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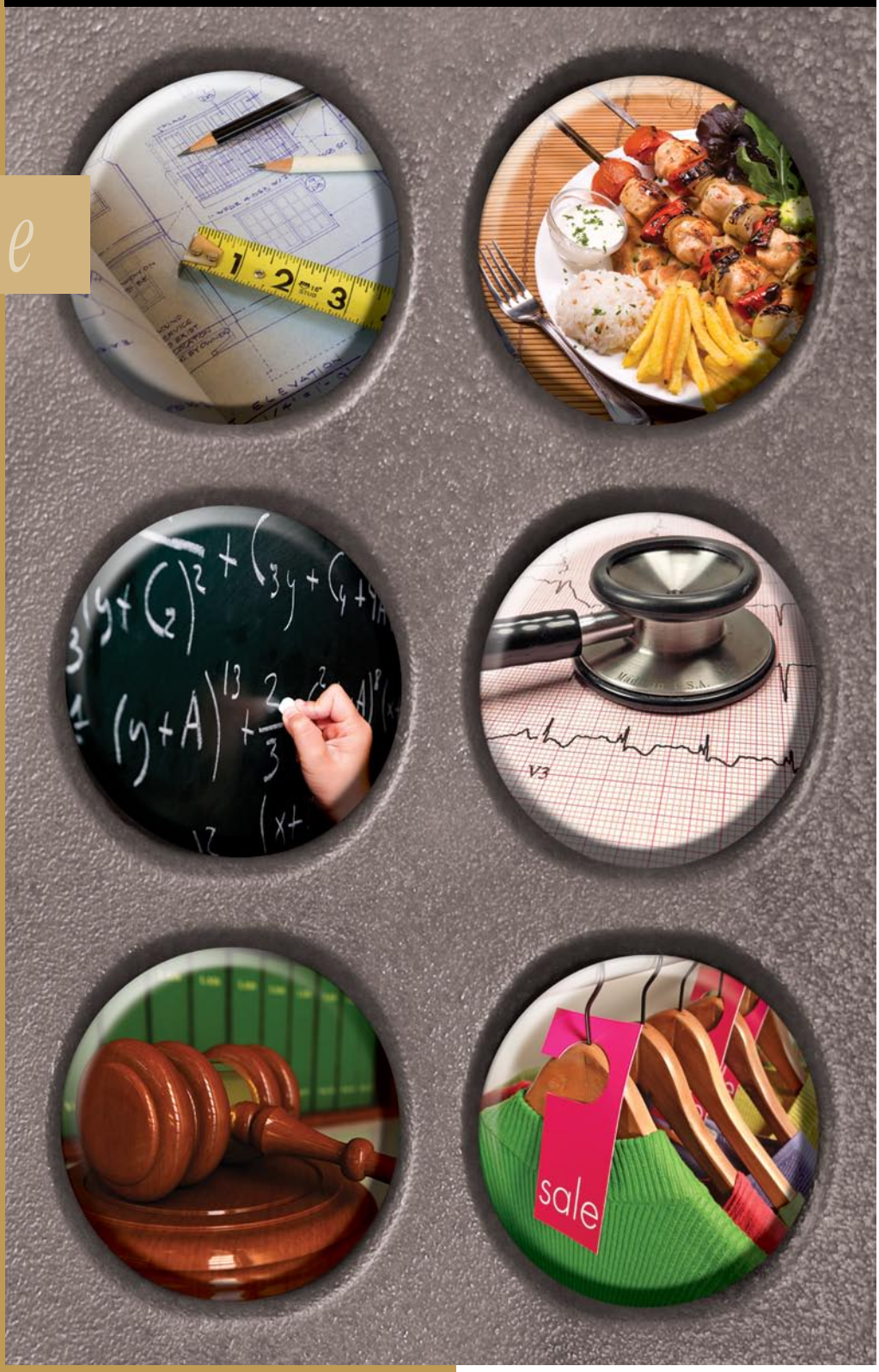
FEDERAL RESERVE BANK OF DALLAS



In This Issue

President's Perspective

The inexorable forces of capitalist evolution have shifted the economic base of our nation and our state from agriculture to manufacturing and now to services.

This issue of *Southwest Economy* presents an in-depth portrait of Texas' service sector, an increasingly important part of the state's growth, employment and well-being.

The inexorable forces of capitalist evolution have shifted the economic base of our nation and our state from agriculture to manufacturing and now to services. We've grown wealthier through the progression.

Generally speaking, our highest-paying jobs are in services—engineers, scientists, stockbrokers, professors, consultants, doctors, lawyers, dentists, investment professionals, financial advisors, famous athletes and entertainers, and many others.

As we did for generations in manufacturing and agriculture, we are exporting services that are high on the value-added ladder and importing ones from the lower rungs. In recent years, for example, we have seen large increases in both exports and imports of computer and information services. Dig deeper into the data, however, and you will find we largely export the services of systems architects and designers, while we import the services of basic programmers.

A rational international division of labor helps support better jobs in the United States while supplying American consumers with low-priced goods. The ubiquitous iPod tells the tale. Engraved on the back of mine are these words: "Designed by Apple in California. Assembled in China." We contribute the higher-value part of the process, while others provide the basic parts and assembly.

That is how it should be. As we send our services into the global economy, we are planting apple seeds all over the world. If those seeds are allowed to germinate and sprout into economic growth, the world will prosper and demand even more of our value-added services. So long as our productive workforce and enterprises continue to create ever more valuable services, we will remain a top beneficiary of capitalist expansion throughout the world.

Richard W. Fisher
President and CEO
Federal Reserve Bank of Dallas

Texas Transitions to Service Economy

By D'Ann Petersen

For Texas as well as the U.S., the increasing importance of services reflects a long-term evolution, driven by the capacity of free enterprise economies to reinvent themselves.

Texas has joined the nation in shifting its economy into services. Decade by decade, the state's service sector has expanded its share of employment and production in an economy traditionally known for cotton, cattle, crude oil and construction cranes.

While agriculture and goods industries remain vital to the state's economic health, the service sector today accounts for roughly 80 percent of jobs and 63 percent of output (*Chart 1*).[1] Texas matches the U.S. in the share of employment in services. The state's share of output in services is less than the nation's 70 percent because of Texas' importance as an energy producer and growing role in manufacturing.[2]

Measured by employment or output, services are expanding faster in Texas than in the U.S. (*Chart 2*). The sector has emerged as the state's leading engine of job creation. Since 1990, it has added more than 2.4 million jobs on net and more than doubled the pace of employment growth in goods-producing industries.

For Texas as well as the U.S., the increasing importance of services reflects a long-term evolution, driven by the capacity of free enterprise economies to reinvent themselves. Agriculture's dominance faded with the rise of manufacturing, and today the factory era has given way to services. The transition shows the ability of businesses and workers to adapt to ever-changing circumstances, including rapid technological progress and an increasingly competitive world economy.

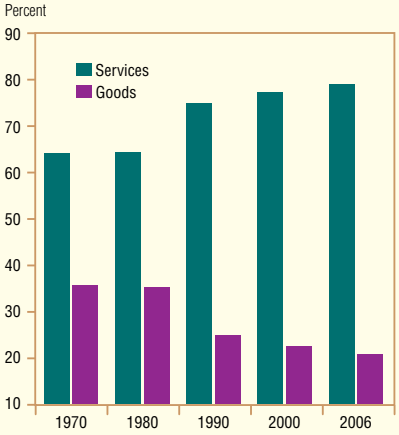
Sizing Up Services

Truckers making deliveries, technicians maintaining Internet sites, brokers selling insurance, architects designing shopping centers, managers running businesses, nurses caring for patients, waiters serving diners—all these and many others are service jobs.

To make sense of this sprawling sector, government agencies aggregate services into groups of related businesses. In 2003, they adopted the North American Industry Classification System (NAICS) to replace the Standard Industrial Classification (SIC). An important reason for the transition to NAICS was rapid growth in service industries that weren't well defined under SIC codes. The NAICS information category, for example,

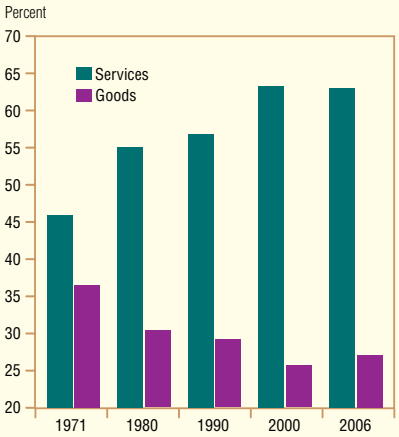
Chart 1
Services Lead Texas Jobs, Output

Employment Share



SOURCES: Federal Reserve Bank of Dallas; Texas Workforce Commission.

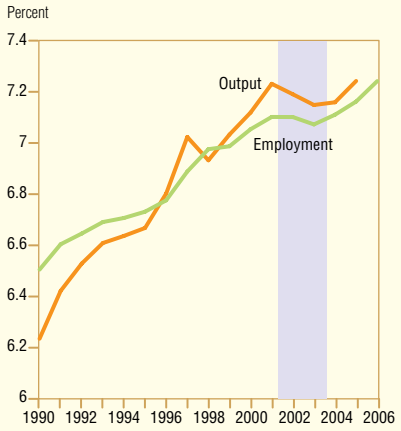
Output Share



SOURCES: Federal Reserve Bank of Dallas; Bureau of Economic Analysis.

From 1990 through 2006—a period that includes vigorous expansion, recession and recovery—each of Texas' major service categories outperformed its U.S. counterpart in job growth.

Chart 2
Texas Takes Larger Role in U.S. Service Sector



NOTE: Shaded area represents economic downturn in Texas.
SOURCES: Federal Reserve Bank of Dallas; Texas Workforce Commission; Bureau of Economic Analysis.

includes communications, publishing and the online services that have emerged in the information-based economy.[3]

Under NAICS, the service sector's diverse members are grouped into seven private-industry categories and government. Texas' share of employment in each of them is at or below the nation's—with one notable exception. The state has 24.3 percent of its total employment in trade, transportation and utilities, compared with 22.9 percent for the U.S. as a whole (*Table 1*).

This category owes its importance to Texas' strategic location on the Mexican border and in the center of the U.S. These attributes have spurred expansion of transportation networks, which have attracted firms in such industries as retail and wholesale trade, airlines, trucking, pipelines, rail and cargo transportation, and warehousing—all of which add to employment in this large sector.

Among the major transportation firms headquartered in Texas are Southwest Airlines, American Airlines, Continental Airlines and Burlington Northern Santa Fe Corp. The Port of Houston is the country's second-busiest deepwater facility, and Dallas/Fort Worth International Airport ranks sixth in the world for passenger traffic and 27th in the world for cargo volume. Houston's Bush Intercontinental Airport is the nation's ninth busiest in passenger traffic. Fort Worth's Alliance Airport, a purely industrial airport, is one of the country's largest intermodal facilities.

Table 1
Breaking Down Service Industry Employment
(Share of total employment, percent)

	Texas	U.S.
Education and health services	14.6	15.7
Financial activities	7.5	7.3
Information	2.6	2.7
Leisure and hospitality	11.4	11.6
Professional and business services	14.9	15.5
Trade, transportation and utilities	24.3	22.9
Other services	4.1	4.7

NOTE: Private employment, December 2006.
SOURCES: Federal Reserve Bank of Dallas; Texas Workforce Commission.

Job Engines

From 1990 through 2006—a period that includes vigorous expansion, recession and recovery—each of Texas' major service categories outperformed its U.S. counterpart in job growth (*Chart 3*).

Three industries stand out, not only doing better than the U.S. but growing faster than the state average of 2.7 percent.

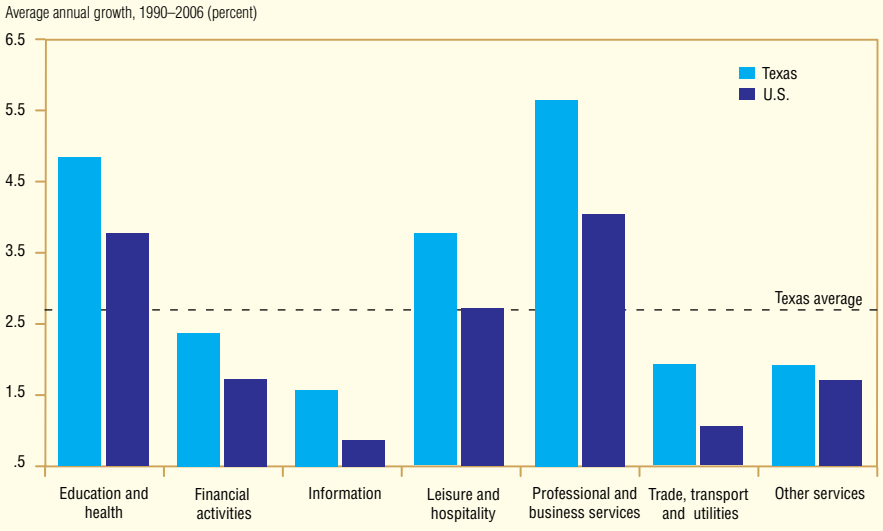
Professional and business services lead expansion. The state's second-largest service category, with almost 15 percent of Texas jobs, is the top performer in job growth. Professional and business services include many knowledge-based positions in law, accounting, architecture, engineering, software design, management and consulting. The industry has added 655,900 jobs since 1990—an average annual pace of 5.7 percent, more than a percentage point faster than the nation.

Professional and business services have played an important role in the state's current expansion. Since the recovery began in July 2003, the industry has added over 228,000 jobs on net—more than any other—accounting for roughly 28 percent of the state's private job gains. Employment has risen sharply for many professional services related to energy and construction, including architectural and engineering services and management, professional and scientific consulting. Employment in computer systems design has also been rising at a fast clip, likely the result of firms outsourcing software development.

Growing population boosts education and health services. The second-fastest-growing service category includes private university and education workers, training center employees, doctors, nurses, medical technicians and social workers. It has added 571,900 jobs since 1990.[4] Health care dominates the category, with about 1.1 million jobs, or 88 percent of the total and roughly 12 percent of Texas private employment.

Health care demand is rising nationwide as the population ages and new technology changes the delivery of medical services. In Texas, the rapidly growing population is another driver for health care employment. The second-most-populous state, Texas has been adding residents twice as fast as the nation, in part because of migration. Along the Texas–Mexico border, health care-related jobs have been multiplying as many Mexicans cross the Rio Grande to meet their medical needs.

Chart 3
Texas Service Industries Outpacing U.S. Counterparts



SOURCES: Federal Reserve Bank of Dallas; Texas Workforce Commission.

A key factor in the category's growth has been the rise of ambulatory care—more commonly known as outpatient services. Managed care and new medical technologies helped reduce the average hospital stay nationally from 7.6 days in 1980 to 5.6 days in 2004.[5] Visits to outpatient facilities have climbed.

In Texas, employment in ambulatory care has increased a vibrant 8 percent a year on average since 1990, and the segment now makes up more than 50 percent of total health care jobs. Employment has also been steadily increasing at hospitals and nursing homes. As the Texas population grows and ages along with the baby boom generation, demand will continue for workers in these service areas.

Leisure and hospitality service employment increases. Texas boasts a wide range of attractions—the Alamo, Galveston and Padre islands, Space Center Houston, Big Bend National Park, the Fort Worth Stockyards, the State Capitol and the rolling Hill Country, to name just a few. Add in business travel and entertainment, and it makes for a healthy industry.

The leisure and hospitality category—which includes hotels, eating and drinking establishments, and recreation services—makes up 11.4 percent of Texas' economy and employs about as many workers as the state's factories.

Most leisure and hospitality industries have been adding jobs at a steady pace each year. Since 1990, job growth has averaged 3.8 percent, outpacing the nation's 2.7 percent. The lion's share of leisure and hospitality employment is concentrated in food-service and drinking establishments, which make up almost 80 percent of the total. This segment continues to add workers at a moderate pace, though job growth has slowed from the 1990s' pace.

The hotel industry makes up 10 percent of leisure and hospitality employment. While lodging employment dropped after the September 11 terrorist attacks, jobs have rebounded the past few years as demand picked up. Texas hotel construction is also on the rise, with the 2006 value of new construction contracts up 24 percent from a year earlier.

Weathering Downturns

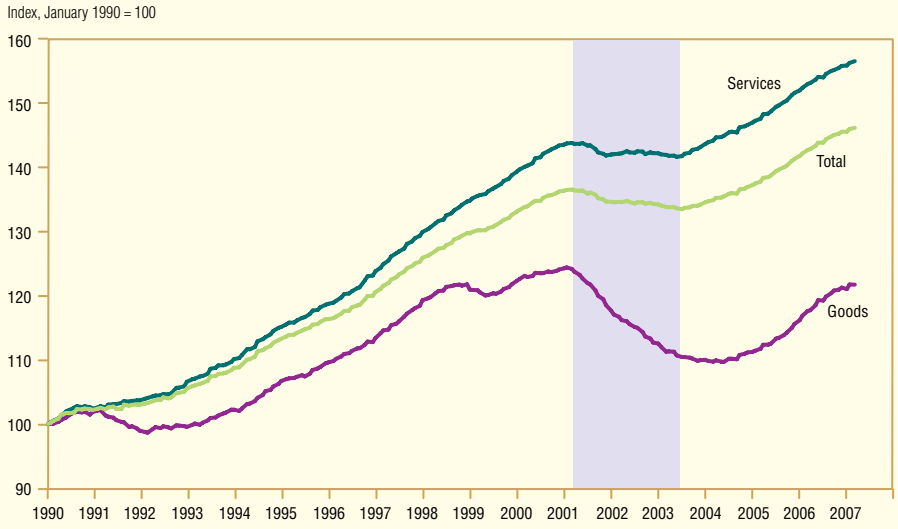
Shifting the employment base from goods to services changes the way economies perform when hard times hit. Employment usually holds up better in services than in goods when economies slip into recession.

The high-tech and dot-com busts sent the country into recession in 2001, but Texas felt the impact longer than many areas, partly because of its large number of high-tech jobs. The 9/11 aftershocks that hurt the travel industry added to the tech crunch, prolonging Texas' recession through June 2003.

Overall, the Texas service sector

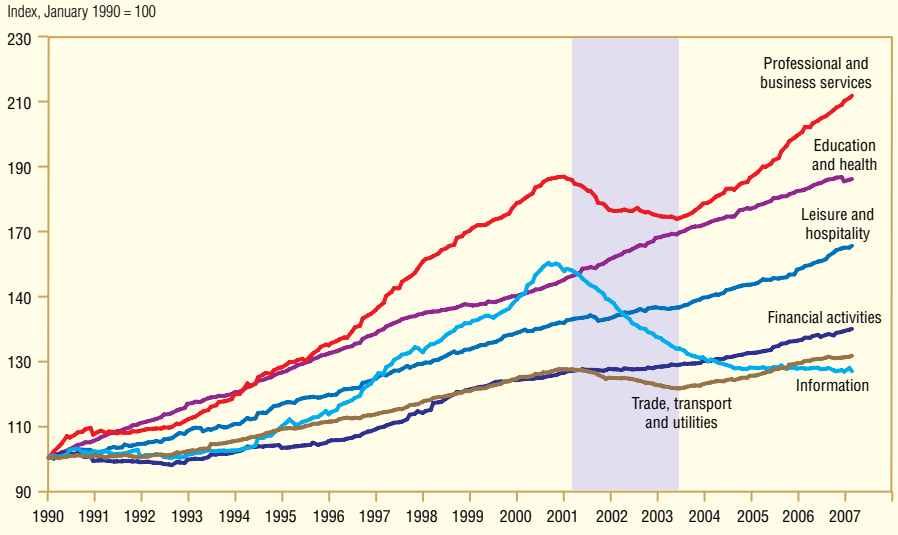
The leisure and hospitality category—which includes hotels, eating and drinking establishments, and recreation services—makes up 11.4 percent of Texas' economy and employs about as many workers as the state's factories.

Chart 4
Services Employment Buoys Texas During Recession



NOTE: Shaded area represents economic downturn in Texas.
SOURCES: Federal Reserve Bank of Dallas; Texas Workforce Commission.

Chart 5
Job Growth Uneven Among Texas Service Industries



NOTE: Shaded area represents economic downturn in Texas.
SOURCES: Federal Reserve Bank of Dallas; Texas Workforce Commission.

weathered the storm, recording an annual employment decline only in 2001, when 67,100 jobs were lost (*Chart 4*). Texas' goods-producing sector lost over 188,000 jobs during the downturn, more than a quarter of them in high-tech manufacturing.

Consistent gains in education and health care, leisure and hospitality, and financial services buoyed Texas employment during the recession. These industries prospered in part because of relatively strong population growth and a healthy housing market, spurred by low mortgage rates (*Chart 5*).

Not all service industries sailed through the recession. Hardest hit was the information sector, with its high percentage of telecommunications service positions. Texas telecom firms shed slightly more than 29,000 jobs during the downturn. Productivity growth has since returned to this industry, yet new jobs remain elusive. Professional and business services also saw jobs decline considerably. Computer systems design, an industry that includes such companies as Plano-based EDS, lost about 18,000 jobs during the recession, accounting for almost 30 percent of the category's decline.

The trade, transportation and utilities industry was hurt by the post-9/11 drop in demand for air travel. Texas airline transportation employment fell by 12,200 during the downturn and continued to edge down through 2005, rebounding slightly in 2006. Other segments of trade, transportation and utilities, such as retail and wholesale trade, contracted during the downturn as consumer demand weakened across the U.S.

Once the Texas recovery began in mid-2003, employment growth swung back quickly in services while jobs continued to fall in goods-producing industries. In late 2004, however, goods joined services on an upward track, helping fuel the state's robust economic growth of the past few years.

Going Global

U.S. business cycles and trends will continue to shape Texas' future, but so will the state's ability to capitalize on a core reality of the 21st century—the increasing integration of the world economy.

High-valued-added services are among America's prime assets in global competition. Texas and its major cities fare well in recent studies that rank states and metropolitan areas on how well their economies stack up in the globalized, knowledge-based economy.

The Progressive Policy Institute (PPI), a Washington think tank, places Texas 14th in its state ranking. PPI's metro index lists Austin second, Dallas–Fort Worth 12th and Houston 14th out of 261 markets.[6]

Texas metros also fare relatively well in the Regional Globalization Index (RGI) compiled by Moody's Economy.com, Inc. Among 379 metro areas, Dallas (9), Austin (25) and Houston (30) rank in the top 30, and 12 of the state's 26 metros make the top 100.[7]

Texas and its metros have characteristics that boost them in the rankings. These include high shares of employment in services that are knowledge-based and in demand by cross-border businesses; relatively high concentrations of export-oriented

industries; dynamic economies in terms of job churn; strong port activity; and populations with high shares of foreign born.

Although Texas performs well in many index measures, it ranks relatively low in a couple of key components. The state is a poor 43rd in PPI's workforce education category, a weighted measure of years of schooling. Census Bureau data show 78.2 percent of Texans age 25 and older had at least a high school diploma in 2005, well below the national average of 85.2 percent.[8] The Texas figure in part reflects border metros' high percentage of foreign born without high school diplomas.

Texas also trails other states in its share of employees at foreign companies, an indicator of foreign direct investment. Texas ranks 22nd in the PPI state index, with 4.5 percent of employment in foreign-owned firms, compared with No. 1 Hawaii's 8.3 percent. Most Texas metros fall into the bottom half of the list in RGI's similar measure. However, the fact that Texas and its major metros rank relatively high in many other global index categories should help attract foreign-based firms to the state.

Plus or Minus for Texas?

The transition from goods to services often raises concerns about a possible decline in living standards if low-wage, low-skilled service jobs replace higher-paying jobs in the goods sector. Fortunately, this isn't the case for Texas. While labor churn creates hardships for some workers who lose their jobs, the service sector's overall expansion has coincided with rising prosperity in the state.

As services have taken a larger share of Texas' economy, productivity has grown in both the goods and service sectors, creating more job opportunities and leading to higher per capita income. Goods and services industries alike have benefited from the increased efficiency that comes from service firms' advances in business communications, financial innovations, and distribution and transportation networks.[9]

The inherently intangible nature of services makes them difficult to measure. In banking, for example, payment handling and safekeeping of funds and valuables are hard to summarize as "banking output."

Despite measurement issues, output per worker indicates that service sector productivity has been rising in both Texas and the U.S. for the past decade (*Chart 6*).

The expansion of industries rich in knowledge-based occupations has played a key role in pushing up Texas' productivity in services.

Since 1990, half of the state's service employment growth has been in the professional and business services and education and health industries. Many of these jobs require above-average education.

According to the Census Bureau, 68.3 percent of U.S. professional service workers age 25 to 64 had at least a bachelor's degree in 2006, compared with 33.2 percent of all workers in the age group. Workers with bachelor's degrees or greater held 39 percent of all service jobs, compared with 7 percent of general production occupations, including electrical equipment handlers, machinists, welders and print machine operators.

Knowledge-based service jobs tend to pay well. In Texas, average hourly wages in 2005 were $77.23 for internal medicine doctors, $44.81 for geological engineers, $39.53 for computer software engineers and $26.35 for registered nurses, according to the Bureau of Labor Statistics.[10]

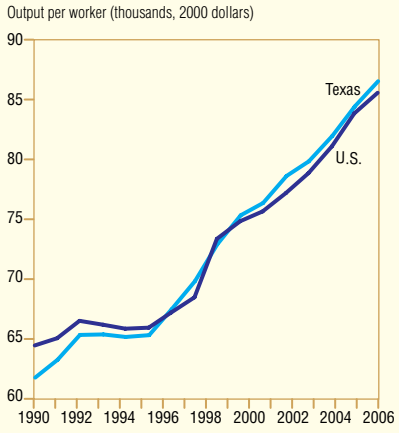
Of course, not all service jobs offer above-average pay. Industries such as retail sales, food preparation and household services pay relatively low wages. But low-wage positions are an important starting point for many of the state's younger, less experienced and less educated workers, including teens and some immigrants.

Overall, the transition from goods to services has benefited the Texas economy. The key to prospering as the economic base shifts lies in developing higher-end, knowledge-based services that offer better pay, greater productivity and global reach.

Texas has been able to do that over the past decade and a half. For the Texas economy to continue to expand its high-value-added service sector, however, it is essential that the state's education system continue to make progress on improving student achievement.

Petersen is an associate economist in the Research Department of the Federal Reserve Bank of Dallas.

Chart 6
Productivity on the Rise in Service Sector



SOURCES: Federal Reserve Bank of Dallas; Bureau of Economic Analysis; Texas Workforce Commission.

Notes

The author thanks Pia Orrenius for contributions to this article and Michael Nicholson for research assistance.

[1] In this article, the service sector refers to the private service-producing sector, which excludes government.

[2] For an explanation of the importance of manufacturing to the Texas economy, see "Made in Texas: The Natural Selection of Manufacturing," by Fiona Sigalla and Danielle DiMartino, Federal Reserve Bank of Dallas *Southwest Economy*, January/February 2007.

[3] For a look at how NAICS differs from SIC and an explanation of how NAICS groups industries, see "Goodbye SIC, Hello NAICS: A Fresh Slate for Houston Jobs Data," by Robert W. Gilmer, *Houston Business*, March 2003.

[4] While education is very important to the state's economy—making up about 9 percent of total state employment—public schoolteachers are included in local and state government payrolls and are not counted in this sector.

[5] *Hospital Statistics*, Health Forum, Chicago: American Hospital Association, 2006 and prior years.

[6] State New Economy Index and Metro New Economy Index, Progressive Policy Institute Technology Project, June 2002 and April 2001, respectively.

[7] Regional Globalization Index, by Andrew Gledhill, *Regional Financial Review*, Moody's Economy.com, Inc., November 2006.

[8] U.S. Census Bureau, Current Population Survey 2006, Annual Social and Economic Supplement, March 15, 2007.

[9] *Productivity in the U.S. Services Sector*, by Jack E. Triplett and Barry P. Bosworth, Washington: Brookings Institution Press, 2004.

[10] See www.bls.gov/data for occupational employment statistics, 2005 data.

OnTheRecord

A Conversation with **John V. Duca and D'Ann Petersen**

The Housing Market, After the Boom

After going gangbusters for years, the housing industry faces loan problems, weaker building activity and soft prices. John V. Duca, a Dallas Fed vice president and senior economist, tracks the national housing market.

Q: Talk about the recent evolution of the subprime mortgage market.

A: In 2006, subprime loans accounted for 24 percent of mortgage originations, including refinancings. To put things into perspective, the subprime share has more than tripled so far this decade. The rapid run-up coincides with the strong spurt we saw in home construction, home sales and home-price appreciation.

Q: When did the subprime market start to unravel?

A: We started hearing some early rumblings late last year, but it really didn't get noteworthy until February. At that point, we started seeing a noticeable pullback in lending, mainly because loose standards had led to a deterioration in loan quality beyond what lenders had anticipated.

But we can't ignore the fact that home-price appreciation started slowing in late 2006. Borrowers were no longer as able to obtain new financing to service higher mortgage payments.

Until then, rapid home-price appreciation had enabled many homeowners to either borrow more to meet their mortgage payments or sell at a profit and retire their loans. With home prices flat or down in parts of the country, many recent subprime borrowers could no longer tap gains, nor could they sell their homes at a high enough price to cover selling costs, outstanding principal and mortgage payments they'd missed.

Q: What about the so-called Alt-A mortgages we're hearing about?

A: Alternative-A mortgages are loans to buyers who don't qualify for low-risk conforming loans because their credit score is too low, down payment is too low or payment-to-income ratio is too high. In some

cases, borrowers fall into the Alt-A category because they didn't provide the documentation of income normally required to get a conforming loan.

The Alt-A mortgage market is new. In 2001, it accounted for only 3 percent of mortgage originations. But by 2006, Alt-A's share had risen to 16 percent. When you add up subprime and Alt-A, you really begin to appreciate their importance. As recently as 2003, they accounted for 11 percent of originations; by last year, the total had risen to nearly 40 percent.

Q: Have problems with these mortgages caused any ripples?

A: We're likely in the midst of a shakeout that will cause some retrenchment in mortgage availability. We've already seen more than 70 mortgage lenders close, with more sure to follow. Keep in mind, though, that there are still more than 8,000 lenders.

Keep in mind, too, that many subprime loans haven't gone sour, and the advent of subprime lending has increased homeownership. In addition, expanded credit availability has helped younger families buy bigger homes, which will help them avoid many of the costs previous generations encountered when they bought starter homes, then had to "buy up" four to five years later.

Q: Aren't many of these families in a distressed state because they bought more home than they could afford?

A: Yes, this is suggested by data from the Mortgage Bankers Association, which show that overall delinquencies were running at 4.9 percent in the fourth quarter of last year, up from a recent low of 4.3 percent in the first quarter of 2005. The deterioration is even more pronounced on the subprime side, where delinquencies rose to 13.3 percent from their recent low of 10.3 percent in the second quarter of 2005.

Subprime mortgage problems are concentrated among borrowers who don't have fixed-rate mortgages. The vast majority of subprime loans have teaser interest rates. After two to three years, many reset at higher rates and borrowers in some cases also begin making principal payments. This resetting can trigger a dramatic rise in mortgage payments, which many borrowers are unprepared to make.

Q: Is the worst over?

A: Several questions remain unanswered about the ramifications of the pullback in nonprime lending—regarding home construction, foreclosures and home prices.

Q: OK, let's start with home construction.

A: Unwinding the dramatic rise in nonprime mortgages could have a noticeable effect on home construction beyond what we've seen through the first quarter. Some industry analysts speculate that the lending pullback could slow homebuilding another 10 to 15 percent. At this point, though, it's hard to gauge the full impact. With nonprime lending at nearly 40 percent last year, the effect could be even greater.

Q: What about the outlook for foreclosures?

A: According to the Mortgage Bankers Association, foreclosures initiated in the fourth

"We're likely in the midst of a shakeout that will cause some retrenchment in mortgage availability."

quarter rose to a record high of 0.5 percent. Looking down the road, though, it's difficult to forecast how much foreclosure rates could rise. For one thing, home-price trends have changed dramatically.

The decline in documentation adds uncertainty about the debt service burdens of many nonprime borrowers. According to Credit Suisse, subprime loans with low to no documentation rose from 30 percent in 2001 to 60 percent in 2006. On the Alt-A side, the share of low- to no-documentation mortgages rose from 66 percent to 81 percent.

Q: Finally, where do you think home prices are headed?

A: Open questions remain about how much the increase in mortgage availability in recent years pushed up home demand and prices. So it's hard to forecast the impact of the recent pullback in lending. It will likely vary across the country, partly because nonprime mortgages have tended to be used more on the coasts, where borrowers have had to reach to qualify to buy. Take California, for example. In 2006, nonprime loans accounted for 55 percent of originations, compared with 40 percent for the nation.

Previous regional price misalignments have unwound, with home prices remaining roughly flat for many years, while incomes and other prices rose. Nevertheless, some noticeable home-price declines did occur in the early 1990s. But the decade's long economic expansion allowed households to work through the realignment.

By keeping inflation under control, the Fed hopes to sustain the current economic expansion, which should enable many, but not all, of today's households and lenders to work through their mortgage quality problems.

D'Ann Petersen, the Dallas Fed's regional housing analyst, discusses developments in Texas.

Q: How are Texas housing markets faring compared with those in the rest of the country?

A: They've cooled, but they're holding up better than in other areas. While home sales remain good by historical standards, they've moderated from last year's vigorous pace. That's not to say all Texas markets are in sync. Austin and Houston sales remain at good levels, while the Dallas–Fort Worth housing market is the weakest among the major metros. Hardest hit have been homes priced below $200,000. Sales remain strong at higher price points.

Builders have pulled back significantly on new home starts, especially in Dallas–Fort Worth, as inventories rose with slower sales, rising cancellations and reduced investor activity. Tighter lending standards have also dampened demand, especially at the market's lower end. Problems with subprime mortgages could reduce starts even more.

Our business contacts remain cautiously optimistic, however. Housing prices have held firm in Texas, unlike other areas of the country, and have even ticked up recently. While there will be some short-term pain from reduced construction and layoffs, the state economy's continued expansion, along with attractive home prices, bodes well for the Texas housing industry's future.

Q: How much has Texas relied on subprime and Alt-A financing?

A: According to Credit Suisse, subprime mortgages' share of the Texas market was about 22 percent in 2006, slightly higher than the U.S. average of 20 percent. Subprime loans tend to be more prevalent in lower-income areas, which would explain Texas' slightly higher share. Texas' share of Alt-A loans was 13 percent, below the nation's 20 percent.

Q: Why have the state's foreclosure rates tended to be higher?

A: The Texas foreclosure rate began running higher than the national average in 2002. At that time, the Texas economy was mired in a recession, spurred by the high-tech bust. The state had a large share of high-tech employment, and it took several years for job losses to level off. Many who lost their jobs were white-collar workers, so a large share of foreclosures involved conventional prime loans.

The Texas economy has been strong for several years, yet the state's foreclosure rates remain high. This probably has a lot to do with the moderate rate of home-price appreciation during the housing boom. Unlike homeowners in California and Florida, Texans who got in over their heads were unable to tap their home's equity to make mortgage payments.

SpotLight

Maquiladora Data

Mexican Reform Clouds View of Key Industry

For years, new jobs in Mexico's assembly-for-export plants have been a growth engine on both sides of the Rio Grande. Mexico reported monthly on employment, wages and production in the maquiladora industry, and those figures became key indicators for the border region's economy.

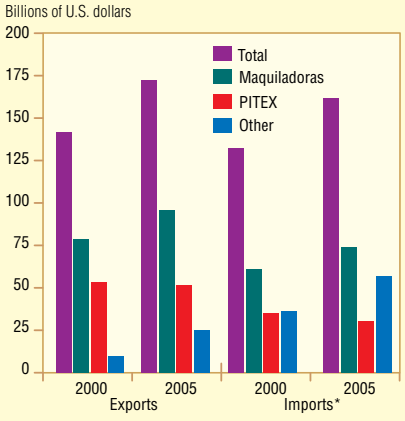
Recent changes in Mexican regulations on export-oriented industries mean these important barometers of border manufacturing activity have been lost—at least temporarily. The new rules merge the maquiladora industry and a program for homegrown exporters into Maquiladora Manufacturing Industry and Export Services, or IMMEX.

Mexico stopped publishing maquiladora data effective March 2007. Beginning in March 2008, the industry will be included in Mexican manufacturing reports. The first figures on IMMEX plants will be available at the same time—but without separate maquiladora data.

IMMEX will provide regional and industrial data similar to the old maquiladora reports in 2008, but for a year analysts will be without manufacturing data for states and cities along Mexico's northern border. The new data series won't mesh with the old, so long-term trends will be hard to track.

Chart 1

Maquiladoras and PITEX: Exports and Imports



*Intermediate imports only.
SOURCE: Secretaría de Economía, www.siicex.gob.mx/Sabias/manufacturero.doc.

The regulatory changes reflect the evolution of a program that began in the 1950s as a simple "twin-plant" concept. Maquiladoras allowed U.S. manufacturers to establish capital-intensive operations on their side of the border, ship goods to Mexico for labor-intensive assembly and return them to the United States. Inputs moved into Mexico duty-free if returned to the U.S. in assembled form within a fixed period. U.S. tariffs applied only to the value added by assembly.

Over the years, the maquiladora industry evolved to include imports of machinery and equipment along with inputs, and it expanded from manufacturing to services, such as engineering, call centers and coupon processing. The original maquiladora program forbade domestic sales, but the North American Free Trade Agreement completely removed the restriction by 2001.

Blurring the Lines

After these changes, maquiladoras became similar to companies operating under the Program for Temporary Imports to Promote Exports (PITEX), created in 1990 to allow qualifying domestic producers to compete with maquiladoras.

In terms of exports and imports, the maquiladora program is larger than PITEX, and it's been growing in recent years (*Chart 1*). PITEX plants are usually in the older industrial belt located in central and southern Mexico. Maquiladoras are more common in states along the U.S.–Mexico border (*Table 1*).

Under PITEX, the "export-services" parts of domestic plants received maquiladora-like benefits, allowing them to import materials and export-oriented machinery. In recent years, no significant differences existed in the customs status of maquiladoras and PITEX plants' export operations.

As differences between the two programs diminished, questions arose about why maquiladora data should be reported separately. As a result, Mexican authorities decided to merge the two export-oriented programs.

Under IMMEX, the combined programs also share similar fiscal treatment. In the past, maquiladoras were exempt from value-added taxes; the IMMEX program extends this benefit to PITEX companies' export services. Income tax differences will persist only to the extent that maquiladoras qualify for treatment as foreign entities.

The elimination of fiscal differences solves a growing problem of companies' shifting between maquiladora and PITEX status for tax advantages and causing large month-to-month swings in regional and national data unrelated to economic events.

In time, the IMMEX data may provide useful information for tracking manufacturing activity in Mexico's border states. For a while, though, analysts will be without a key source of data.

—Jesus Cañas and Robert W. Gilmer

Table 1

Export-Oriented Plants in Selected Mexican States

	Number of plants		
	Maquiladoras	PITEX	IMMEX
Border states			
Baja California	901	246	1,147
Coahuila	224	177	401
Chihuahua	395	107	502
Nuevo León	213	432	645
Sonora	213	214	427
Tamaulipas	337	93	430
Border total	**2,283**	**1,269**	**3,552**
Other states			
Distrito Federal	17	237	254
Durango	42	74	116
Guanajuato	38	186	224
Jalisco	98	275	373
México	26	380	406
Puebla	58	217	275
Querétaro	30	185	215
San Luis Potosí	30	100	130
Sinaloa	8	164	172
Veracruz	2	98	100
Yucatán	74	52	126
Other states' total	**423**	**1,968**	**2,391**
Selected states	**2,706**	**3,237**	**5,943**
Nationwide	**2,795**	**3,620**	**6,415**

SOURCE: INEGI.

Bridging the Texas GDP Gap

By Stephen P. A. Brown and Raghav Virmani

Weeks after the end of each quarter, the Commerce Department releases its first estimate of the nation's gross domestic product. Because GDP numbers are timely and offer broad coverage of U.S. economic activity, policymakers, analysts and business executives rely heavily on them in assessing the nation's economy.

At the state level, however, GDP data are available only annually, and they're released more than five months after the end of the year. In May 2007, for example, the most current numbers on Texas output covered 2005—a gap of 17 months.

The lag diminishes the value of state GDP data, prompting analysts to turn to other measures to gauge the Texas economy's performance—most notably payroll employment, household employment and earnings. All three series are timely and relatively broad. They also track well with inflation-adjusted Texas GDP (*Chart 1*).

The related movements suggest employment and earnings could be used to project Texas GDP for the quarters for which state output data haven't yet been released. We conducted a series of econometric tests to evaluate how much information about Texas GDP is contained in the other three measures.

In our most effective models, household employment and real earnings explain 55 to 60 percent of the change in Texas GDP. Payroll employment doesn't explain as much as the other two measures. The results suggest the first two data series do a reasonable job anticipating state output and can help bridge the gap until the Texas GDP numbers are released.

State-Level Data

State and federal agencies supply most of the data that track the Texas economy. Real state GDP, produced annually by the federal Bureau of Economic Analysis (BEA), is generally released in June following the year it covers. Using procedures developed in-house, the Dallas Fed makes quarterly estimates of state output, enabling us to track the economy's ups and downs more closely during any given year.[1]

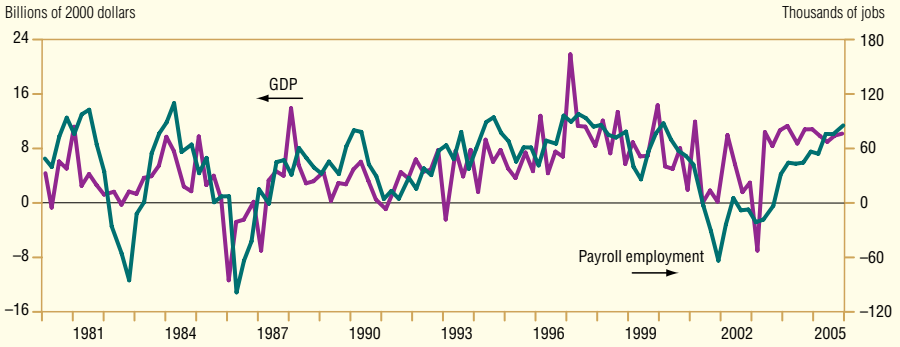
The two state employment measures

Chart 1

Employment, Earnings Move with State GDP

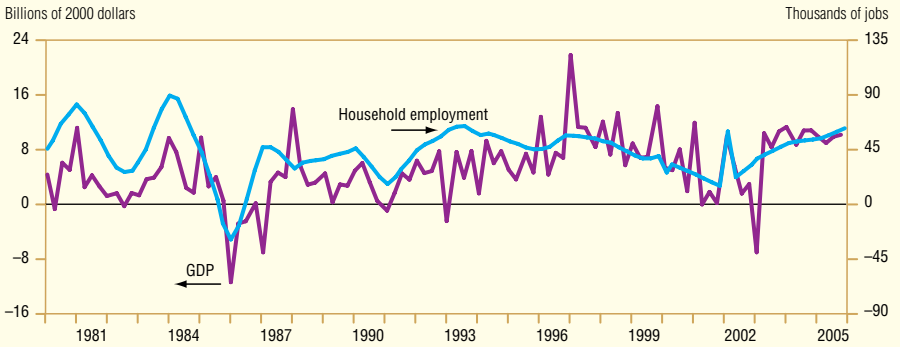
(Quarter-to-quarter change)

Payroll Employment



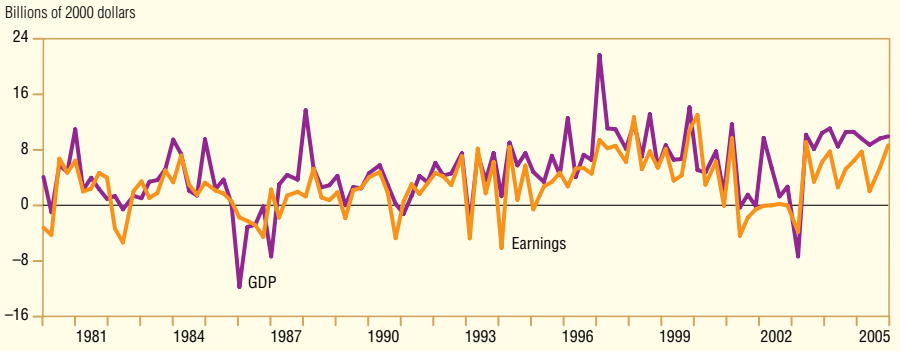
SOURCES: Bureau of Economic Analysis; Bureau of Labor Statistics; Texas Workforce Commission.

Household Employment



SOURCES: Bureau of Economic Analysis; Federal Reserve Bank of Dallas; Bureau of Labor Statistics; Texas Workforce Commission.

Real Earnings



SOURCES: Bureau of Economic Analysis; Federal Reserve Bank of Dallas.

It's somewhat surprising that the survey-based payroll employment is statistically inferior to household employment in projecting state GDP.

are released about three weeks after month's end. The Texas Workforce Commission (TWC) produces what's commonly called payroll employment, which summarizes a monthly survey of nonfarm business establishments. These data are timely and provide information broken down by industry and metro area.

The alternative measure is household employment, from the federal Bureau of Labor Statistics. The agency gathers national data by surveying households about whether members are employed or looking for work. The TWC produces state-level numbers with models that use Texas-specific elements of the national survey, payroll employment and unemployment insurance claims. The household series is used to calculate the unemployment rate, but it also offers information on total employment, overall workforce size and demographic groups' labor force participation.

The BEA compiles state earnings, a quarterly measure that covers wages, salaries and their supplements, and business owners' income.[2] The data are available a little more than three months after the quarter ends. In our work, we've adjusted the data for inflation using the U.S. Consumer Price Index.

The availability of these data depends on the time of the year. In July 2006, for instance, state GDP ran through the end of 2005. Employment data were available for the second quarter of 2006 and earnings for the first quarter of that year (*Table 1*). In April 2007, we had no new state GDP reports, but employment data were available for first quarter 2007 and earnings for fourth quarter 2006.

Estimating State GDP

Projecting Texas GDP required eight models. For each, we considered seven different specifications—three with payroll employment, household employment and real earnings separately; three with them in pairs; and one with all of them.[3] We used quarterly data from 1980 through 2005 and staggered lags to reflect the timing of each series' release.

We needed so many models because our task varied with the calendar. In July 2006, it involved projecting the first two quarters of 2006. In October 2006, it became projecting the year's first three quarters. In January 2007, we had to estimate all four quarters of 2006. In April 2007, the task was projecting all four quarters of 2006 and the first quarter of 2007. In July 2007, it will once again be projecting the first two quarters of the year.

One group of four models projects Texas GDP from the first through fourth quarters, when up-to-date employment data are available but earnings are from the previous quarter. We found household employment was the most useful series for projecting state GDP. In three cases, real earnings may provide some help with the projections. Payroll employment provides no additional information. These models account for nearly 60 percent of the change in Texas GDP.[4] (Details of these statistical tests are available at www.dallasfed.org/research/swe/2007/swe0703x.cfm.)

The other group of four models projects first through fourth quarter Texas GDP when employment and earnings data are all current. We found that both household employment and earnings are useful for projecting state GDP. The payroll series adds no useful information. These models account for nearly 55 percent of the change in Texas GDP.[5]

We conclude that household employment and earnings data do possess the ability to anticipate state GDP numbers—with these two series performing better at various times of the year (*Table 2*). Up-to-date data are important. So earnings take a backseat to household employment data for any quarter for which earnings are not yet available.

It's somewhat surprising that the survey-based payroll employment is statistically inferior to household employment in projecting state GDP. It's possible the household data's value in assessing Texas real GDP growth owes partly to its construction from employment surveys, population data and unemployment insurance reports.

Table 1
What We Know, When We Know It

	State GDP	Employment	Earnings
July 2006	4th quarter 2005	2nd quarter 2006	1st quarter 2006
October 2006	4th quarter 2005	3rd quarter 2006	2nd quarter 2006
January 2007	4th quarter 2005	4th quarter 2006	3rd quarter 2006
April 2007	4th quarter 2005	1st quarter 2007	4th quarter 2006

Table 2
Keys to Projecting State GDP

	Quarters to project	Relevant data: Most recent quarter	Relevant data: Earlier quarters
July	1st, 2nd quarters same year	Household employment	Real earnings & household employment
October	1st–3rd quarters same year	Household employment & possibly real earnings	Real earnings & household employment
January	1st–4th quarters previous year	Household employment & possibly real earnings	Real earnings & household employment
April	1st quarter same year & 1st–4th quarters previous year	Household employment & possibly real earnings	Real earnings & household employment

Recent Growth Rates

What do the household and earnings data tell us about the recent behavior of Texas GDP? At this writing in May 2007, state output data weren't yet available for the five quarters from the beginning of 2006 through March 2007. Employment data were available through first quarter 2007 and real earnings through fourth quarter 2006.

Using our models, we conclude that Texas GDP growth had a bumpy ride in 2006, with a downswing in the second quarter before a revival in the second half of the year. The state's economy then slowed somewhat in first quarter 2007 (*Chart 2*). Confidence bands around the results indicate some uncertainty about the precise path of Texas GDP.

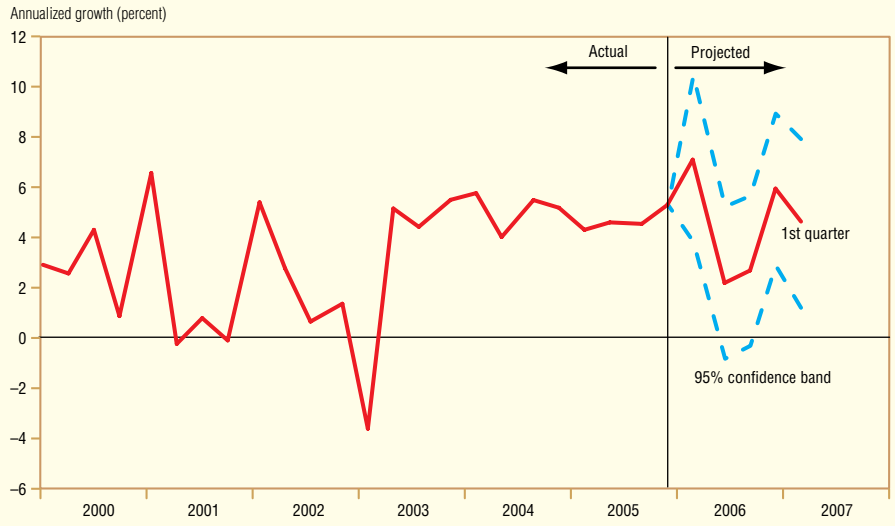
This assessment is generally consistent with the Dallas Fed's Beige Book reports for 2006 and first quarter 2007. These anecdotal surveys suggested the slowing of the economy in the middle of the year as well as the uptick in activity that followed. They also indicated a slowing in the first quarter of this year.

The results suggest that paying closer attention to household employment might help analysts get a better fix on what's happening in the Texas economy. However, accurate assessments are more likely to come from considering a range of timely measures—from employment and earnings data to the Beige Book reports.

Brown is director of energy economics and microeconomic analysis and Virmani is an economic analyst in the Research Department at the Federal Reserve Bank of Dallas.

We conclude that Texas GDP growth had a bumpy ride in 2006.

Chart 2
Projections Point to Bumpy Texas GDP



NOTE: Data have been adjusted for inflation.
SOURCES: Bureau of Economic Analysis; Federal Reserve Bank of Dallas; Bureau of Labor Statistics; Texas Workforce Commission; authors' calculations.

Notes

The authors thank Jiroko Rosales for research assistance and Nathan S. Balke, Franklin D. Berger, Dong Fu, Anil Kumar, Pia M. Orrenius, Keith R. Phillips and Mine K. Yücel for helpful comments.

[1] See "A New Quarterly Output Measure for Texas," by Franklin D. Berger and Keith R. Phillips, Federal Reserve Bank of Dallas *Economic Review*, Third Quarter 1995, pp. 16–23.

[2] Earnings better track Texas GDP than personal income. The latter measure is broader than earnings, incorporating other sources of income, much of which comes from outside Texas.

[3] We conduct all econometric analysis in first differences because augmented Dickey–Fuller tests show all the series are difference stationary. We use a cointegrating term between real state GDP and real earnings because the Johansen procedures show the two series are cointegrated. The use of an interpolated series for Texas GDP raises the possibility that the standard errors of the estimated relationships will be understated. We hope the careful construction of the quarterly GDP series keeps these problems to a minimum. Because household employment is a model-generated series, estimates of its standard errors are understated, but hypothesis testing of the coefficients on the variable being equal to zero remains valid. See "Econometric Issues in the Analysis of Regressions with Generated Regressors," by Adrian Pagan, *International Economic Review*, vol. 25, February 1984, pp. 221–47.

[4] The adjusted R^2s are somewhat lower at 0.40–0.44.

[5] As shown in the estimation details, available on the Dallas Fed's web site, all four models prove to have the same specification. The adjusted R^2 is 0.53.

NoteWorthy

QUOTABLE: *"Despite a 30 percent increase in rooms, hotel occupancy in San Antonio has remained steady at 68 percent over the past decade—the best rate among Texas' major cities."*

—Jason L. Saving, Senior Economist

BANKING: Housing Not Contributing to District Bank Loan Losses

Banks in the Dallas Fed's district escaped the housing market woes of 2006, probably because the region hasn't seen the home-price declines of other parts of the country.

With housing markets slumping in many areas, nationwide mortgage charge-offs (net of recoveries) on one- to four-family residences rose 53 percent to $1.8 billion last year. Residential mortgages account for nearly 19 percent of U.S. banks' assets.

In the Eleventh District, which includes Texas and parts of Louisiana and New Mexico, banks recorded a decline in residential mortgage charge-offs of 16 percent in 2006, suggesting their focus has been on prime rather than subprime mortgages. District banks' residential mortgages account for about 9 percent of assets.

The difference in mortgage markets doesn't show up in profitability. Eleventh District banks earned a return on average assets of 1.3 percent in 2006, just about on par with other U.S. banks. In general, the industry considers returns of 1 percent or better to be robust.

For U.S. banks, loan charge-offs fell from $28.5 billion in 2005 to $23.3 billion in 2006, an 18 percent drop. The improvement came largely from a 27 percent decline in losses from nonmortgage consumer loans.

Eleventh District banks reported a 16.5 percent decline in total charge-offs. As with banks across the country, regional losses in nonmortgage consumer loans fell.

—Kenneth J. Robinson

METRO ECONOMIES: Austin Leads, but All Majors Show Positive Signs

Through the first four months of 2007, Austin had the most dynamic economy of Texas' five major metropolitan areas—at least that's the message from the Dallas Fed's Texas Business-Cycle Index and employment data.

The index, a barometer based on nonfarm jobs, unemployment rates, real wages and retail sales, jumped 9 percent for Austin, well above the 3.7 percent rise in the state index. Austin's employment grew 3.6 percent, or 8,700 jobs, eclipsing the state's 1.8 percent.

Dallas employment rose 2.7 percent, or 18,400 jobs. Fort Worth added 7,000 jobs, up 2.5 percent. The two North Texas neighbors were a tad below the state average, with business-cycle index gains of 3.5 percent.

Since the start of the year, San Antonio (at 1.8 percent) and Houston (at 1.7 percent) have met the state average in job creation. The increase in San Antonio's business-cycle index was high at 5.8 percent. Houston's gain was average at 3.8 percent.

While the major metros are doing well, the border region as a whole has generated little momentum. El Paso has lost 600 jobs so far this year, and Brownsville and Laredo show meager gains. The exception is McAllen, where employment has risen 5.6 percent, or 3,800 jobs, and the business-cycle index has posted an 8.7 percent increase.

—Laila Assanie

IMMIGRATION: Demand Heavy for Visas to Admit Skilled Workers

On the very first day U.S. Citizenship and Immigration Services started to accept fiscal 2008 petitions for skilled-worker visas, the annual cap of 65,000 was exhausted. A record 120,000 new applications were filed.

H1-B visas, initiated in 1990, admit workers with expertise in fields ranging from medicine to mathematics and high-tech services to fine arts. Two factors explain the recent surge in demand—the rapid growth in U.S. service jobs and the mounting backlog of visa petitions since 2004, when the annual quota was reduced to 65,000, with an additional 20,000 visas possible for foreign workers who have U.S. advanced degrees.

Texas employers have relied on H1-B visas, especially in two fast-growing sectors—professional and business services and educational and health services.

Texas firms filed about 8 percent of all H1-B applications in 2006, the most recent year for state data. Dallas–Fort Worth led with 40 percent of the total, followed by Houston at 36.5 percent, Austin at 10.7 percent and San Antonio at 3.2 percent.

Two-fifths of Texas' visa applications were in IT-related occupations, such as programmer, system analyst, computer software engineer, software developer and consultant. Architectural and engineering services accounted for another fifth, while teachers, professors and health care professionals made up about 16 percent of the pool.

—Laila Assanie

Regional Update

Texas Economy Expanding at Moderate Pace

The state's economy continues to grow, but the latest readings suggest a mixed bag, with some sectors growing and others faltering. Texas nonfarm payroll employment grew 2.2 percent in April and 1.7 percent for the first quarter—a decline from the 3 percent pace of the previous six months (*Chart 1*).

Slowing job growth usually shows up in the unemployment statistics. Yet, the Texas jobless rate fell to a seven-year low of 4.2 percent in April, and other indicators of labor market conditions, such as initial claims for unemployment insurance, have been favorable in recent months (*Chart 2*). The Dallas Fed's Beige Book survey of business leaders supports the notion that labor markets are tighter than the payroll data indicate.

Sectors whose employment growth has been especially strong include mining and natural resources, professional and business services, and leisure and hospitality. Retail sales and consumer confidence are holding up reasonably well.

Tentative signs of stabilization are showing up in technology industries. Texas high-tech service employment grew 5.8 percent in the first quarter, compared with 1.2 percent for the nation. High-tech manufacturing employment has stalled after an encouraging January, although its growth rate remains slightly ahead of the nation's.

Cautionary Signs

Significant weakness has emerged in manufacturing. Factory employment, a source of strength just a year ago, has been softening for several months. It fell 1.7 percent in April and 3.5 percent for the first quarter. One positive development over the past six weeks is a marked upturn in the petrochemical sector, driven mainly by unusually strong demand.

Construction-related manufacturing continues to falter, a reflection of the general slowing in the industry. Construction contract values plunged in the first quarter, albeit from high levels (*Chart 3*). The decline was broad based, with residential, nonresidential and nonbuilding (road and bridge) construction all falling.

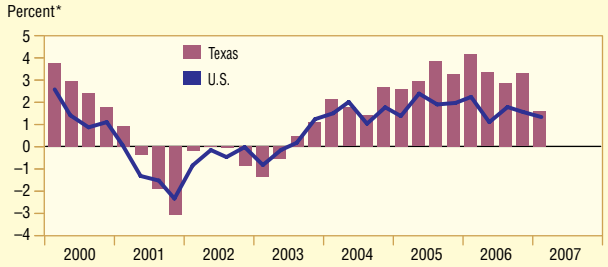
Texas' exports came in lower than expected over the past few months, probably contributing to the lull in manufacturing employment. For the first quarter, the state's overseas sales slipped by 3.3 percent, ending five straight quarters of strong growth. With the notable exception of China, Texas exports were down to all major trading partners, with Mexico off 3.7 percent and Canada 2 percent. Industrial production has been stagnant or falling in America's two North American Free Trade Agreement partners, which account for nearly half of Texas' exports.

Beige Book reports show retail sales stronger than expected. In line with this, real, seasonally adjusted sales tax revenue has performed well over the past several months, suggesting continued strength on the consumption side.

Consumer confidence in the West South Central census region remains the highest in the nation, bolstering Texas' medium-term outlook. This confidence is reflected in rising sales tax receipts and barometers of future economic activity. While flat in recent months, the Texas leading index remains above the national reading (*Chart 4*).

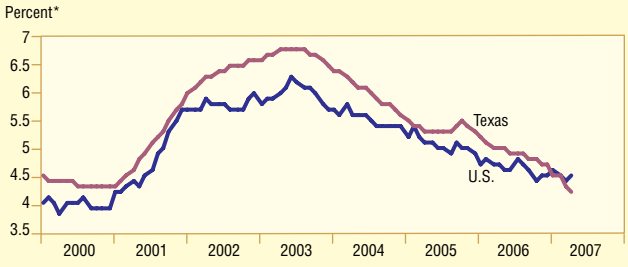
—Jason L. Saving

Chart 1 **Payroll Growth Appears to Downshift in the First Quarter**



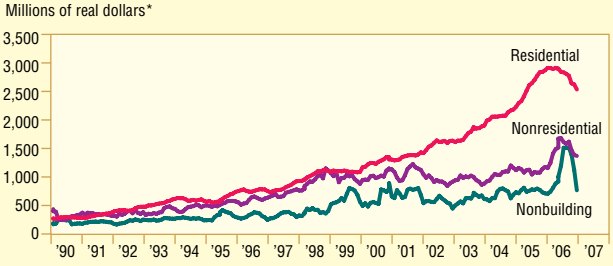
* Quarter-over-quarter, seasonally adjusted annual rate.
SOURCES: Bureau of Labor Statistics; Texas Workforce Commission; seasonal adjustment by Federal Reserve Bank of Dallas.

Chart 2 **Texas Unemployment Rate Falls Below U.S. Rate**



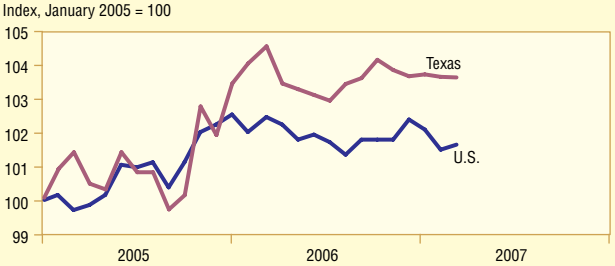
*Seasonally adjusted.
SOURCE: Bureau of Labor Statistics.

Chart 3 **Texas Construction Contract Values Fall Across the Board**



* Five-month moving average, seasonally adjusted.
SOURCES: McGraw-Hill Dodge Construction; Bureau of Labor Statistics.

Chart 4 **Texas Leading Index Flat but Above Nation's**



SOURCE: Federal Reserve Bank of Dallas.

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