



# Texas Service Sector Outlook Survey

## Completing the Regional Economic Picture

The service sector drives the Texas economy, accounting for 59 percent of private-sector output and employing close to 7 million workers. Despite the service sector's prominence, there are no timely state-level gauges of its activity. To fill this regional data gap, the Federal Reserve Bank of Dallas began assembling the Texas Service Sector Outlook Survey (TSSOS) in 2007. After a four-year collection period, the data have been seasonally adjusted, with public release June 1.<sup>1</sup>

About 230 firms participate in the survey monthly. Executives are asked about changes to business indicators such as revenue, employment, prices and general business activity. Responses are aggregated into balance indexes, similar to the Dallas Fed's popular Texas Manufacturing Outlook Survey (TMOS), where positive values indicate growth or improvement while negative ones show contraction or worsening conditions.<sup>2</sup> TSSOS has a breakout for the retail and wholesale sectors, called the Texas Retail Outlook Survey (TROS).<sup>3</sup>

The recent recession and ongoing economic recovery provide good variation on which to test how well key TSSOS indexes—revenue, employment and general business activity—reflect changing economic conditions. The negative readings of the TSSOS indexes are in line with declining economic

activity in Texas in late 2008 and 2009 (*Chart 1*). The general business activity index was the first to enter negative territory, most likely reflecting respondents' perception that national business conditions were worsening before those in Texas. The key TSSOS indexes turned positive in late 2009, coinciding with the economic recovery taking hold.

Business tendency surveys such as TSSOS and TMOS are particularly valuable because they're timely. Like the influential national PMI index (formerly known as the Purchasing Managers Index), these Texas measures come out before other data, such as employment, and provide crucial early clues about the direction of economic activity.<sup>4</sup> The most important gauge of their value is whether the indexes are correlated with the economic activity they are intended to measure. To formally test the explanatory power of TSSOS and TROS indexes, we ran statistical regressions on state service sector employment, retail employment and retail sales.

The results suggest the survey indexes are a good fit for employment and other regional data—that is, statistically speaking, they help explain what's taking place. Explanatory power is captured in the statistical measure R-squared, which calculates how much of the variation in the dependent variable (for ex-

ample, employment) is accounted for by variation in the included variables (survey indexes). The first row in Table 1 shows the result of including two lagged values of the dependent variable—the predictive power of past performance—absent the survey variables. When survey variables are added to the model, the R-squared rises in all cases, signifying that the survey index provides additional explanatory power for the dependent variable.<sup>5</sup>

—Jesus Cañas and Emily Kerr

### Notes

<sup>1</sup> Information regarding the Texas business outlook surveys can be found at [www.dallasfed.org/research/surveys](http://www.dallasfed.org/research/surveys).

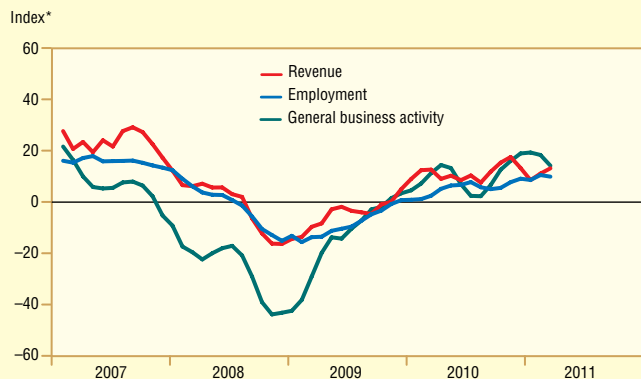
<sup>2</sup> Each index is calculated by subtracting the percentage of respondents reporting a decrease from the percentage reporting an increase.

<sup>3</sup> Retailers and wholesalers make up 12 percent of Texas output and account for 1.6 million jobs.

<sup>4</sup> See "Texas Manufacturing Survey Offers Advance Look at State and National Economies," by Franklin D. Berger, Federal Reserve Bank of Dallas *Southwest Economy*, Third Quarter, 2010.

<sup>5</sup> An R-squared reading of zero means no explanatory power, while a 1 indicates complete explanatory power. A second-order, autoregressive distributed lag model was estimated. Because no autocorrelations were found, the model was estimated with ordinary least squares. We report adjusted R-squared, which corrects for the fact that R-squared will always increase as independent variables are added.

**Chart 1**  
Texas Service Sector Outlook Survey Reflects Recent Recession, Ongoing Recovery



\*Three-month, centered moving average.  
SOURCE: Federal Reserve Bank of Dallas.

**Table 1**  
TSSOS Indexes Help Explain Regional Economy  
(Quality of fit, adjusted R-squared)\*

	Private service employment	Retail sales	Retail employment
Lagged dependent variables only	0.39	0.65	0.42
with TSSOS employment	0.54**	–	–
with TSSOS revenue	0.53**	–	–
with TSSOS business activity	0.54**	–	–
with TROS employment	–	0.68**	0.61**
with TROS revenue/net sales	–	0.69**	0.48**
with TROS business activity	–	0.66	0.53**

\* An R-squared reading of zero means no explanatory power, while a 1 indicates complete explanatory power.

\*\* Indicates the survey variable is statistically significant with 95 percent confidence.

SOURCES: Bureau of Labor Statistics; Federal Reserve Bank of Dallas; authors' calculations. Seasonal and other adjustments by the Federal Reserve Bank of Dallas.