
- <sup>2</sup> The broadest definition of each metro area is used, normally the consolidated metropolitan statistical area (CMSA) definition, except for Austin and San Antonio, which are metropolitan statistical areas (MSAs). The definitions used: New York–New Jersey–Long Island; Los Angeles–Riverside–Orange

County; Chicago–Gary–Kenosha; Washington–Baltimore; San Francisco–Oakland–San Jose; Philadelphia–Wilmington–Atlantic City; Dallas–Fort Worth; Houston–Galveston–Brazoria; San Antonio; Austin–San Marcos.

- <sup>3</sup> The Dallas and Houston CMSAs ranked number nine and 10, respectively, in 2001. Based on population, the Boston–Worcester and Detroit–Ann Arbor–Flint CMSAs ranked number seven and eight. Table 1 of the January article contains comparable data for individual Texas Triangle metro areas.
- <sup>4</sup> American Chamber of Commerce Research Association, *ACCRA Cost of Living Index*, various issues, 2001 and 2002. Data reported for New York and Chicago were too limited in geographic scope to make any metrowide comparisons. The comparisons that were available, however, indicate that Chicago would stand a few percentage points above the national average, and New York would be well above the national average.
- <sup>5</sup> Nondisclosure of data is a recurring problem. Data are not disclosed in U.S. government publications unless there are three or more respondents in the sector, or if one respondent is so large that its data dominate the results. In a number of cases where nondisclosure was an issue, we used adjacent or trend values to fill in and complete comparisons. This was especially true within the Texas Triangle, where any one nondisclosure out of four cities could eliminate a comparison. Few if any of the inserted values were meaningful to the results, other than to allow a better picture of overall results.
- <sup>6</sup> Export industries for individual Texas Triangle metro areas are in Table 2 of the January article.

**J**ob growth remains elusive in Houston. What looked like a picture of solid growth in January—1.7 percent over the prior six months, 3.5 percent for the last three—changed entirely with the February employment release. Another month's data and revisions to the prior month's left Houston with only 1.2 percent growth for six months and 1.5 percent for the last three. Growth is no longer without jobs, but job growth is weak given the economic backdrop of solid U.S. and global expansion.

#### Retail Sales

Someone threw the right switch during the week after Christmas; Houston's retail sales have been doing fine ever since. Almost all retailers are comfortably meeting plans for the year, and high-end retailers are substantially exceeding them. Cost pressures are growing from energy and employee benefits, however. Hiring remains scarce.

#### Real Estate

The real estate story remains largely unchanged. Both new and used homes opened the year with record sales, driven by low interest rates. Lower-priced homes remain the hot segment of the market as first-time buyers seek to qualify for a mortgage. Warm weather and the end of the school year should add fuel to this fire in coming months.

Apartment occupancy continues its two-year decline, and prospects are bleak with new units coming on line. Occupancy rates for office space also continue to fall citywide.

Downtown would benefit from a consolidation of Chevron Texaco into its 1500 Louisiana location, but this would do little for metro-area occupancy rates. Retail occupancy is up a bit, and industrial space is down slightly.

#### Oil Machinery and Services

There is not much change here. The overall domestic rig count has moved up 20 to 30 rigs in recent weeks, but the rigs are for low-risk, land-based drilling, which adds little to the demand for oil services. Off-shore drilling remains at the depressed levels of the 1999 drilling downturn. Only 89 rigs were working the Gulf of Mexico in early April. No cure is in sight for the gulf; seismic activities and producer plans indicate that no one intends to return there soon. Capacity is slack and price mediocre. International activity remains strong in Latin America and the Middle East, weak in West Africa and the North Sea.

#### Petrochemicals

After five years of gloomy news from the petrochemical industry, 2004 has brought the first signs of recovery. Petrochemical demand is very strong, and only a few areas still suffer from serious overcapacity problems. With turnaround season under way in March, taking some capacity temporarily out

of service, shortages cropped up in ethylene and styrene, and chlorine customers were put on allocation. Competition from cheap imports has been limited by a weak dollar and by Chinese purchases of much of the Asian output that might have been shipped to the United States. Price increases are being seen in a long list of basic chemicals and plastics: ethylene, propylene, polypropylene, styrene, polystyrene, chlorine, polyvinyl chloride and PET bottle plastic.

#### Refining

Gasoline prices have been supported by strong U.S. demand, reduced capacity due to refinery turnarounds, and state and local environmental requirements for 15 different kinds of gasoline. Pump prices set an all-time record in March (if not adjusted for inflation). With gasoline inventories scraping the bottom of the five-year range, refiners have enjoyed some of their best margins since 1999. Seasonal turnarounds are now ending, capacity utilization is rising, and inventories should respond to higher production in the weeks ahead.

The markets shrugged off recent ratification of a previously announced OPEC production cut. Unable to pass on the current high prices in world crude markets, OPEC members will probably continue to make crude available.



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