

Southwest Economy

▶ **Texas Economy Remains Resilient,
but Low Oil Prices Loom as Future Risk**

PLUS

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▶ *While we face myriad challenges in 2016 and beyond, I am very optimistic about the future prosperity and vibrancy of Texas.*

The downturn in energy and a stronger dollar have created headwinds for economic growth in the Eleventh District. Despite these challenges, the Texas economy continues to grow. In their annual *Southwest Economy* regional outlook, Keith Phillips and Christopher Slijk forecast that employment in Texas will increase about 1 percent in 2016. While this is lower than job growth of 3.7 percent in 2014 and 1.5 percent in 2015, it is still highly impressive in light of recent challenges.

Layoffs in Texas were concentrated in the mining and manufacturing sectors in 2015, with oil- and gas-related employment declining 19.4 percent and manufacturing payrolls shrinking 4.1 percent. Due to diversification of the state's economy over the past three decades, the energy industry now accounts for approximately 2 percent of employment and 9 percent of gross domestic product, a much smaller share of activity than in the 1980s, when the oil price collapse pushed the Texas economy into a deep recession. In-migration of people and firms has been a key underpinning of the resiliency of the Texas economy.

As we look ahead, I firmly believe that improving educational attainment will be critical to the prosperity of this state. In their article, Anthony Murphy and Camden Cornwell focus on how increasing the financial literacy of young adults can help enhance the future economic well-being of Texans. They cite a decision by state lawmakers that mandated a financial literacy curriculum for high school students. They argue that financial literacy is strongly correlated with the ability to make better decisions about spending and saving such as decisions relating to buying a home and planning for retirement.

While we face myriad challenges in 2016 and beyond, I am very optimistic about the future prosperity and vibrancy of Texas. The state continues to be a magnet for people and businesses from around the nation and the world. It is a great place to live and to work. It has a culture of optimism and a can-do attitude that encourages tackling issues head-on. I am confident that, working together, we will make changes that set us on a course for continued success and prosperity.

A handwritten signature in black ink that reads "Robert S. Kaplan". The script is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

*Robert S. Kaplan
President and Chief Executive Officer
Federal Reserve Bank of Dallas*



Texas Economy Remains Resilient, but Low Oil Prices Loom as Future Risk

By Keith R. Phillips and Christopher Slijk

ABSTRACT: After weathering tumult in its energy and manufacturing sectors in 2015, a diversified Texas economy is poised for slow growth this year. The biggest risk to the outlook: If oil prices average below \$30 per barrel, overall job losses could result.

Texas employment grew in 2015 despite dramatically lower oil prices and a stronger dollar.

While energy and manufacturing jobs declined sharply, employment in many sectors continued to expand at a healthy pace. Economic diversification since the 1980s limited the oil price fall-out and played an important role in the state's continuing economic growth.

While the Texas unemployment rate rose in the second half of 2015, most indicators suggest a recession was averted. Factoring in declines in the Texas Leading Index and recent modest employment gains, a Federal Reserve Bank of Dallas employment model forecasts continuing, but slightly weaker, job growth in the state in 2016 compared with last year.

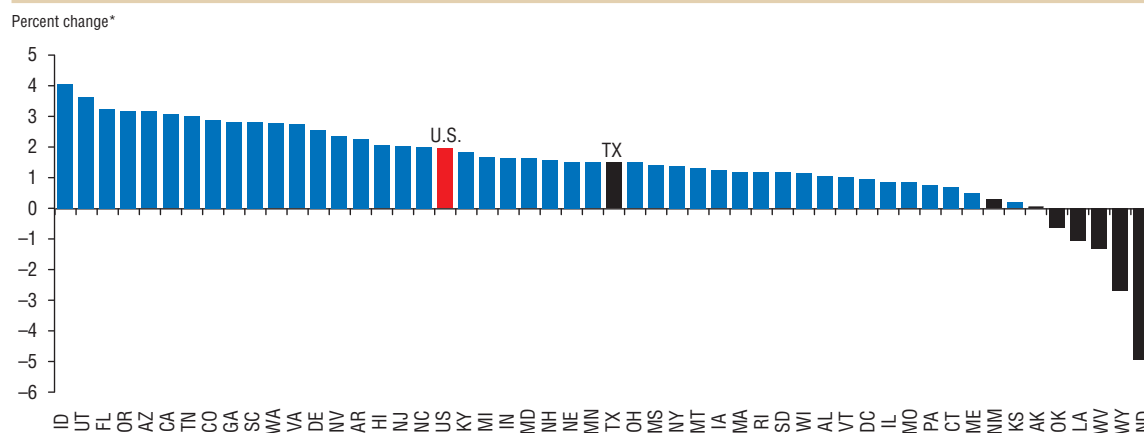
The model projects that employment growth will be between zero and 1.5 percent from December 2015 to

December 2016. However, oil prices averaging less than \$30 per barrel pose the greatest risk to the outlook and could result in overall job losses. Besides further decreasing energy and manufacturing employment, low oil prices could increase problem loans at financial institutions with exposure to the industry.

2015 Slowdown

Texas employment grew 1.5 percent in 2015—the middle of the 1–2 percent range predicted in *Southwest Economy* a year ago.¹ Job growth decelerated from 3.7 percent in 2014 and fell below the national average for the first time since 2003. Yet, compared with other energy states such as North Dakota and Oklahoma, Texas performed well (*Chart 1*). The state's job growth—the fourth fastest in the nation in 2014—ranked 26th last year. All other energy states except New Mexico and Alaska lost jobs. North

Chart 1 Texas Job Growth Falls Below National Average in 2015



*December 2014 over December 2015.

NOTE: Black bars represent major energy-producing states as defined in "The Shale Gas and Tight Oil Boom: U.S. States' Economic Gains and Vulnerabilities," by Stephen P.A. Brown and Mine K. Yücel, CFR Energy Brief, Council on Foreign Relations, October 2013.

SOURCES: Bureau of Labor Statistics; Federal Reserve Bank of Dallas.

Dakota went from the second-fastest growing in 2014 to the sharpest declining in 2015.

Job weakness in Texas was concentrated in the mining and manufacturing sectors, which combined fell 8.1 percent. Hardest hit was oil and gas-related employment, which plummeted 19.4 percent in the face of an almost 66 percent drop in the price of oil and a nearly 75 percent reduction in the drilling rig count since mid-2014 (*Chart 2*). Nearly all of the 63,800 jobs created from 2012 to 2014 were lost.

Manufacturing employment slumped 4.1 percent last year. Sharply reduced energy activity pressured the production of oilfield machinery and other energy-related items, such as fabricated metals. Also, the strengthening dollar—making U.S. goods sold overseas more expensive—weakens the competitiveness of Texas' manufacturing exports.

The Texas trade-weighted value of the dollar—which weights the dollar's real (inflation-adjusted) exchange rate by the countries with which Texas trades—appreciated 11.1 percent last year, and

real exports from Texas declined 7.2 percent.² These factors led to a very weak manufacturing environment. Based on the Dallas Fed's Texas Manufacturing Outlook Survey, the production, new orders and company outlook indexes last year all suggested contraction and painted a far more pessimistic picture than at any time since the Great Recession.

Growth in the service-providing and construction sectors slowed from 3.6 percent in 2014 to 2.6 percent last year. The health care and education sector stood out as one of the few to accelerate from its 2014 pace. Due in large part to increasing health insurance coverage in Texas, the sector added 58,000 jobs—more than any other—in 2015.

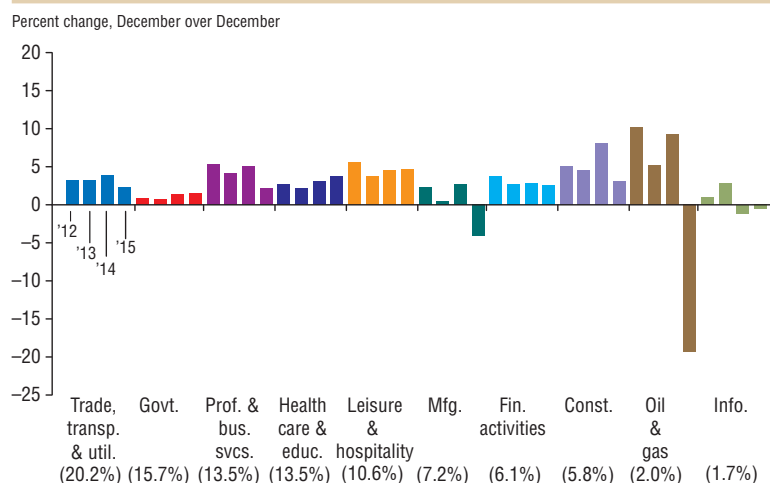
Leisure and hospitality also expanded, growing a substantial 4.7 percent. Declining energy prices benefited consumers, who used some of their energy savings at restaurants, theaters, hotels and amusement parks. This strength in service-related industries is reflected in the Dallas Fed's Texas Service Sector Outlook Survey, which indicated continuing growth last year.

The sharp falloff in the energy and manufacturing sectors caused a regional divergence in economic performance. Job growth was weak in metropolitan areas such as Midland, Odessa, Longview, Corpus Christi and Houston that have a larger share of jobs in mining (*Chart 3*). Conversely, regions more closely linked to the U.S. economy, such as Dallas, or to sectors benefiting from low energy prices, such as leisure and hospitality in San Antonio, continued growing robustly.³

The overall correlation between a metro area's share of jobs in mining and its 2015 job growth is strong at -0.87. The negative value means that job growth weakens as the mining share increases, with a correlation of -1 or 1 representing a perfect one-for-one relationship and zero representing no relationship.

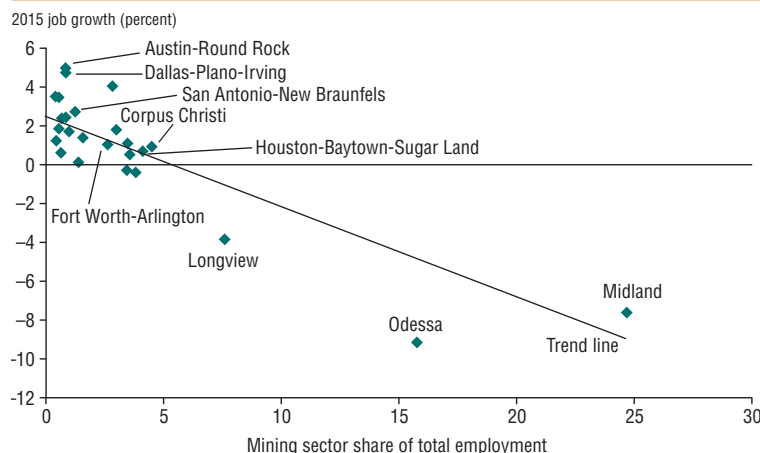
Offsetting the loss of energy extraction jobs has been a flurry of petrochemical plant construction along the Gulf Coast. These projects are primarily designed to take advantage of recently discovered large supplies of natural gas in Texas shale formations. In the Houston area alone, \$50 billion in planned petro-

Chart 2 Employment Weakness Centered in Energy and Manufacturing
(Job growth by year, 2012–15)



NOTE: Figures in parentheses represent share of total employment as of December 2015.
SOURCES: Bureau of Labor Statistics; Federal Reserve Bank of Dallas.

Chart 3 Metros with Higher Concentration of Energy Jobs Fare Worst



NOTES: Job growth data are December 2014–December 2015. Mining share data are as of 2014.
SOURCES: Texas Workforce Commission; Bureau of Labor Statistics; Federal Reserve Bank of Dallas.

chemical plants will bolster construction jobs through 2017, when most of these projects are slated for completion.

Other multibillion-dollar projects along the coast, including several large liquefied natural gas export terminals, will continue supporting construction jobs. The expansion of these downstream industries allowed the larger metropolitan areas along the Texas Coastal Bend to avoid job losses in 2015.

Recession Averted

Texas job growth abruptly slowed in first quarter 2015 before growing modestly for the remainder of the year. The unemployment rate ticked down from 4.5 percent in December 2014 to a postrecession low of 4.4 percent in January 2015, where it held steady through August before climbing to 4.6 percent at year-end.

Flattening labor force growth mitigated the impact on the unemployment rate from large layoffs in the oil and gas sector, particularly during the first half of the year. Anecdotal reports suggest that many oilfield workers who had moved to Texas during the drilling boom returned to their home states after losing their jobs. This is supported by a surge of continuing unemployment claims in first quarter 2015 filed by workers who no longer lived in Texas.

Does the uptick in the unemployment rate toward the end of 2015 signal the start of a recession in Texas? Modest, yet positive, job growth suggests continued expansion. Because Texas has a younger, more rapidly expanding population with relatively strong net immigration from other states and nations, its labor force generally grows faster than the national average. That means the state must have stronger job growth to hold its unemployment rate steady. Thus, if state labor force growth were near its four-year average, monthly payroll job growth would have to be 1.9 percent.

Two measures suggest that the modest job growth and rising unemployment rate reflect weak expansion rather than recession.

An adjusted measure of Texas' real gross domestic product (RGDP) implies slower, but positive, growth last year—2.0

percent, compared with 3.9 percent in 2014.⁴

The Texas Business-Cycle Index, the broadest indicator of the state's business cycle, dipped below its trend pace of previous years during 2015 but continued to grow, indicating weak but positive expansion (*Chart 4*).⁵

Improving job growth and a renewed decline in the unemployment rate in January caused the index to move slightly above its trend growth rate.

Texas More Diversified

Many of the factors that aided job expansion in 2015—petrochemical plant construction and strength in health care and leisure and hospitality—were magnified by economic diversification in Texas.

Illustrative of the transformation, mining as a share of output went from a peak of 15.1 percent in 1981 to a low of 4.2 percent in 1999, before rebounding to 13.5 percent in 2014 in the wake of the shale revolution. As a share of jobs, mining went from a peak of 4.5 percent in 1982 to a low of 1.5 percent in 1999, rebounding to 2.7 percent in 2014.⁶

One method to measure broad industrial diversification is to compare the industry structure in a region to that of the nation. The more a region's industrial structure resembles the nation's, the less specialized it is—and the

more likely its business cycle follows the nation's.

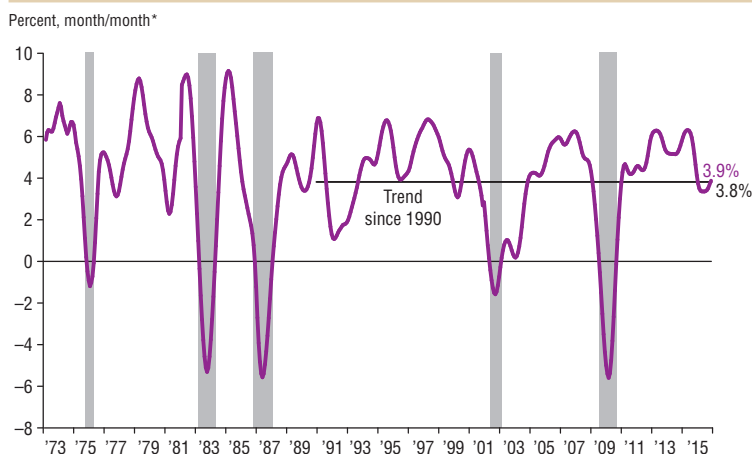
The industrial structure of Texas became more like that of the U.S. from the early 1980s through the shale boom in the mid-2000s, as noted by the gold line in *Chart 5*. Technically, the measure is the square root of the mean squared error of the differences of Texas industry employment shares from those of the nation. By this measure, industry shares are exactly the same as the nation's at a value of zero and become increasingly different as the value approaches 1.

Diversification can also be measured by analyzing the volatility of each industry and how it moves—or its covariance—relative to other industries. Industry structure—as well as the accompanying employment growth—has tended to become less volatile overall in Texas, as the blue line in *Chart 5* shows.

This measure is the same one used by analysts who look at a stock's beta coefficient to see if it adds to or subtracts volatility from a market portfolio. In this case, each industry is treated as a company stock. If an industry has a beta coefficient of 1, growth in the industry in Texas doesn't affect the volatility of job growth. (In other words, a beta of 1 means an industry moves in unison with the overall market.) However, growth in an industry with a beta less than 1 tends to damp volatility, while growth

Chart 4

Texas Business-Cycle Index Shows No Recession in 2015



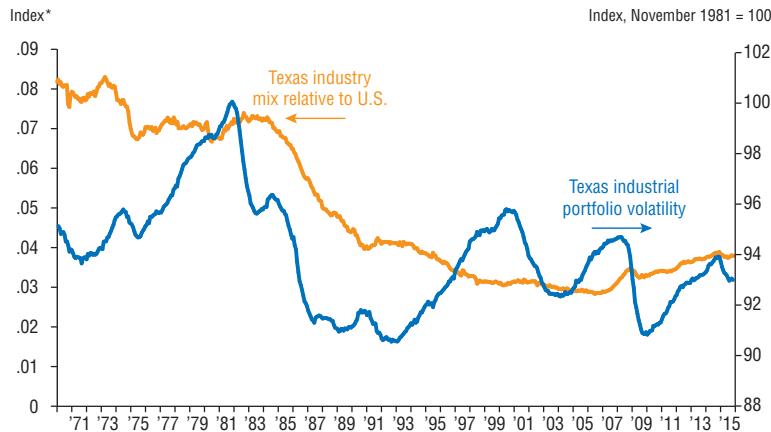
*Seasonally adjusted, annualized rate.

NOTE: Shaded areas represent Texas recessions as determined by contractions in the Texas Business-Cycle Index.

SOURCE: Federal Reserve Bank of Dallas.

Chart 5

Texas Economy More Diversified than in the 1980s

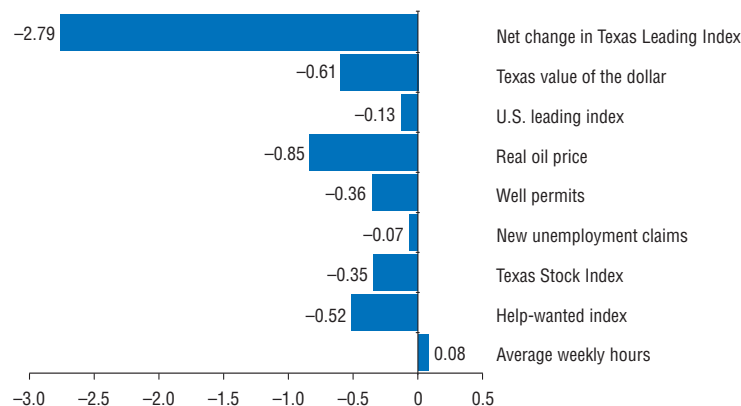


*The index is the square root of the mean squared error of the differences of Texas industry employment shares from those of the nation, with zero indicating similarity and 1 the most dissimilarity.

SOURCES: Bureau of Labor Statistics; authors' calculations.

Chart 6

Texas Leading Index Components Broadly Negative



NOTES: Chart shows the weighted contribution of components to the index change, December 2015–February 2016. Data are seasonally adjusted.

SOURCE: Federal Reserve Bank of Dallas.

in an industry with a beta greater than 1 increases overall volatility.

Growth in industries that have low variance and/or a low or negative covariance with total job growth reduces the overall portfolio variance—and thus the underlying volatility of the economy (Table 1). For example, computer systems design has grown rapidly in Texas since 1990, expanding at an annual pace of 8.8 percent and adding about 148,500 high-paying jobs to the state's economy. This sector is very cyclical, however, and with a beta coefficient of 1.54 (as part of business and other services) has contributed to higher volatility in the Texas economy.

As Table 1 shows, an increasing share of jobs in service industries such as health care, retail, private education, and leisure and hospitality and a shrinking share of jobs in mining and durable manufacturing have reduced the overall volatility of Texas jobs. Thus, the changing industrial structure of Texas has reduced its dependence on the energy sector, made it more similar to the nation and decreased its underlying volatility relative to the early 1980s.

2016 Forecast

Leading economic indicators suggest continued tepid growth in 2016. The components of the Texas Leading Index were weak during the three months ended Feb. 29, and the index declined sharply (Chart 6). Oil prices had the largest negative contribution, falling from an average \$37.23 in December to \$30.33 in February. This decline further stresses drilling companies and economic activity in energy areas of the state. Permits to drill oil and gas wells also dropped.

Table 1

Industry Shares, Betas Affect Texas Employment Volatility

	Mining	Const.	Non-durable mfg.	Durable mfg.	Wholesale	Retail, leisure & hosp.	Transp.	Util.	Info.	FIRE	Bus. & other svcs.	Educ.	Health care	Govt.
1980 (%)	4.1	7.2	10.1	7.9	7.2	19.5	3.6	1.2	1.4	5.7	9.6	0.8	4.8	16.7
1990 (%)	2.3	4.9	5.4	7.9	5.2	21.1	3.5	0.8	2.5	6.5	12.7	1.2	8.3	17.8
2014 (%)	2.7	5.6	2.6	5.1	5.0	21.1	3.7	0.4	1.7	6.1	16.9	1.6	11.6	15.8
Beta	1.71	2.29	0.81	1.55	1.05	0.80	1.17	-0.03	1.24	0.41	1.54	0.71	0.22	0.61

NOTES: Percent figures represent shares of total state employment for each year. Industry beta coefficients, which measure volatility, are calculated over the period 1990–2015. FIRE stands for finance, insurance and real estate.

SOURCE: Bureau of Labor Statistics.

Broad indicators of labor market conditions were mixed, with new unemployment claims rising slightly (a negative contribution) and help-wanted advertising declining. Average weekly hours worked in manufacturing picked up slightly, but further appreciation in the Texas value of the dollar suggests additional weakness in the sector.

The Texas Stock Index, which measures the share price of a wide range of companies with significant operations and employment in Texas, dropped sharply in December but rose slightly in February.

The Dallas Fed forecasting model, which uses the recent momentum in job growth along with changes in the Texas Leading Index, predicts that Texas employment growth will be between zero and 1.5 percent (179,000 jobs).

Big swings in the index have preceded big movements in job growth, as seen in Chart 7. The chart also depicts an 80 percent confidence band for future job growth. While the most likely outcome is a jobs gain, there is some risk of a jobs loss. The standard error of the model indicates about a 24 percent probability that the true forecast is for zero job growth or contraction. Deterioration in the Texas Business Outlook Surveys also suggests slower growth this year.

While many events in the state, country and world could reduce the

accuracy of the Texas forecast, oil prices are a particular risk going forward. The futures market early in the year suggested that oil prices will slowly rise and finish the year at about \$39 per barrel. However, to be 95 percent confident of price would imply a possible range of \$15 to \$96. Clearly, there is much uncertainty. The Dallas Fed employment model reflects the oil price declines through February 2016, when West Texas Intermediate crude hovered around \$30 per barrel. If 2016 prices average below \$30, employment will likely contract.

Oil prices below \$30 would also likely increase loan defaults and bankruptcies in the oil and gas industry,

putting increased strain on Texas banks with exposure to the energy sector. As credit among energy producers began drying up in the face of falling oil prices, delinquencies in oil and gas-related loans picked up in the second half of 2015. However, overall loan quality held up, and data through fourth quarter 2015 show that banks in the Federal Reserve Eleventh District—largely Texas—continued to be more profitable than the U.S. average.

However, the region experienced a slight increase in noncurrent loans—those 90 or more days past due, plus those no longer accruing interest—

(Continued on back page)

Chart 7 Texas Jobs Forecast Points to Zero to 1.5 Percent Growth in 2016

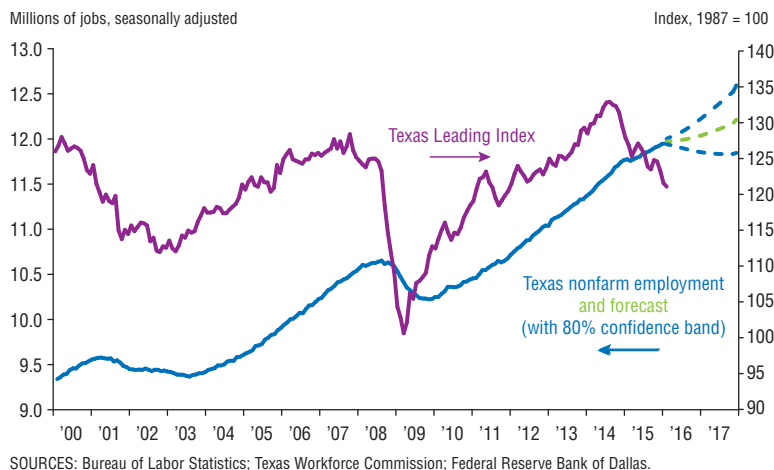
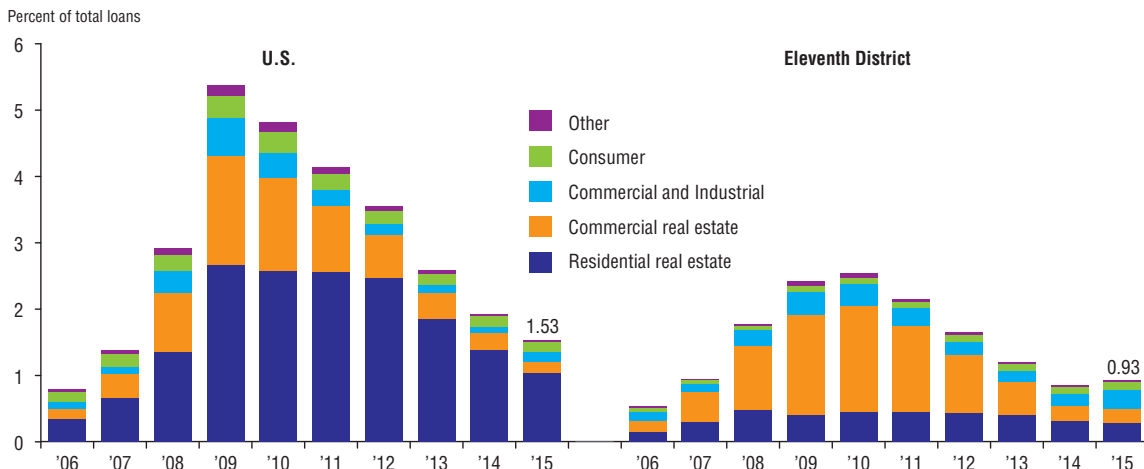


Chart 8 Noncurrent Eleventh District Commercial and Industrial Loans Rising



SOURCE: Quarterly Reports of Conditions and Income, Federal Financial Institutions Examination Council.

A Conversation with James Gaines

Texas Home Prices to Keep Rising Despite Energy Slowdown

James Gaines, chief economist of the Real Estate Center at Texas A&M University, is a leading authority on housing and development issues in Texas. He discusses the supply and demand conditions that have led to rapidly rising house prices, as well as the unique role municipal utility districts (MUDs) play in single-family housing construction in Texas.



Q. Texas never had much house price appreciation because there was so much building. What's happening now?

Texas has not had the extreme home price volatility that other areas of the country experienced mainly because homebuilders could produce a substantial number of homes at comparatively modest cost to keep the market well-supplied.

Even during past booms—such as the 1970s and early 1980s—Texas markets lacked substantial price increases. This was in marked contrast to other states, especially California and Florida. They and many of the other high-growth, high-population states had much more restrictive housing and land-use policies limiting new home production and leading to significantly higher home prices.

The difference today is that Texas homebuilders have been unable to recover from the financial crisis and Great Recession of 2008–09 to supply the state and our major metro areas with sufficient new housing. The phenomenal increase in jobs and population in the major metro areas during the past six years, coupled with historically low mortgage interest rates, created such housing demand that prices have risen at more than twice the long-term historical rate of around 4 percent per year.

Q. Is the price appreciation you speak of due to supply- or demand-side factors?

The answer is no doubt both. Between 2010 and 2015, Texas added more than 1.45 million jobs, about 290,000 per year on average. During the same period, the state gained nearly 2.55 million people, or an average of nearly 510,000 people per year.

On the supply side, the number of new homes built could not keep pace. Single-family permits in 2011 were the lowest since 1992 and only regained their long-term average level by 2014. Although new-home construction in 2014 and 2015 exceeded the long-term average, the amount was nearly 35 percent less than the peak years of 2005–06. The balance of the increased demand for housing was filled by the substantial addition of rental units. Construction permits for multifamily units spiked in 2012 and continued to increase through 2015.

Q. To better understand supply-side constraints, what's the process of developing a new community of single-family homes?

The business model for developing residential subdivisions in Texas typically involves a land developer who acquires a tract of raw land and transforms it into residential lots. The land development process involves acquiring land (some-

times assembling multiple parcels), platting and permitting a subdivision, engineering the land and building roads, utility lines and other necessary improvements before marketing the finished lots to homebuilders or owners. This basic process covers anything from a few dozen acres of land to master-planned communities comprising thousands of acres.

The next step is building and marketing individual housing units—the role of homebuilders. In some cases, the role of land developer and homebuilder might involve the same entity, but until recently, quite often it did not.

Regulators play an integral role—from the state to the county and municipal layers of government—applying standards for zoning, minimum lot size, roads and utilities, and building, fire, plumbing and electrical codes.

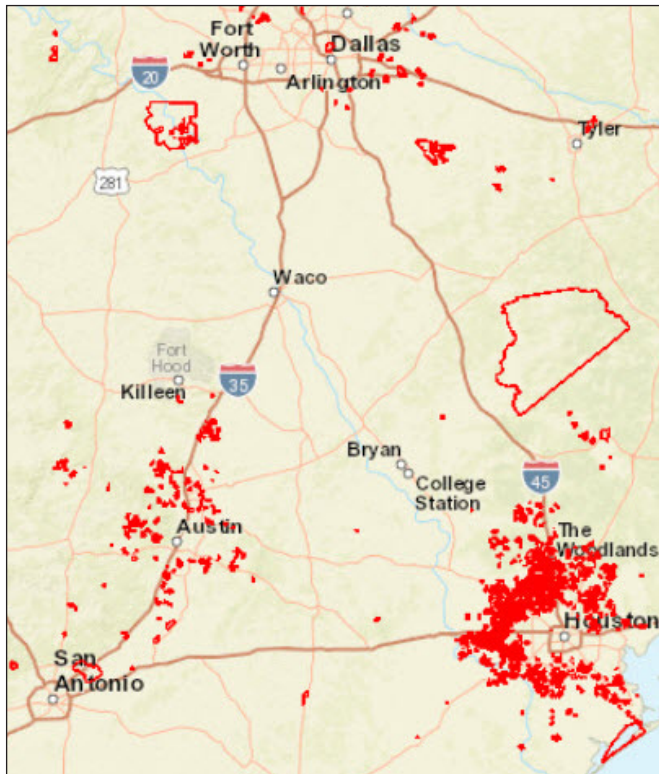
During periods of rapid population growth that fuel the need for fast development of housing, counties and cities are often unable to keep pace to provide such services as roads and water/sewer capacity for new subdivisions. Sometimes a local government may try to control growth by limiting new subdivision permits, charging local impact fees for road and water/sewer services or changing density and affordable-housing requirements or other aspects of the development process.

All of these activities limit supply by adding to the time and cost of development, thereby raising the price of new housing. Restricting supply, especially in the face of rising demand, causes all housing to be more expensive.

Q. Developers' ability to establish municipal utility districts (MUDs) was one reason Texas housing supply was so elastic for decades. What are MUDs, how are they created and how do they help expand the supply of new homes?

A key part of the subdivision development process is ensuring adequate water and sewer services for houses being built. If a local municipality is unable to provide utility services or, more often, if the development is located in an unincorporated area, a developer can create a MUD to undertake the task.

Municipal Utility Districts Concentrated in Metro Houston



SOURCE: Texas Commission on Environmental Quality, 2016.

MUDs have been crucial in allowing an adequate housing supply and keeping home prices lower than in other high-growth states. Without MUDs, or some other means of financing local infrastructure to accommodate a rapidly expanding population and escalating housing demand, new-home construction would be severely limited and much more expensive and overall housing costs would escalate. That's what happened in such high-growth areas as California and Florida, where supply was constrained by local infrastructure development and highly restrictive, costly land-use regulations.

In Texas, the Texas Commission on Environmental Quality (TCEQ) oversees the creation of MUDs, which provide water, sewage treatment, drainage, garbage, firefighting and other services to a defined area—all or part of a proposed subdivision or community development. A MUD may issue bonds, levy and collect property taxes, charge for services provided, condemn property, enforce restrictive covenants and make other necessary regulations to accomplish its purposes.

A developer may petition the TCEQ

to create a MUD by paying at least 30 percent of the cost of the subdivision utilities or providing a letter of credit. Typically, the developer funds the initial cost of building the water/sewer facilities and operations—and drainage improvements where necessary—and the MUD issues bonds. The developer is reimbursed from the proceeds. The level of MUD bond indebtedness assumes a projected property tax base as the subdivision is developed. The MUD becomes the

owner and operator of the utility and has an independent board of directors.

Q. Are MUDs still the best way to finance and maintain community infrastructure?

The debate on the best way to finance local, community infrastructure generally involves who pays for future growth—current residents or future residents. Most communities want and solicit growth through economic development efforts and other initiatives.

For existing residents, it may mean higher property tax rates or current user fees to pay infrastructure capital development costs to provide services to future residents. Current residents often want the future residents to pay for the facilities that newcomers will need and use. MUDs allow subdivision developers to front the initial utility capital costs and get reimbursed by taxing the future property owners.

Q. What is the current status of creating a MUD? What has changed from previous housing cycles?

Over the years, the specifics of creating a MUD have remained essentially

the same. TCEQ has established detailed requirements to create, fund and operate a MUD. Following some MUD bond defaults that occurred during the oil bust of the 1980s, probably the biggest change involves more rigorous evaluation and approval processes of the economic feasibility analyses that support the estimates of future property values and tax rates to back any bond issues.

Q. MUDs were particularly prevalent in Houston. Is that still true?

MUDs are located all over Texas but have been used extensively in the Houston metro area. Houston experienced unprecedented population growth in the 1970s through the first half of the 1980s, during the oil boom. None of the local communities had the financial capacity to deal with the pace of growth for housing. Without MUDs or something like them, Houston would probably be another very-high-cost housing market similar to the major markets in California. MUDs were not as plentiful in the Dallas-Fort Worth metroplex because much of the growth occurred in existing small towns and incorporated areas.

Q. Given the oil price decline, what's the outlook for housing construction in Texas?

The outlook for residential construction remains strong despite the effects of lower oil prices on the general economy. The demand momentum built up over the past five years from job creation and rapid population growth will push the housing market through at least the rest of this year. A greater number of young people are forming new households and looking to enter into homeownership as they marry, have children and wish to move beyond renting.

As demand has risen, affordability has become an ever-pressing issue for intraurban as well as suburban housing. Higher land and materials costs, coupled with relatively short labor supply, caused new-home prices to expand rapidly. In order to produce even moderately lower-priced housing, land developers and homebuilders have been forced to move further out into the suburbs and away from incorporated areas.

High School Financial Literacy Mandate Could Boost Texans' Economic Well-Being

By Camden Cornwell and Anthony Murphy

ABSTRACT: National surveys suggest Texans have a relatively low level of financial literacy that can adversely affect decision-making. Since state lawmakers mandated high school financial coursework in 2007, consumer credit measures of young Texas adults have improved.

Financial literacy—the “ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt and pensions”—is strongly correlated with an ability to make wiser choices and realize better outcomes, research has shown.¹ Household finances should strengthen as people improve their financial literacy.

Making financial choices involves a range of factors, including cognitive ability, personality and attitudes toward risk as well as the context in which decisions are made.

Education also plays a role. Mandated high school financial literacy coursework in Texas—a state that ranks low on a variety of financial health indicators—appears to have significantly improved the financial profiles of high school graduates in recent years.

Measuring Texans' Knowledge

The Financial Industry Regulatory Authority, the industry’s private self-regulatory organization, commissioned National Financial Capability Study (NFCS) surveys in 2009 and 2012 to better understand household financial literacy and behavior.² The findings, which include breakdowns by age,

sex, ethnicity, education and income, incorporate responses to five standard financial literacy questions (see the box, “Test Your Financial Literacy”).

Literacy scores based on these five questions ranged from 0 (no correct answers) to 5 (all correct). The 2012 national average was 2.88; Texans scored 2.73. Individual responses show that nationally, most respondents understand interest rates, inflation and mortgages. However, many do not fully grasp portfolio diversification and how bond prices respond to changes in interest rates (Table 1). Compared with the national average, Texans are less likely to comprehend all of these financial concepts except mortgages.

Low Financial Literacy

The average Texas test score ranked 45th among the 50 states and the District of Columbia (Chart 1). Demographic factors and education levels largely account for Texas’ poor performance. Financial literacy scores are tied to age, education, gender and ethnicity, which particularly affect Texas because it is younger and less educated.³

Age is strongly correlated with financial literacy.⁴ Younger households tend to have less financial experience

Table 1 | Texans Score Below National Averages on Financial Literacy Questions

Question	Correct (%)		Incorrect (%)		Don't know or refused (%)	
	U.S.	Texas	U.S.	Texas	U.S.	Texas
1. Interest rates	74.9	73.0	13.0	13.6	12.1	13.4
2. Inflation	61.3	53.7	17.2	20.3	21.5	26.1
3. Bond prices	28.1	26.0	33.3	33.3	38.6	40.7
4. Mortgages	75.0	75.0	9.0	8.2	15.9	16.8
5. Diversification	48.5	45.3	8.7	9.9	42.9	44.8

NOTES: The percentages are weighted to reflect the age, sex, ethnicity, and education composition of the adult population of the U.S. and Texas.

SOURCES: Financial Industry Regulatory Authority, 2012 National Financial Capability Survey; authors’ calculations.

and less wealth to manage, and they are less concerned with the prospect of retirement. As people age, they gain financial experience, which tends to improve financial literacy. Texas is the third-youngest state, with a median age of 43 after excluding children under 18 (consistent with the survey sample). Consequently, its average financial literacy score is lower than the scores of states with older populations.⁵

Educational attainment also is important to financial literacy. At the national level, adults without a high school diploma scored 1.81 correct answers on average, while adults with a high school diploma or equivalent scored 2.47. By comparison, college-educated respondents scored well above the national average, with 3.32 correct answers. Texas ranks relatively poorly in terms of educational attainment and has the highest share of adults 25 years and older with no high school diploma or equivalent (16.7 percent).⁶

Even after accounting for education and age, ethnicity remains correlated with financial literacy. About 34.3 percent of Texans 18 years and older are Hispanic—the second-highest percentage in the U.S.⁷ The average financial literacy score was 2.56 among Hispanics in 2012, which weighs on the Texas average. Hispanic scores reflect that many residents are foreign born or children of immigrants. Language and cultural barriers make it more difficult for individuals to seek financial advice or use more formal financial services.

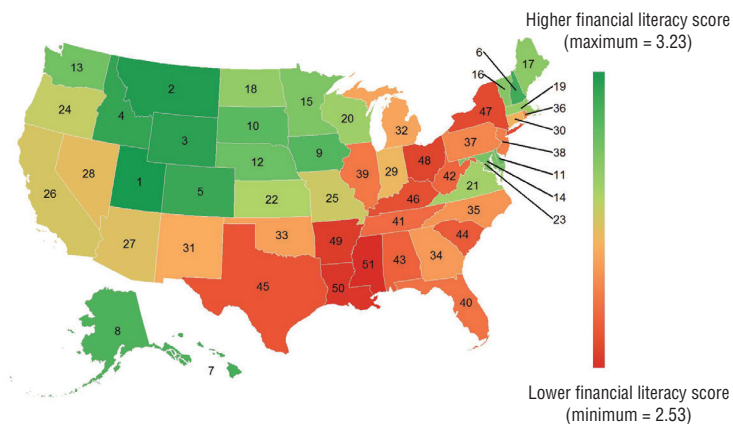
Impact on Financial Behavior

Financial literacy is strongly correlated with financial ability and behavior. One comprehensive measure of financial health is credit scores, which are important because they indicate an individual's borrowing power. State average credit scores, collected from large random samples, are strongly correlated with the NFCS financial literacy scores (*Chart 2*).⁸ Texas' average credit-score ranking was 47th in 2012—two spots lower than its financial literacy ranking.

The NFCS survey included questions on financial behaviors, such as debt management and financial services

Chart 1

Texas Ranks Low in Financial Literacy in 2012



NOTE: Rankings are based on average financial literacy scores weighted by state age, ethnicity, sex and education composition.

SOURCES: Financial Industry Regulatory Authority, 2012 National Financial Capability Survey; authors' calculations.

Test Your Financial Literacy:

Questions from the National Financial Capability Study

1. Suppose you had \$100 in a savings account and the interest rate was 2 percent per year. After five years, how much do you think you would have in the account if you left the money to grow?

- (a) More than \$102 (b) Exactly \$102 (c) Less than \$102

2. Imagine that the interest rate on your savings account was 1 percent per year and inflation was 2 percent per year. After one year, how much would you be able to buy with the money in this account?

- (a) More than today (b) Exactly the same (c) Less than today

3. If interest rates rise, what will typically happen to bond prices?

- (a) They will rise (b) They will fall
(c) They will stay the same (d) There is no relationship

4. A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.

- (a) True (b) False

5. Buying a single company's stock usually provides a safer return than a stock mutual fund.

- (a) True (b) False

ANSWERS: 1) a; 2) c; 3) b; 4) a; 5) b.

SOURCE: Financial Industry Regulatory Authority, 2012 National Financial Capability Survey.

(*Chart 3*). Consistent with lower credit scores and financial literacy, Texas' results again rank toward the bottom among states. Though the differences between the Texas and U.S. averages are small in some cases, raising the state's ranking by 10 places, for example, would

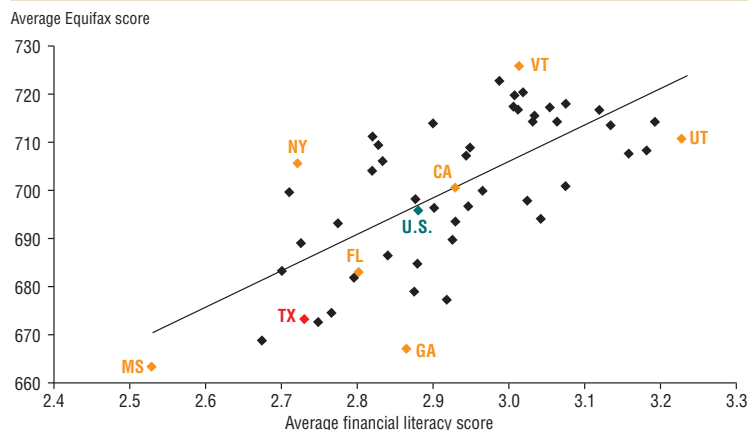
imply reducing adverse outcomes by 1 to 4 percentage points.

Texans rank near the bottom for outstanding medical debt, dependence on high-interest financial services ("non-bank borrowing") and preparation for retirement. Nearly 30 percent of

► More than 60 percent of Texas respondents haven't planned for retirement. Texans also fare poorly when it comes to having a bank account.

Chart
2

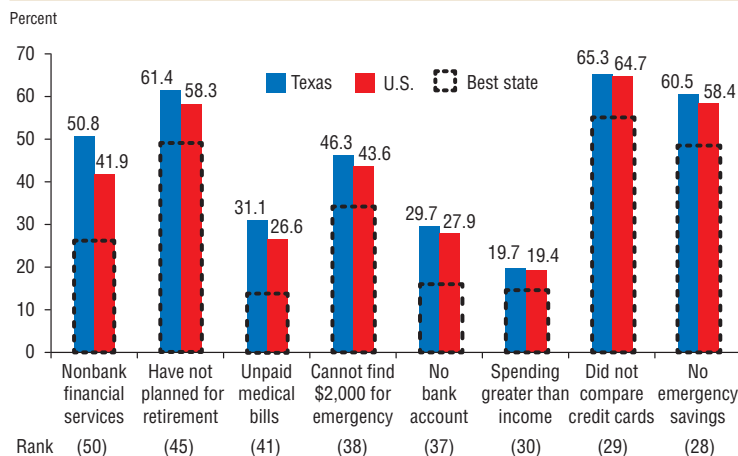
State Average Credit Scores Correlated with Financial Literacy



NOTE: The R^2 measure of correlation is 0.47 (a reading of 1 is perfect correlation).
SOURCES: New York Fed/Equifax Consumer Credit Panel; Financial Industry Regulatory Authority, 2012 National Financial Capability Survey; authors' calculations.

Chart
3

Texans Have an Opportunity to Improve Financial Outcomes



NOTES: The Texas state ranking is in parentheses (51 = worst). The percentages are computed using state weights in the case of Texas and national weights in the case of the U.S. and after dropping "don't know" and "refuse" responses from the sample.

SOURCES: Financial Industry Regulatory Authority, 2012 National Financial Capability Survey; authors' calculations.

Texas respondents indicated having unpaid medical bills, which also reflects Texas' high rate of uninsured residents.⁹ Texans frequently use forms of nonbank borrowing such as payday loans, auto title loans, pawnshops and independent check-cashing services. More than 60 percent of Texas respondents haven't planned for retirement.

Texans also fare poorly when it comes to having a bank account, comparing credit card rates and fees, having an emergency fund and spending within

their means—indicating a substantial level of financial vulnerability.

Financial Literacy Mandate

In 2007, Texas began requiring high school students to take personal financial literacy coursework for graduation.¹⁰

Most of the material was incorporated within an existing mandated economics curriculum. Topics included interest, debt management, buying and renting a home, investment and retirement planning.¹¹

The regulation's implementation provided researchers with a so-called "natural experiment" that helps identify the causal effects of financial literacy.¹² Similar to experiments in the natural sciences in which there are treatment and control groups for comparison, the outcomes in Texas can be contrasted with those in similar states lacking such a literacy requirement.

Many studies of financial literacy have attempted to measure its impact on behavior by simply controlling for a wide variety of factors. However, omitted factors (such as ability) can affect financial literacy and how people behave. Thus, the studies may identify a correlation—but not causation—between greater financial literacy and better outcomes.

The authors of a recent meta-analysis—a review that looked at results from 168 research studies—concluded that attempting to improve financial literacy explains little of the variation in financial behavior.¹³ The authors found that the estimated effect of financial literacy is much smaller in studies that control for personality traits and account for omitted variables.

However, one study found that the effect of the Texas program appeared to be substantial.¹⁴ It looked at credit scores and credit card and auto loan delinquency rates of Texans for the four years after they graduated from high school. The research covered 2000 to 2009; the mandate affected the 2007, 2008 and 2009 graduating classes.

Changes in the credit scores and delinquency rates of young Texans before and after the requirement were compared with the corresponding credit score and delinquency rate data for young adults in New Mexico and other states without a similar state program. The approach allowed the assessment to exclude, for example, the effects of changes in unemployment rates and other relevant factors.

As a result of implementing the mandate, researchers found "notable improvements in credit outcomes for young adults who take personal finance courses in high school."

After the mandate, the credit scores of young Texans rose significantly and

their loan delinquency rates fell. Compared with New Mexico residents, Texans who graduated from high school in 2009 averaged 32 points higher on their credit scores (a 5 percent increase). Their 90-day delinquency rates on credit accounts—auto loans, credit cards, etc.—decreased 6 percentage points, a one-third reduction.

More Work to Do

While greater educational attainment and financial literacy courses at school will contribute to better financial outcomes, the shortfall in adult financial literacy should also be addressed.

One possible approach is to provide consumers with additional just-in-time financial coaching before they make major financial decisions. Unlike broader educational initiatives, well-designed coaching can be tailored to the specific behaviors it intends to help.¹⁵

Such initiatives will aid the financial behavior and outcomes of Texans over the medium term.

Cornwell is a research analyst and Murphy is a policy advisor and senior research economist in the Research Department at the Federal Reserve Bank of Dallas.

Notes

¹ See "The Economics of Financial Literacy: Theory and Evidence," by Annamaria Lusardi and Olivia S. Mitchell, *Journal of Economic Literature*, vol. 52, no. 1, 2014, pp. 5–44, and "Financial Well-Being: The Goal of Financial Education," Consumer Financial Protection Bureau, Jan. 27, 2015.

² See "Financial Capability in the United States: Report of Findings from the 2012 National Financial Capability Study," Financial Industry Regulatory Authority Investor Education Foundation, May 2013. The authors thank the foundation for granting them access to the detailed survey data. The survey is a quota survey, as opposed to a random survey. Survey responses were collected to satisfy an appropriate mix of individuals on the basis of race, age, sex, education and income. This means that, for example, standard statistical tests can't be used to judge the significance of differences in financial literacy scores between states. The quota design needs to be taken into account in any analysis—for example, by including the quota selection variables as explanatory variables in any regressions. In addition, the state-level surveys used a common sample size of about 500

respondents from each state for a total sample of 25,509 individual observations.

³ Individual financial literacy scores across the nation were regressed on sex, age and age squared, ethnicity, highest level of education and state indicators.

⁴ More accurately, the effect of age is nonlinear. Average financial literacy scores increase with age until the early 70s, after which scores begin to fall.

⁵ See the Census Bureau's 2012 American Community Survey (ACS) one-year estimates, and IPUMS-USA, University of Minnesota, www.ipums.org. Utah is the youngest state, followed by Alaska. However, Washington, D.C., was the youngest jurisdiction reviewed.

⁶ See note 5. Low educational attainment in Texas is mainly due to the large population of immigrants from countries with low levels of formal education.

⁷ See note 5.

⁸ Credit scores are computed from a random sample of credit scores from 2012 Equifax reports.

⁹ At the state level, the correlation is strong between the share of the population reporting unpaid medical bills in 2012 and the state population share that is uninsured, based on data from the Census Bureau's 2012 ACS and IPUMS-USA. Also see "Texas Health Coverage Lags as Medicaid Expands in U.S.," by Jason Saving and Sarah Greer, Federal Reserve Bank of Dallas *Southwest Economy*, Fourth Quarter, 2015.

¹⁰ See Section 28.0021 of the Texas Education Code.

¹¹ See the Texas Education Agency's personal financial literacy list of approved materials, http://tea.texas.gov/Curriculum_and_Instructional_Programs/Subject_Areas/Social_Studies/Personal_Financial_Literacy_List_of_Approved_Materials/.

¹² A natural experiment is an observational study in which the assignment of individuals to a program is determined by nature or by other factors outside the control of the investigators, yet the assignment process arguably resembles random assignment. A natural experiment is often possible where there is a divergence in law, policy or practice between states.

¹³ See "Financial Literacy, Financial Education and Downstream Financial Behaviors," by Daniel Fernandes, John G. Lynch Jr. and Richard G. Netemeyer, *Management Science*, vol. 60, no. 8, 2014, pp. 1,861–83.

¹⁴ See "State Mandated Financial Education and the Credit Behavior of Young Adults," by Alexandra Brown, J. Michael Collins, Maximilian Schmeiser and Carly Urban, Finance and Economics Discussion Series no. 2014-68, Federal Reserve Board, 2014. The study looks at changes in high school financial education mandates in Georgia and Idaho as well as Texas.

¹⁵ See note 13.



ENERGY: Crude Oil Export Outlook Mixed as 1975 Ban Ends

Two oil tankers with a combined capacity of 1 million barrels left Corpus Christi and Houston for Europe in January, carrying the first U.S. crude cargoes since a 1975 export ban ended late last year.

The shipments amounted to 2.6 percent of the 38.1 million barrels of crude produced in South Texas' Eagle Ford Shale region in January. Two more deals were announced that month involving an estimated 1.2 million barrels of U.S. condensate and crude bound for Japan and China in early 2016.

In the short term, exports are unlikely to surge because of the global oil glut. Department of Energy (DOE) data show that 2015 world petroleum production exceeded consumption by an unprecedented amount, leaving year-end oil inventories at record highs. Earlier this year, the price of U.S. benchmark West Texas Intermediate crude fell to below \$30 per barrel for the first time since 2003. With the DOE forecasting rising inventories through fourth quarter 2017, prices are expected to remain soft.

Still, the end of the export ban may benefit Texas, where export facilities have been built along the Gulf Coast in recent years. Eagle Ford producers that can reach port cheaply will have an alternative to domestic refineries for their output, while countries seeking to diversify their sources of oil imports may look to the U.S. for geopolitical and strategic reasons.

—Navi Dhaliwal



NATURALIZATION: Eligible Immigrants in Texas Deferring Citizenship

Texas is home to roughly 4.1 million immigrants, including 2.5 million who are in the country legally but not yet citizens. An estimated 40 percent were eligible to naturalize in 2013, according to the Center for Migration Studies.

Nationally, of the 27.9 million legal, noncitizen immigrants, about one-third are eligible for citizenship. States with larger Mexican populations have relatively higher eligibility percentages. In Texas, 623,500 Mexican citizens are eligible, accounting for 63 percent of the state eligible total, followed by citizens of El Salvador, India, the United Kingdom and China.

Citizenship applicants must be legal permanent residents for five years, demonstrate English proficiency and pay a \$680 application fee. The process involves a lengthy background check, interviews and oral exams on U.S. history and civics. However, research suggests the effort is worth it. Naturalized citizens earn higher wages, the right to vote and the ability to sponsor relatives for permanent resident visas.

Those less likely to naturalize tend to have lived in the U.S. for more than 25 years, do not speak English, have less than a high school diploma and earn below-poverty-level incomes. Many find the language requirement too difficult and the application cost too steep.

—Emily Gutierrez



BORDER: Joblessness Falls Despite Weak Employment Growth

Laredo's unemployment rate reached near-record low levels in 2015 even though payroll employment growth in the area was weak.

The jobless rate in Laredo ended the year at 5 percent, equal to the national rate and up slightly from a record low at year-end 2014. However, payroll employment grew just 1.1 percent, compared with a long-run average of 3.3 percent.

Laredo's situation is indicative of metropolitan areas along the Texas-Mexico border, where unemployment rates declined in 2015 to lows last seen before the Great Recession. Border communities generally experience high unemployment rates due to a rapidly growing, young labor force. Recently, however, labor force growth in Laredo—a major inland port that accounts for more than one-third of U.S.-Mexico trade—has stalled. It expanded 0.1 percent in 2015, well below the annual average rate of 2.8 percent since 1990.

Laredo's proximity to the Eagle Ford Shale may explain some of the slowing in the labor force—falling oil prices led to layoffs and a likely exodus of oilfield workers. Additionally, the sluggish pace may be reflective of longer-term demographic and economic trends.

—Christopher Slijk

Remittances to Mexico Fall as Immigration, Incomes Stagnate

By Jesus Cañas and Pia Orrenius

Mexicans living in the U.S. are sending less money home than they did before the 2008–09 recession.

Remittances to Mexico peaked with the U.S. housing boom in 2006, reaching \$30.1 billion. On an inflation-adjusted basis, remittances have since fallen, totaling \$24.9 billion in 2015. The trend reflects declining Mexico–U.S. migration and stagnant incomes.

The Mexican immigrant population grew 28 percent from 2000 to 2007, peaking at 11.7 million; it hasn't grown since because inflows declined while outflows increased.

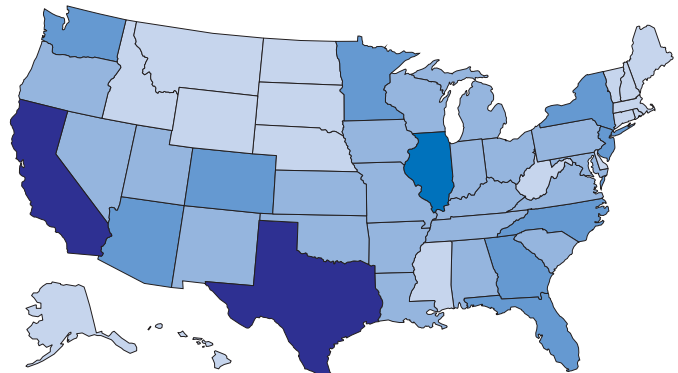
On net, Mexican immigration slowed due to a number of factors: less U.S. economic growth in the postrecession period and more enforcement targeting unauthorized immigrants (including record deportations) amid improved macroeconomic conditions and slower population growth in Mexico. Meanwhile, median household income among Mexican immigrant families fell in the recession and has yet to recover; it declined 9 percent in real (inflation-adjusted) terms between 2000 and 2013.¹

Financial transfers are highly correlated with the size of the immigrant population, recently released data from Banco de México show (*Chart 1*). California was the top remitter in 2014, with immigrants there sending \$5.3 billion to Mexico. Texas came next, \$2.6 billion, followed by Illinois, \$1 billion; Florida, \$800 million, and New York, \$775 million. The ranking closely matches the geographic distribution of the nation's Mexico-born population, which is concentrated in California, 36.6 percent; Texas, 21.7 percent; Illinois, 5.8 percent; Florida, 2.4 percent, and New York, 2.1 percent.

Remittances have received considerable attention recently with some U.S. officials worrying that these transfers out of the country are suppressing domestic spending.

Chart
1

Texas Among Top States for Cash Transfers



Total remittances in 2014 (millions of dollars)

■ More than 2,500 ■ 1,000–2,500 ■ 300–1,000 ■ 100–300 ■ Less than 100

SOURCES: Banco de México; Bureau of Economic Analysis.

But while remittances represent large shares of migrant income, they make up a tiny fraction of overall economic activity in U.S. sending states—no more than 0.2 percent of state gross domestic product (GDP). Meanwhile, remittances are 2.5 percent of Mexico's GDP and an important source of income to poor and capital-deprived Mexican origin communities.

At the national level in 2015, migrants' transfers exceeded Mexico's revenue from oil exports by 6 percent and foreign direct investment by 15 percent. The central-western states attract most of the financial flows, with Michoacán at the top with \$2.2 billion and 10.3 percent of state GDP in 2014. It was followed by Guanajuato, \$2.1 billion, 5.6 percent of state GDP; Jalisco, \$2 billion, 3.3 percent of state GDP; and Estado de México, \$1.5 billion, 1.7 percent of state GDP.

By comparison, the northern Mexico border states—which tend to be better off and send fewer migrants—receive relatively less in remittances.

In addition to income, migrant remittances depend on factors such as exchange rates and origin country

conditions. While macroeconomic conditions are largely stable in Mexico, the peso has lost 20 percent of its value against the dollar in the last year, a factor that should stimulate cash transfers.

U.S. lawmakers' proposals to tax remittances come with benefits and costs. While taxing remittances would increase revenue and decrease transfers, migrants could choose to save the extra money rather than spend it, so domestic consumption would not necessarily increase. Taxing remittances may also force more transfers via third parties and increase the likelihood of additional fees and fraud.

While proposed measures may be intended to serve as a benefit to the local economy and a deterrent to migration, they could have unintended consequences, providing a negligible impact on the U.S. economy while making migrants' families in Mexico worse off and more likely to migrate.

Note

¹ Remittance data are from Banco de México, expressed in 2015 dollars. Population and income data are based on the 2007 and 2014 American Community Survey and 2000 census.

Texas Office, Industrial Markets Mostly Healthy Despite Energy Bust

By Laila Assanie



ABSTRACT: Texas commercial real estate activity is poised for a solid performance in 2016, though energy sector-related weakness will constrain prospects, particularly in Houston where an office space overhang should persist.

Texas commercial real estate activity remains strong despite weakness in Houston, which in 2015 began feeling the repercussions of oil prices that started tumbling in mid-2014.

Net absorption of office space set records in 2015 in most major Texas metros, and continued solid demand kept industrial vacancy rates in the low single digits despite high levels of ongoing construction. Rents rose for both industrial and office space and increased markedly in some markets.¹

Texas' underlying economic expansion has weakened, however. Last year, job growth in Texas downshifted to 1.5 percent from a torrid 3.7 percent in 2014, most notably due to oil prices. Moreover, a strong dollar contributed to a decline in statewide exports and manufacturing output. Consequently, job gains were weak in energy- and manufacturing-dependent metros such as Houston and Fort Worth. Growth remained resilient elsewhere, with Austin and Dallas climbing nearly 5 percent in 2015.

Commercial construction and real estate activity play a noteworthy role in the state's economic expansion, adding to its output and job gains. A healthy and broad-based expansion occurred in Texas office and industrial real estate markets in recent years. The Texas economy declined less than the nation during the Great Recession and grew much faster from 2010 to 2014, fueling commercial property sector growth.

The commercial real estate sector, apart from Houston's office market, should likely continue growing this year. Planned corporate expansions and relocations will fuel expansion in Dallas, and an expanding technology sector will buoy demand in Austin. San Antonio, with a diverse industrial base and a large leisure and hospitality sector that is

benefiting from low gasoline prices, will experience moderate growth.²

Construction Surge Ebbs

Residential construction contract values held up last year, while nonresidential and nonbuilding construction (principally public works-type projects) first climbed and then pulled back at year-end.³ The surge was mainly a result of several large projects breaking ground, most notably Facebook's \$570 million data center in Fort Worth, Methodist Hospital's \$540 million tower in Houston and a \$9 billion liquefied natural gas (LNG) export terminal in Corpus Christi—part of a boom in downstream refinery, petrochemical and LNG plant construction and expansion along the Coastal Bend into Louisiana.⁴

Overall, Texas office markets strengthened during the recovery from the Great Recession. Vacancy rates began ticking downward in some Texas major metros as early as 2010, marking the beginning of a turnaround.⁵ Office demand was remarkably strong across all major metros from 2012 through 2014, thanks to the shale-oil boom that helped propel the state's economic recovery (*Chart 1*).

Inflation-adjusted total construction contract values set a record by mid-2015, eclipsing the previous peak in 2014. Values remained well above their long-term average—recorded over the May 1970–December 2015 period—as of February 2016.⁶

Dallas–Fort Worth placed second and Houston third on the *Forbes* 2015 list of building-boom cities, ahead of Los Angeles and Chicago. Austin and San Antonio also ranked among the top 20 U.S. metros in terms of total construction starts.⁷ Total construction starts (excluding public projects and utility construction) in DFW reached \$17.8 billion in 2015, up 19 percent from 2014, while in

Houston, it totaled \$16.7 billion—just half its 2014 volume.

Houston construction is expected to slow further this year and into 2017, affecting statewide totals.⁸ According to the Beige Book, the Federal Reserve Bank of Dallas' anecdotal survey of economic conditions, funding for new office and multifamily projects has dried up in Houston, and there is not much in the pipeline once projects currently under construction are completed.

Total housing permits (a leading indicator for new-home and apartment construction) in Houston, which made up one-third of the state's total last year, were down 16 percent year over year in February. Moreover, petrochemical plant construction is expected to wind down beginning in 2017.

Houston, We Have a Problem

Plunging oil prices have most affected Houston's office market. Energy firms' leasing and expansion decisions have been put on hold amid cost cutting and downsizing. This is not surprising, given that from 2010 to second quarter 2014, energy firms accounted for 80 percent of Houston's office leasing activity tied to relocation and expansion, compared with 5 percent for DFW and 21 percent for San Antonio.⁹

Employment growth in Houston was weak in 2015 at 0.7 percent due to job reductions among oil producers, their suppliers, service providers and equipment manufacturers. These layoffs have continued in 2016, including the March announcement from Anadarko Petroleum Corp. of a 17 percent workforce reduction.

As a result, the office direct vacancy rate—reflecting space not under a direct lease—increased 2.6 percentage points in 2015 (*Chart 1*). However, when the 7.3 million square feet of available sublease space (as of fourth quarter 2015) is added—a sizeable share of which went on the market in 2015—total availability climbed 3.9 percentage points to 17.6 percent. The total vacancy rate (availability rate) is roughly where it stood in third quarter 2009, but lower than the recent peak in third quarter 2010, in the aftermath of the Great Recession.

Available sublease space increased again in early 2016, to 8.5 million square feet, more than twice the combined size of the Empire State Building and the U.S. Bank Tower in Los Angeles, according to CBRE Research. Houston submarkets such as the West Houston energy corridor, where 58 percent of the office space is occupied by energy companies, and the central business district are among the hardest hit.¹⁰ Surprisingly, net absorption was positive in 2015. However, excluding build-to-suits and single-tenant deliveries, leasing demand fell by nearly 1 million square feet, according to CBRE.¹¹

Business contacts in Houston note that building owners are increasingly making concessions, which include six to 18 months of free rent and allowances for space improvements. There is weakness in rents for sublease space; for example, ChaiOne—a technology startup in Houston—obtained a three-year sublease for \$9 per square foot, one-third of the going direct lease rate of \$26.¹²

Houston was the nation's leader in office space under construction, with nearly one-third (32 percent) of suburban office space being built nationally in 2014, which by year-end 2015 had dropped to 12 percent.¹³ Despite the pullback, Houston remains the frontrunner in office space under construction (of which 52.4 percent is preleased) among the four Texas major markets. With sev-

eral projects expected to be completed in 2016 and further increases in sublease space expected, office vacancies will increase further if oil prices remain below \$40 per barrel and hiring prospects remain bleak.

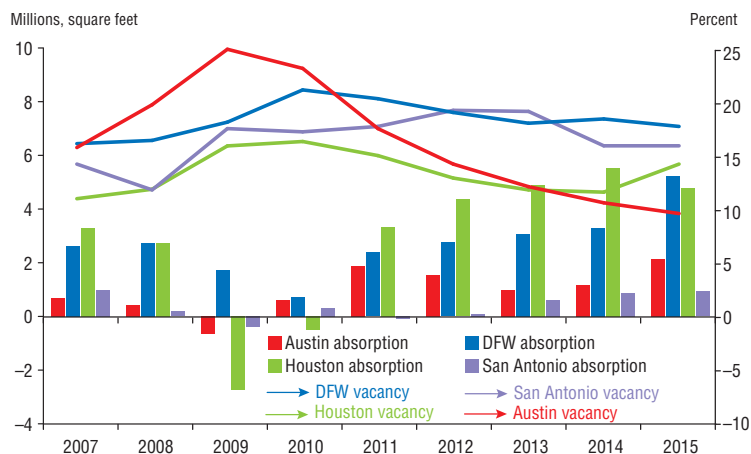
Strong Metro Growth

Net office absorption in Austin reached an all-time high of 2.1 million square feet in 2015; asking rents climbed to a record \$31.81 per square foot, according to CBRE. The vacancy rate slid below 10 percent in fourth quarter 2015—the only major Texas metro with a single-digit office vacancy rate, suggesting a very tight market.

Austin was the first major metro to regain jobs lost in the Great Recession. Thanks to an expanding high-tech sector, Austin's declining office vacancy rate has led other major metros (*Chart 1*). Moreover, with the beginning of several large leases executed in early 2015, strong absorption should continue through the first half of 2016, according to JLL Research.¹⁴

The DFW office market also experienced a banner year in 2015, with nearly 6 percent year-over-year rent growth and record net absorption, thanks to large corporate relocations and expansions such as State Farm and Raytheon. This strength is confirmed by data from JLL Research, which placed Dallas on top of the list in 2015 in terms of total net

Chart 1 Texas Major Metros' Office Markets Diverge



SOURCE: CBRE Research.

► *The Texas commercial real estate market is in the advanced stages of its expansion cycle, and recent data provide reason for some caution, especially in energy-dependent areas such as Houston.*

absorption among the 50 office markets that it tracks. Thus, by third quarter 2015, the DFW vacancy rate fell to 17.7 percent—the lowest since second quarter 2001.

Similar to Austin and Dallas, net absorption in San Antonio—the smallest of the major Texas office markets—was at a postrecession high in 2015 and rents edged up. Year-over-year vacancy was flat due to speculative space in new properties. Still, investor confidence remains strong with sales of office properties reaching \$1.2 billion in 2015, according to JLL Research.

Industrial Vacancies Low

The state's industrial markets were strong in 2015. Net absorption totaled 29 million square feet, of which more than 60 percent was in DFW—a major national trade and distribution center with the state's largest share of industrial space (Chart 2). Strong leasing demand pushed vacancy rates in the low single digits in Austin, El Paso and McAllen, suggesting a tight industrial market statewide.

DFW also led Texas major metros in industrial space square footage under construction at 19.7 million square feet in fourth quarter 2015.

Lower oil prices have affected growth of Texas manufacturing output and exports—both key drivers of industrial demand (Chart 3). Manufacturing activity has been lackluster since early 2015, according to the Dallas Fed's Texas

Manufacturing Outlook Survey. Exports declined 8.7 percent in 2015, largely because of low oil and gas prices, a strong dollar and weak demand, particularly from Texas' major trading partners in Latin America, Canada and China.¹⁵

Caution in 2016

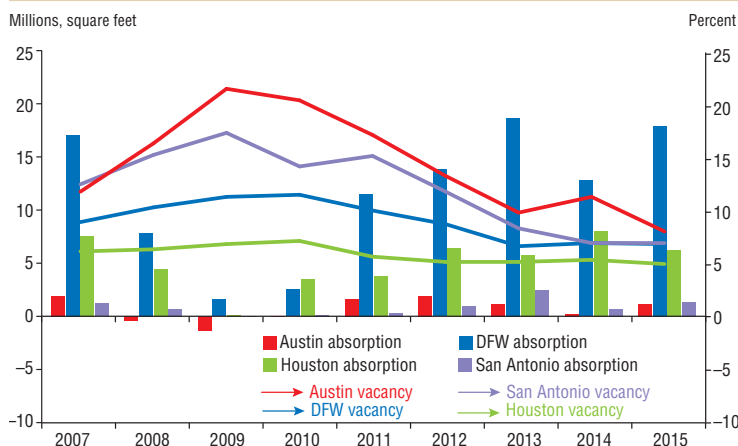
The future of Texas' industrial and office markets depends on the state's broad economic expansion. The Texas commercial real estate market is in the advanced stages of its expansion cycle, and recent data provide reason for some caution, especially in energy-dependent areas such as Houston.

Continued weakness in Texas exports and manufacturing activity is a discouraging sign for the industrial market. Statewide industrial construction is elevated at 30 million square feet; however, with vacancy rates at multiyear lows in most major metros and Texas inland ports doing well, the industrial market appears to be well positioned to absorb the impact from slowing demand.

Texas service sector job gains have slowed (from 3.3 percent in 2014 to 2.6 percent in 2015), including in information, finance and professional and business services sectors that typically drive office demand. The overhang in Houston's office market will intensify in 2016 as downsizing continues, more sublease space becomes available and new buildings are completed and open amid weakening demand.

Chart
2

Texas' Industrial Markets Tighten



SOURCE: CBRE Research.

Moreover, a large share of growth in Texas' office market has been driven by corporate relocations and expansions, which accounted for 30 million square feet of occupied space from 2010 to second quarter 2014.¹⁶ This, in turn, supported strong rent growth (Chart 4).

While the office market in Houston will continue to weaken, DFW office and industrial markets will continue to perform well in 2016, due to a lesser dependence on energy and the many planned corporate relocations and expansions, including Toyota, Liberty Mutual, Kubota Tractor Corp. and McKesson Corp.

CBRE's Americas Investor Intentions Survey 2016 ranked DFW third on its list of preferred investment metros, behind Los Angeles and New York City.¹⁷ Similarly, prospects for Austin are also strong, with its economy generally unaffected by the oil bust. It was the only other Texas metro to make the CBRE list; it ranked No. 12.

Assanie is a business economist in the Research Department of the Federal Reserve Bank of Dallas.

Notes

¹ *Site Selection* magazine awarded Texas its Governor's Cup for top performing state in 2015 (based on the total number of new and expanded corporate facilities)—Texas' fourth consecutive win.

² For more detail on Texas metros' industrial profile, see "At the Heart of Texas: Cities' Industry Clusters Drive Growth," by Laila Assanie, Kristin Davis, Pia Orrenius and Michael Weiss, Federal Reserve Bank of Dallas Special Report, February 2016.

³ Nonresidential construction includes hotels, motels, dormitories, commercial buildings, manufacturing plants, hospitals, schools and colleges, and other public and private buildings. Nonbuilding construction includes highways, bridges, dams, utility systems and power plants.

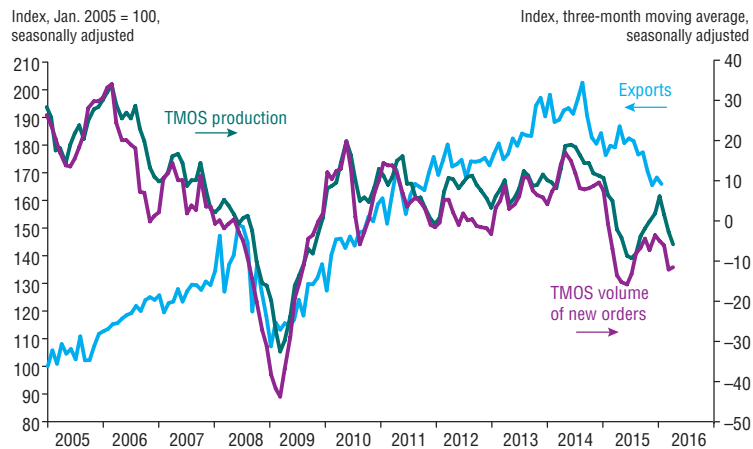
⁴ For more information on petrochemical plant expansion, see "Upstream Bust Meets Downstream Boom in Houston: The East Side Earns Some Respect," by Bill Gilmer, *Forbes* blog post, December 2015; "Diversified Houston Spared Recession ... So Far," by Jesse Thompson, *Southwest Economy*, Third Quarter, 2015.

⁵ Texas major metros are Austin, Dallas–Fort Worth, Houston and San Antonio.

⁶ Real contract values are the inflation-adjusted dollar value of new construction, additions and major alteration projects, but not maintenance. The consumer price index is used to convert nominal values to real. Data are smoothed using a five-month moving average.

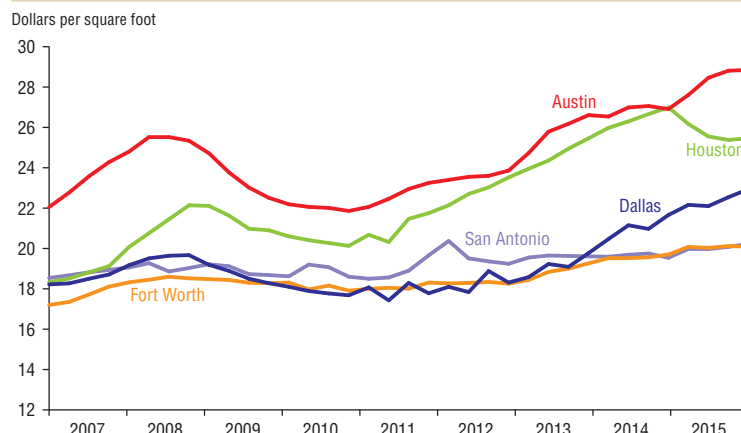
⁷ *Forbes* 2015 list of Building Boom Towns is available

Chart 3 Texas Exports and Manufacturing Output Plunge Following Healthy Growth



SOURCES: Federal Reserve Bank of Dallas Texas Manufacturing Outlook Survey (TMOS); Census Bureau; WISERTrade; seasonal and other adjustments by Federal Reserve Bank of Dallas.

Chart 4 Houston Office Rents Slide; Other Metros Grow Strongly



SOURCE: CBRE Econometric Advisors.

at www.forbes.com/sites/erincarlyle/2016/02/10/building-boom-towns-the-metro-areas-with-the-most-new-construction/#b3cc3595a5e0. The list contains the nation's 20 metropolitan statistical areas where the most money was spent on new construction in 2015.

⁸ Over the past two years, 58 percent of Texas major metros' office construction delivered was in Houston.

⁹ "Texas Special Report: Impact of Corporate Expansions and Relocations on Major Texas Office Markets," by Sara Rutledge and Lauren Paris, CBRE Research, September 2014.

¹⁰ "Houston Commercial Real Estate: Some Reasons for Optimism Despite Lower Oil Prices," *Viewpoint Houston*, CBRE Research, March 2015.

¹¹ JLL Research data confirms this weakness. See JLL Research, *Office Insight*, Houston, Fourth Quarter, 2015.

¹² "Behind the Deal: How a Tech Startup Got a Massive

Discount on the Sublease Market," *Houston Business Journal*, March 10, 2016.

¹³ See CBRE Research, *U.S. Office MarketView*, Fourth Quarter, 2015.

¹⁴ See JLL Research, *Office Insight*, Austin, Fourth Quarter, 2015.

¹⁵ See "Texas Ports Stay Busy as Trade Values Fall Along Gulf, Rise Inland," by Jesse Thompson, *Southwest Economy*, Fourth Quarter, 2015.

¹⁶ See note 9.

¹⁷ See CBRE Research, Americas Investor Intentions Survey 2016.

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Texas Economy Remains Resilient, but Low Oil Prices Loom as Future Risk

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suggesting some strain on banks going forward (Chart 8). More specifically, commercial and industrial loans that were noncurrent rose from around 21 percent of total noncurrent loans to 32 percent. Despite this uptick, the share of loans that are noncurrent in the region is only slightly above half the national average.

This is due to a much healthier residential lending situation in Texas, where housing inventories were tight at the end of 2015 and the state led the nation with the fewest mortgages under water (house values below the amount owed). Strength in the housing market provides a buffer for banks should oil and gas defaults continue climbing in 2016.

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Notes

¹ See "Texas Facing Economic Headwinds in 2015," by Keith R. Phillips and Christopher Slijk, Federal Reserve Bank of Dallas *Southwest Economy*, First Quarter, 2015.

² See "New Tool Gauges Impact of Exchange Rates on States," by Keith R. Phillips, Steve Brzezinski and Barbara Davalos, Federal Reserve Bank of Dallas *Southwest Economy*, Fourth Quarter, 2010.

³ For more detail on metro industrial profiles, see "At the Heart of Texas: Cities' Industry Clusters Drive Growth," by Laila Assanie, Kristin E. Davis, Pia M. Orrenius and Michael Weiss, Federal Reserve Bank of Dallas Special Report, February 2016.

⁴ Our version of state real GDP uses an alternative measure of output for oil and gas extraction and support services. For more information, see "A Closer Look at Potential Distortions in State Real Gross Domestic Product: The Case of the Texas Energy Sector," by Keith R. Phillips, Raul Hernandez and Benjamin Scheiner, *Journal of Economic and Social Measurement*, vol. 39, no. 1–2, 2014, pp. 105–19.

⁵ See "A New Monthly Index of the Texas Business Cycle," by Keith R. Phillips, *Journal of Economic and Social Measurement*, vol. 30, no. 4, 2005, pp. 317–33. Specifically, the index measures underlying cyclical changes in the Texas economy based on smoothed movements in state real GDP, job growth and unemployment.

⁶ As of third quarter 2015, the mining share of GDP had fallen to 8.8 percent and the share of employment had declined to 2.2 percent.

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