

Economic Progress in the Texas Economy

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Since 1969, the Texas economy has grown rapidly, consistently matching or exceeding the growth of the national economy from one decade to the next. Real personal income growth rates in Texas matched the U.S. rates even during the oil bust years of 1979–89 and exceeded U.S. rates in 1969–79 and 1989–2001 (Table 1). Measured by total population, growth in Texas was substantially greater in all periods.

The state's largest metropolitan areas—Dallas–Fort Worth, Houston, Austin and San Antonio, which together make up what is known as the Texas Triangle—have contributed the largest part of this growth, especially since 1979. Outside the Texas Triangle cities, real income growth has failed to match U.S. growth since 1979, although population has expanded somewhat faster.

This growth has improved Texas' economic position relative to the rest of the United States. Texas moved from the nation's fourth most populous state in 1969 to second in 2001, trailing California but ahead of New York and Florida. In terms of personal income, Texas has moved from the sixth largest state economy in 1969 to the third largest today, behind California and New York.

The state's large metropolitan areas have similarly moved up the ranking of the nation's largest cities.¹ Dallas–Fort Worth, Houston and San Antonio made most of their climb through these rank-

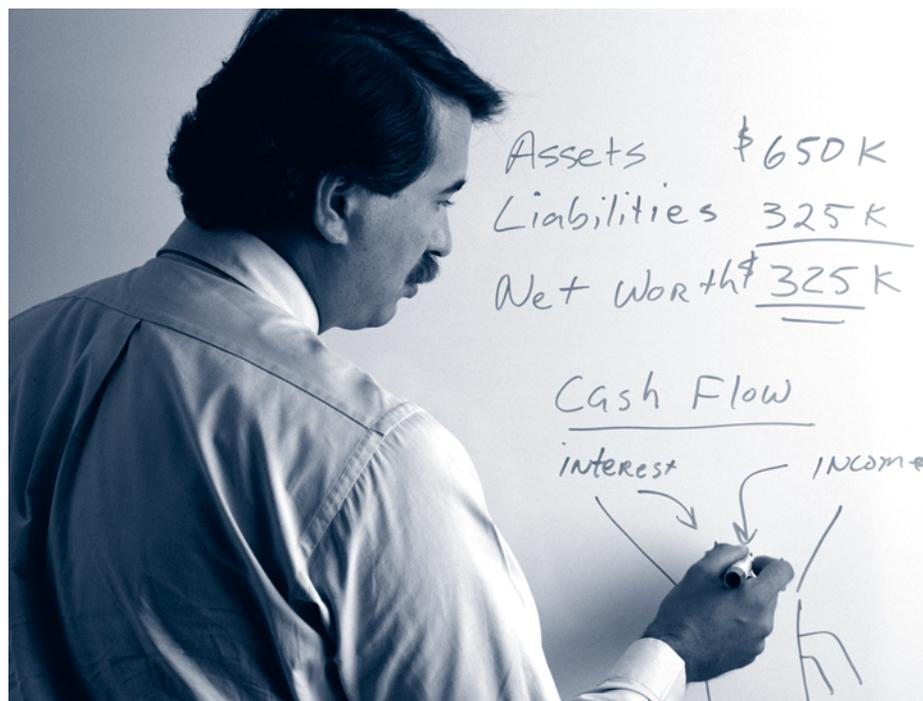


Table 1
Growth of Population and Personal Income in Texas and the United States
(Average percent per year)

	Population		
	1969–1979	1979–1989	1989–2001
United States	1.1	1.0	1.2
Texas	2.3	1.9	2.0
Dallas–Fort Worth	2.4	3.0	2.6
Houston	3.4	1.9	2.3
Austin	4.1	3.8	3.9
San Antonio	1.9	2.1	1.8
Texas Triangle	2.8	2.5	2.5
Rest of Texas	1.7	1.2	1.3

	Personal Income		
	1969–1979	1979–1989	1989–2001
United States	3.7	3.0	2.9
Texas	6.0	3.0	4.3
Dallas–Fort Worth	5.4	4.7	4.7
Houston	8.0	2.4	5.1
Austin	2.3	5.6	8.3
San Antonio	4.7	4.2	4.0
Texas Triangle	6.5	3.8	5.0
Rest of Texas	5.2	1.7	2.9

NOTE: Based on 1999 metropolitan area definitions of the Office of Management and Budget. Dallas–Fort Worth and Houston use the consolidated metro area definition.

SOURCES: Bureau of Economic Analysis; author's calculations.

In terms of personal income, Texas has moved from the sixth largest state economy in 1969 to the third largest today, behind California and New York.

Table 2
Rank of Texas Triangle Metro Areas in United States by Population and Personal Income

Population				
	1969	1979	1989	2001
Dallas–Fort Worth	12	9	9	8
Houston	13	10	10	9
Austin	75	63	63	39
San Antonio	37	33	33	32
Texas Triangle	4	4	4	3

Personal Income				
	1969	1979	1989	2001
Dallas–Fort Worth	13	10	9	8
Houston	16	9	10	9
Austin	86	69	55	37
San Antonio	45	39	38	35
Texas Triangle	9	4	3	3

SOURCES: Bureau of Economic Analysis; author's calculations.

Table 3
Contribution to Texas Personal Income Growth

Percent					
	1969–1979	1979–1989	1989–1999	1989–2000	1989–2001
Texas	100.0	100.0	100.0	100.0	100.0
Dallas–Fort Worth	23.6	31.9	30.7	31.3	30.6
Houston	28.5	23.8	28.2	28.6	29.7
Austin	4.1	6.0	8.7	8.6	8.3
San Antonio	6.3	8.1	7.1	6.9	7.0
Texas Triangle	62.6	69.8	74.6	75.4	75.5
Rest of Texas	37.4	30.2	25.4	24.6	24.5

SOURCES: Bureau of Economic Analysis; author's calculations.

ings between 1969 and 1979 (*Table 2*).² Since 1979, Dallas–Fort Worth and Houston have shared the eighth through tenth spots in population and personal income, while San Antonio moved slowly upward to 32nd in population and 35th in personal income.

Austin, however, made steady and dramatic gains. In 1969, at No. 75 in population, Austin was the size of Canton, Ohio, or Fort Wayne, Ind. But by 2001, at 39th, Austin's population compared favorably with that of Nashville or New Orleans. During the same period, Austin surged from 86th to 37th in personal income.

Table 3 summarizes the contribution of these different metro areas to Texas' personal income growth. Except for the oil bust years, Houston contributed nearly 30 percent of growth, and Dallas–Fort Worth's growth exceeded Houston's by the late 1970s. San Antonio's growth contribution held steady at 6 to 8 percent, while Austin's doubled from 4.1 percent to

8.3 percent. The combined metro areas, collectively designated the Texas Triangle in the table, accounted for three-fourths of the state's income growth between 1989 and 2001.

In this article, we will measure the

success of the Texas economy not by its size, growth rates or ranking, but by the state's ability to improve the welfare of its citizens. In particular, we will look at the state's ability to raise its per capita income levels to those of the nation—to join and perhaps outperform the nation's mainstream. Income per person presents a number of flaws as a measure of general welfare, but it serves here as a widely recognized and useful summary of the standard of living.³

Texas Per Capita Income

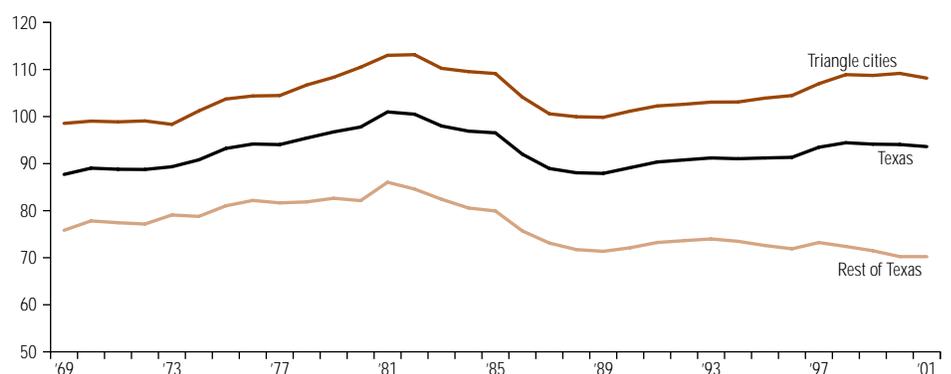
In 1969, per capita income in Texas was \$3,373, or 87.7 percent of the U.S. level. Fueled by the oil boom after 1973, Texas' per capita income grew rapidly to briefly exceed that of the United States by 1981–82 (*Chart 1*). The 1980s oil, banking and real estate bust quickly erased these gains, and by the end of the decade, state per capita income had returned to 87.9 percent of the U.S. level.

The 1990s brought new advances relative to the nation as oil, high tech and a free trade- and maquiladora-inspired boom along the Texas–Mexico border produced another burst of Texas economic growth. By 1998, Texas per capita income returned to 94.4 percent of U.S. levels and made no further progress through 2001.

We can examine Texas per capita income growth both geographically and by the components of income—wages and salaries, proprietor's income, property income, transfers and other sources. By component, the most interesting

Chart 1
Convergence of Texas to U.S. Per Capita Income Levels

Index: U.S. per capita income = 100



SOURCE: Bureau of Economic Analysis.

results come from the growth of wages and salaries and proprietor's income. The geographic designation focuses largely on the Texas Triangle cities, which have fueled both the state's growth and most of its recent convergence to U.S. per capita income levels.

Framework for Analysis

The general framework used here is shown in Table 4, which summarizes per capita income growth in Texas by component of income, geographic area and time period from 1969 to 2001.⁴ The data are presented as percentage point contributions to average annual real per capita income growth in each region and time period.⁵

For example, the growth of per capita income in Texas from 1969 to 1979 averaged 3.6 percent per year, with most of the growth (3 percent per year) coming from wages and salaries per capita and smaller contributions from property income (0.2 percent), transfer payments (0.2) and other per capita income (0.4). Proprietor's income per capita grew more slowly than other components, reducing the growth rate by 0.2 percent.

The components of income definitions follow standard conventions for accounting for personal income in the national income and product accounts. The definitions are fairly obvious: non-farm wages and salaries; farm and non-farm proprietor's income earned by sole proprietorships, partnerships and tax-exempt corporations; property income from dividends, rent and interest; and transfer payments for no current services rendered. The "other income" category is a residual made up mainly of benefits paid to wage and salary workers, but it also includes a residence adjustment for workers who live and work in different areas.

The rationale for the geographic focus on the Texas Triangle has partly been discussed above, primarily because three-fourths of the region's personal income growth came from these metro areas after 1989. Also, most of the forces driving income convergence have come from the Triangle cities. While per capita income levels were, on average, well above national norms and rising through the 1990s within the Triangle, they were falling back to near 70 percent outside of it.

Table 4
Growth Rate of Real Per Capita Personal Income and Factors Contributing to Its Growth
(Average percent per year)

	Component Percentage Point Contribution Per Capita					
	Personal income	Nonfarm wages and salaries	Proprietor's income	Property income	Transfer payments	Other income
1969–1979						
United States	2.6	1.6	-.1	.3	.4	.4
Texas	3.6	3.0	-.2	.2	.2	.4
Dallas–Fort Worth	2.9	2.1	.1	.2	.2	.4
Houston	4.4	4.2	-.1	-.1	.1	.3
Austin	3.4	2.7	-.1	.3	.1	.5
San Antonio	2.7	1.3	.1	.3	.4	.6
El Paso	1.4	.9	.2	.3	.6	-.6
Texas Triangle	3.5	2.9	0	.1	.1	.4
Rest of Texas	3.4	2.8	-.5	.4	.3	.4
1979–1989						
United States	2.0	1.4	0	.7	.1	-.1
Texas	1.1	.2	0	.7	.2	0
Dallas–Fort Worth	1.6	1.1	.1	.4	0	-.1
Houston	.5	-.8	.5	.6	.2	0
Austin	1.9	1.7	-.6	.6	0	.1
San Antonio	2.0	1.1	.1	.7	.1	.1
El Paso	1.7	.2	-.2	.7	.1	.9
Texas Triangle	1.2	.3	.2	.6	.1	0
Rest of Texas	.6	-.6	-.5	1.1	.4	.2
1989–2001						
United States	1.7	1.8	.1	-.1	.2	-.2
Texas	2.2	2.4	.4	-.4	.1	-.3
Dallas–Fort Worth	2.0	2.4	.2	-.3	.1	-.3
Houston	2.7	2.3	1.0	-.6	.1	-.2
Austin	2.9	4.2	.1	-.7	-.1	-.6
San Antonio	2.2	2.1	.7	-.3	.2	-.5
El Paso	1.7	.9	.8	-.2	.5	-.3
Texas Triangle	2.4	2.5	.5	-.4	.1	-.3
Rest of Texas	1.6	1.5	0	-.4	.4	0

SOURCES: Bureau of Economic Analysis; author's calculations.

Chart 2 shows the path of the four cities since 1969 in terms of income growth relative to the nation's. The gains and losses of the boom and bust in oil and real estate are visible in all four cities, but most notably in Houston and Austin. All cities made gains in the 1990s, especially Austin. San Antonio made the least progress, despite beginning from the lowest per capita base. The two high-tech metros began losing ground in relation to the United States well before the national recession began in 2001, with Austin peaking at 110 percent of U.S. levels in 1999 and Dallas–Fort Worth at 112 percent in 2000. Houston reached 115 percent of U.S. per capita income in 2001. San Antonio stood at 88 percent.

The fact that the four cities have such different income levels and very different behavior over time might seem surprising in light of their geographic proximity. But,

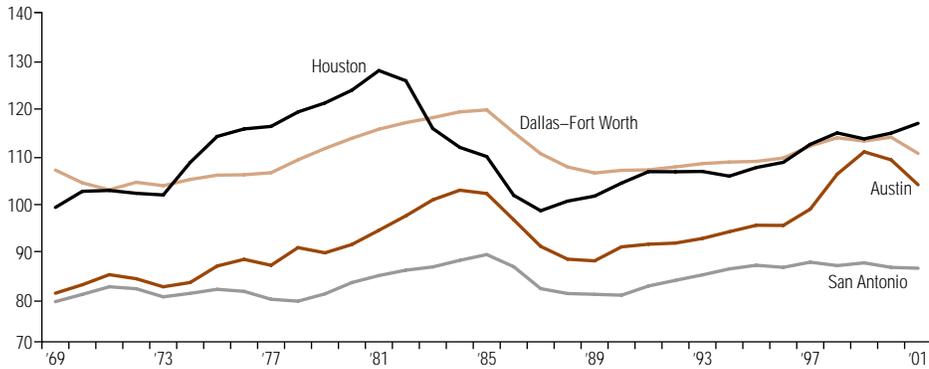
in fact, it may be this very proximity that guarantees their different personalities. Because no pair of cities in the Texas Triangle is more than 240 miles apart, each has assumed a role in the state economy that sets it apart and makes it distinct from the others.⁶

Dallas–Fort Worth. Dallas–Fort Worth is a major inland transportation hub and distribution center for Texas, Louisiana, Arkansas and Oklahoma and claims the world's fifth busiest airport. Following the oil bust, Dallas emerged as the state's banking and financial center. Dallas and Fort Worth also have a significant presence of oil-related activity, notable on any standard except that set by Houston. High-technology industries, especially telecommunications, became a major center of growth in the 1990s.

Houston. Houston's bread and butter remains oil and natural gas, with oil pro-

Chart 2
Convergence of Texas Triangle Cities to U.S. Per Capita Income Levels

Index: U.S. per capita income = 100



SOURCE: Bureau of Economic Analysis.

The fact that the four Texas Triangle cities have such different income levels and very different behavior over time might seem surprising in light of their geographic proximity.

ducers, oil services and machinery companies, refineries and petrochemicals directly or indirectly accounting for half the metro area's jobs. The Texas Medical Center and Johnson Space Center, along with companies such as Continental Airlines, American General Insurance and HP/Compaq, help define the non-oil part of Houston's economy. Houston is the state's major deepwater port—the second largest in the country based on tonnage—and home to the state's international business community.

Austin. Because it is the state capital and site of the University of Texas' main campus, Austin's major strength has historically been a robust government sector. Beginning in the late 1960s, Austin began developing a significant presence in high technology: IBM in 1967, Texas Instruments in 1969 and Motorola in 1974. The arrival of chipmaker-consortium Sematech in 1988 provided the momentum for the 1990s. Today, about 120,000 employees—25 to 30 percent of the local workforce—are tied to technology industries, and Dell Inc. has emerged as the city's most important technology employer. Austin is also renowned for its music industry. Billed as the "Live Music Capital of the World," the city sponsors a number of festivals and conventions based on music.

San Antonio. San Antonio's historic role has been as the distribution point for South Texas and northern Mexico, a role that has grown with the rapid expansion of the maquiladora industry and the implementation of the North American Free Trade Agreement. Tourism is a major

industry, with such features as Fiesta Texas, SeaWorld, the River Walk, El Mercado and others. Lackland Air Force Base, Fort Sam Houston and Randolph Air Force Base provide a major military presence.

One could speculate that if Texas' geography had been only slightly different—with navigable rivers or a saltwater inlet that cut into the heart of the state—the four cities could easily have been one. The port, the inland distribution point and the political capital would all have been colocated. Because the four Triangle cities play such different economic roles, adding up their current populations produces a not far-fetched approximation of what might have been a single metro area. The combined ranking of the Triangle cities (bottom of Table 2) shows that such a combination would rank third among all U.S. consolidated metro areas—behind New York and Los Angeles but ahead of Chicago—in both personal income and population in the 1990s.

It is difficult to generalize about the area outside the Triangle, or to easily characterize an area that includes cities as different as El Paso, Amarillo, Texarkana and Beaumont. The decline of agriculture throughout the second half of the 20th century played a large role in the region's poor performance.

In addition, the Texas-Mexico border acts as a drag on any measure of economic progress or welfare in the state, including per capita income. Gilmer, Gurch and Wang have already examined the Texas border cities using the same framework employed here.⁷ The border cities' average per capita income is only 50 to 60 percent of the national average and has only occasionally matched or exceeded the state's overall growth rate (such as Laredo in the 1990s). El Paso, by far the largest Texas-Mexico border city, saw its per capita income fall from 73 percent of the U.S. average in 1969 to 63 percent in 2001. Although the border saw gains in income and jobs in the 1990s, rapid population growth due to high birthrates and in-migration meant living standards did not improve nearly as much as overall growth statistics might indicate.

How Income Grew in Texas

Except for the oil bust years, Texas' per capita income outgrew the nation's by

a significant margin (see Table 4). The difference was a full percentage point from 1969 to 1979 (3.6 versus 2.6) and by half a percentage point from 1989 to 2001 (2.2 versus 1.7). With the oil bust and recovery factored in, however, the difference in favor of Texas narrows to 0.2 percent (2.3 versus 2.1 over the 32-year period), and per capita income rises from 88 percent to 94 percent of the national average.

Also except for the oil bust years, most of the growth in Texas' real per capita income came from increases in real wages and salaries per capita—83 percent from 1969 to 1979 and 109 percent from 1989 to 2001. Only during the years of the oil and banking crisis did real wages and salaries fail to contribute strongly to income growth; only 17 percent of growth came from that source from 1979 to 1989. Growth in property income (most probably in the first half of the 1980s) was the major factor contributing to income growth during the decade of the downturn.

Proprietor's income makes its largest contribution from 1989 to 2001. Houston has the strongest contribution from the self-employed in this period (1 percent) and during the previous period as well (0.5 percent). In 16 cities in Texas and Louisiana, all with strong ties to oil, the first result of the oil bust was a large number of new "proprietors," presumably new businesses started by people unemployed by the downturn.⁸ This forced entrepreneurship was followed in the late 1980s and early 1990s by rapidly growing proprietor's income, the fruit of the businesses that succeeded. The often-used analogy of a forest fire leaving behind the seeds for the forest's regeneration seems to apply to Texas in recent years, with entrepreneurship sowing the seeds. On average, proprietor's income contributed 0.5 percent to per capita income growth in Texas Triangle cities in the 1990s.

Property income (dividends, rent and interest) was the biggest contributor to per capita income growth during the oil bust and recovery years. The 1980s saw a large run-up in property values, which fell back slowly late in the decade but drove up rental values, and a sharp hike in interest rates due to inflation and tight monetary policy increased income from interest-earning sources. The contribution of property income is small from 1969 to

Table 5
Impact on Per Capita Income of Industry Mix, Differential Regional Earnings and Jobs Per Capita

	Percentage Point Contribution to Annual Growth Rate			
	Wages and salaries per worker	Industry mix	Differential regional earnings	Jobs per capita
1969–1979				
Texas	1.5	1.3	.2	1.5
Dallas–Fort Worth	.8	1.1	–.2	1.3
Houston	1.9	1.1	.8	2.3
Austin	1.2	1.2	0	1.4
San Antonio	1.2	1.5	–.3	.2
Texas Triangle	1.4	1.2	.2	1.5
Rest of Texas	1.5	1.5	0	1.2
1979–1989				
Texas	.3	.8	–.5	–.1
Dallas–Fort Worth	.9	.9	.1	.2
Houston	–.2	.7	–.8	–.6
Austin	1.2	1.2	0	.5
San Antonio	.5	.8	–.3	.6
Texas Triangle	.4	.8	–.4	–.1
Rest of Texas	–.3	.8	–1.0	–.4
1989–2000*				
Texas	1.8	1.4	.4	.8
Dallas–Fort Worth	2.1	1.3	.8	.7
Houston	1.9	1.5	.3	.5
Austin	3.7	1.3	2.4	1.5
San Antonio	1.2	1.4	–.2	1.1
Texas Triangle	2.1	1.4	.6	.8
Rest of Texas	.7	1.0	–.3	.8

* Data extend only to 2000 due to a change in the distribution of jobs from the Standard Industrial Classification to North American Industry Classification System in 2000, making it impossible to compare 1989 with 2001.

NOTE: Differences due to rounding error.

SOURCES: Bureau of Economic Analysis; author's calculations.

1979 and negative from 1989 to 2001.

Other income per capita makes its largest contribution from 1969 to 1979, is negligible from 1979 to 1989 and turns slightly negative in the most recent period.

A Closer Look at Wage and Salary Growth

Because wages and salary growth per capita account for such a large share of Texas per capita income, we will examine it more closely. We can divide wages and salaries per capita (WS/P) into two parts: wages and salaries per employee (WS/E) and the employment population ratio (E/P).

$$WS/P = WS/E \times E/P$$

Further, we can offer two reasons for the growth of wages and salaries per employee: (1) improvements in the industry mix that allow more workers to move into higher-paying industries, or (2) specific advantages the region offers in

resources, labor supply, infrastructure or other local factors. This region-specific advantage is called differential regional earnings.⁹

$$WS/P = WS/E \times E/P = \text{industry mix} \times \text{differential regional earnings} \times E/P$$

Table 5 summarizes the contribution of each of these elements to real per capita income.¹⁰ The first column is wages and salaries per worker; the second and third columns divide this category into two parts. The fourth column is the employment population ratio, or jobs per capita.

Industry mix was a significant factor in all areas and in every period. Texas was clearly shedding low-wage jobs and replacing them with better-paying jobs throughout the entire period.

We also see gains from differential regional earnings in the two periods of rapid growth. In the 1990s the Texas Triangle cities added 0.6 percent per year to per capita income thanks to these advantages. The measure highlights the

During the two decades of strong growth, Texas generated jobs faster than the rate of population growth, despite rapid in-migration.

Table 6
Employment and Population Growth, 1969–2001

	Job Growth*		
	1969–1979	1979–1989	1989–2001
United States	2.2	1.8	1.5
Texas	3.8	1.8	2.7
Dallas–Fort Worth	3.6	3.2	3.0
Houston	5.8	1.3	2.7
Austin	5.5	4.4	4.9
San Antonio	2.0	2.6	2.7
Texas Triangle	4.3	2.5	3.0
Rest of Texas	3.0	.8	2.0

	Population Growth*		
	1969–1979	1979–1989	1989–2001
United States	1.1	.9	1.2
Texas	2.3	1.9	2.0
Dallas–Fort Worth	2.3	3.0	2.6
Houston	3.4	1.9	2.3
Austin	4.1	3.8	3.9
San Antonio	1.9	2.1	1.8
Texas Triangle	2.8	2.5	2.5
Rest of Texas	1.7	1.2	1.3

	Jobs Per Capita*		
	1969–1979	1979–1989	1989–2001
United States	1.1	.8	.3
Texas	1.5	–.1	.7
Dallas–Fort Worth	1.3	.2	.4
Houston	2.3	–.6	.4
Austin	1.4	.5	1.0
San Antonio	.2	.6	.9
Texas Triangle	1.5	–.1	.5
Rest of Texas	1.2	–.4	.7

* Annualized growth rates.

SOURCES: Bureau of Economic Analysis; author's calculations.

state's booms and busts: Houston added 0.8 percent per year from 1969 to 1979, which turned to –0.8 percent the following decade. Large regional differentials in Austin (2.4 percent) and Dallas–Fort Worth (0.8 percent) mark the 1990s tech boom. A look back at Chart 2 shows that these cities were already giving back some of their tech gains by 2001.

During the two decades of strong growth, the state generated jobs faster than the rate of population growth, despite rapid in-migration (Table 6). Per capita job growth has occurred inside and outside the Triangle cities despite the fact, as mentioned above, that the border cities were unable to attain job growth much faster than population growth. This contributed 1.5 percent per year to Texas per capita income growth (as seen in column 4 of Table 5) from 1969 to 1979 and 0.8 percent from 1989 to 2000. The slight decline in the 1980s (–0.1 percent) was primarily due to slower job growth in Houston and areas outside the Triangle.

Summary and Conclusions

Measured by standards of population, employment and income growth, the Texas economy has outperformed the U.S. economy since 1969. As shown in Table 7, by 2001 the state as a whole had raised its per capita income to 94 percent of the national average, up from 88 percent in 1969. Over the same period, the average annual growth rate of per capita income was 2.3 percent for Texas versus 2.1 percent for the United States.

Economic progress has been uneven over time. The oil boom briefly pushed Texas per capita income above the nation's in 1981–82. In the subsequent collapse of oil, banking and real estate, Texas fell back to almost its 1969 position relative to the United States. Most subsequent progress has come since 1989, and it primarily can be attributed to more jobs available to the general population and an improving mix of jobs with higher salaries.

Table 7 also indicates the uneven geographic progress. In fact, the forces of convergence to U.S. levels have mostly come from the Texas Triangle metropolitan areas of Dallas–Fort Worth, Houston, Austin and San Antonio. All these cities have outperformed the United States since 1969, with the most dramatic gains

coming out of Austin. The addition of a large high-technology workforce to a stable, if less-well-paid, government and university base fueled both rapid growth and rising per capita income in the state capital. Except for San Antonio, all the cities enjoy living standards above the U.S. average.

The uneven nature of Texas' economic history makes it difficult to predict future progress. The geographic concentration of growth seems unlikely to change, but the state's advantages relative to the rest of the nation (as measured by differential regional earnings) were dominated by the oil boom from 1969 to 1979 and to some extent by the high-tech expansion of 1989–2001. Advantages were concentrated first in Houston, then in Austin and Dallas–Fort Worth. Predicting the source or location of the next great round of expansion is impossible.

However, since 1969 Texas' cost advantages, tax advantages, climate and lifestyle have prepared the ground for further growth and development, including periodic excesses. These Sunbelt advantages should persist, making renewed economic expansion in Texas and continued progress in raising the state's living standards simply a matter of time.

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Notes

- ¹ The statistics for Dallas–Fort Worth and Houston use their consolidated metropolitan statistical area definition throughout this article. The ranking of metro areas includes consolidated metropolitan statistical areas (CMSAs) but then excludes all the parts of these CMSAs (metropolitan and primary metropolitan statistical areas) in the subsequent ranking process.
- ² The end years used here—1969, 1979, 1989 and 2001—are all peak years in the U.S. business cycle. Although Texas and its metro areas did not always follow the U.S. cycle, particularly in the 1980s, these years were typically times of economic expansion for Texas, making comparisons to the U.S. economy appropriate.
- ³ The most notable flaw in the use of per capita income as a measure of welfare is that it tells us nothing about the size distribution of income among the population. However, this article divides per capita income into enough categories by component and geography to give some insight into how income growth is affected by regional wage levels, job growth, population

Table 7
Performance of Regions of the Texas Economy

	2001 per capita income (dollars)	Percent of U.S. level	Annual growth rate 1969–2001 (percent per year)
United States	30,413	100	2.1
Texas	28,472	94	2.3
Dallas–Fort Worth	33,247	109	2.2
Houston	34,916	115	2.5
Austin	31,511	104	2.8
San Antonio	26,887	88	2.3
Texas Triangle	32,897	108	2.4
Rest of Texas	21,357	70	1.8

SOURCES: Bureau of Economic Analysis; author's calculations.

growth and the locational advantages of the state's largest metro areas.

- ⁴ The framework was developed by Daniel H. Garnick. See "Accounting for Regional Differences in Per Capita Personal Income Growth, 1929–79," by Daniel H. Garnick, *Survey of Current Business*, vol. 62, September 1982, pp. 24–34, and "Accounting for Regional Differences in Per Capita Income Growth: An Update and an Extension," by Daniel H. Garnick and Howard L. Friedenber, *Survey of Current Business*, vol. 70, January 1990, pp. 29–40.
- ⁵ Constant dollars are obtained by deflating with the personal consumption expenditure deflator (1996 = 100) for all areas.
- ⁶ "The Simple Economics of the Texas Triangle" (January 2004) and "The Texas Triangle as Megalopolis" (April 2004), both by Robert W. Gilmer, in *Houston Business*, Federal Reserve Bank of Dallas.
- ⁷ "Texas Border Cities: An Income Growth Perspective," by Robert W. Gilmer, Matthew Gurch and Thomas Wang, *The Border Economy*, Federal Reserve Bank of Dallas, June 2001, pp. 2–5.
- ⁸ "Finding New Ways to Grow: Recovery in the Oil Patch," by Robert W. Gilmer, *Houston Business*, Federal Reserve Bank of Dallas, July 1995.
- ⁹ The actual calculation of industry mix and differential regional earnings is spelled out carefully in Garnick and Friedenber (1990). The calculation depends on the definition of hypothetical income (H), total wages and salaries that would have been earned in Texas if compensation were paid at the national rate in each industry. Hypothetical income was calculated using the wage and salary employment categories in the Bureau of Economic Analysis's Regional Economic Information System, essentially a one-digit definition in the Standard Industrial Classification. Using this definition,

$$WS/P = \text{industry mix} \times \text{differential regional earnings} \times E/P = H/E \times WS/H \times E/P.$$
- ¹⁰ The data in Table 5 extend only to 2000 because of the change in the industrial classification system from the Standard Industrial Classification

to the North American Industry Classification System, beginning in 2001. This made it impossible to compare the distribution of jobs and income by industry in 1989 and 2001.