

Texas Economic Growth and Volatility

Ali Anari
Research Economist

Texas Economic Growth and Volatility

M. Ali Anari
Research Economist



Texas A&M University

January 2008

© 2008, Real Estate Center. All rights reserved.

Texas Economic Growth and Volatility

Economic growth, whether measured in goods and services, jobs or income, generates demand for real estate properties, resulting in increased sales and rentals. However, wide or rapid swings in growth rates have an adverse impact on all economic activities, particularly on real estate sales and rental activities.

Real estate properties are the least liquid assets. Residential units, offices, commercial and industrial real estate properties are leased or purchased to be used over a long period. While it may take only a few days to sell stocks and other financial assets, it can take months or even years from the time a real property is put on the market for a sale to be completed.

The long-term nature of many real estate transactions, together with liquidity limitations inherent in real properties, make the real estate sector more susceptible to the adverse impacts of economic fluctuations. This is especially true because central banks in all industrialized countries use interest rates to fine tune the economy and because the real estate sector is the most sensitive with respect to interest rate fluctuations.

An ideal economy is characterized by high growth rates combined with low growth rate volatility. On a macro level, it is the job of the government, the Federal Reserve and macroeconomists to orchestrate such economic conditions. On a micro level, real estate industry market participants can do little to attain this goal. However, market participants can use information on regional economic growth and volatility to plan short- and long-term marketing strategies, and minimize adverse effects of economic volatility on their business operations. Participants can even take advantage of economic volatility as a source of profit opportunity.

The Real Estate Center at Texas A&M University has an ongoing research program on the growth rate and volatility of the Texas economy as a whole and within the state's metropolitan statistical areas. The program compiles various economic indicators and analyzes the relationships between changes in these indicators and real estate transactions such as home sales, home construction and rental activities. This article briefly reports the findings of the research program.

Growth and Volatility Defined

Growth rate is percentage change over time. Economists look at mean, maximum and minimum growth rates and other parameters for comparing growth rates. Mean or average growth rate over a period is the sum of growth rates divided by the number of periods.

There are several measures of growth rate volatility. The simplest measure is the coefficient of variation (COV), which is the standard deviation of a variable divided by mean of the variable. Standard deviation is the square root of variance showing the degree of dispersion of growth rates around the average value or mean growth rate. The variance of a variable is calculated by: (1) computing the average or mean of the vari-

able, (2) deducting the mean to compute deviations from the mean, (3) squaring the deviations and (4) taking the mean of squared deviations.

Economic growth rate can be measured in terms of output, employment or income. This study used two measures of economic growth: employment growth rates and real per capita income (per capita income adjusted for inflation).

Employment Growth and Volatility

Data used were monthly employment data from the Texas Workforce Commission from January 1990 to February 2007. Using monthly employment data for Texas and its metro areas, the annual employment rate for a month is computed as percentage change from the same month one year ago (from January 2006 to January 2007, for example).

This computation method overcomes the seasonality problem in monthly and quarterly data. For instance, the effects of holiday hiring on the employment growth rate is adjusted by dividing the December 2006 employment level by the December 2005 employment level to arrive at the annual employment growth rate from December 2005 to December 2006.

Mean Employment Growth Rates

Mean annual employment growth rates in the state's metro areas were as high as 4.4 percent and as low as 0.8 percent (Table 1, first column). McAllen-Edinburg-Mission ranks first in mean growth rate of employment (4.4 percent) followed by Laredo (4.1 percent), Austin-Round Rock (4.0 percent) and Brownsville-Harlingen (2.9 percent).

Beaumont-Port Arthur had the lowest average employment growth rate (0.8 percent), followed by Wichita Falls (1.0 percent), Sherman-Denison (1.1 percent) and San Angelo (1.2 percent).

Maximum and Minimum Employment Growth Rates

Annual employment growth rates for Texas metro areas varied between a maximum of 10.1 percent and a minimum of 8.6 percent (Table 1, second and third columns). Laredo, with an employment growth rate of 10.1 percent in August 1994, ranked first in maximum employment growth rate followed by Beaumont-Port Arthur (9.7 percent in October 2006), Odessa (9.0 percent in July 1998) and Victoria (8.9 percent in May 1991).

Midland recorded an 8.6 percent drop in employment in June 1999 followed by Laredo (-6.9 percent in August 1995) and Sherman-Denison (-5.8 percent in December 2001).

Employment Growth Rate Volatility

Employment growth rate volatility varied between 2.9 percent and 0.4 percent (Table 1, fourth column). Beaumont ranked first in employment growth volatility (2.9 percent),

followed by Sherman-Denison (2.4 percent), Wichita Falls (1.9 percent), Midland (1.6 percent), Odessa (1.6 percent) and San Angelo (1.5 percent). Beaumont is a large producer of oil, other minerals and petrochemical products, so the metro area's employment reacts to oil price fluctuations.

Volatility of employment in Sherman-Denison, Wichita Falls, Midland, Odessa, and San Angelo is mainly attributable to the small size of the local economies. In larger economies, employment drops in some industries may be offset by increases in others. Employment volatility in the "petroplexes" of Odessa and Midland was mainly because of oil price fluctuations.

Per Capita Income Growth and Volatility

Per capita income data used are annual data from the U.S. Bureau of Economic Analysis from 1969 to 2004. Per capita income data in real terms are computed by adjusting actual per capita income data for inflation. Growth rates of real per capita income are percentage change over a year.

Mean Real Per Capita Income Growth Rates

Mean per capita income growth rates among Texas metro areas varied between 2.7 and 1.6 percent (Table 2, first column). Austin-Round Rock ranked first in mean growth rate of per capita personal income (2.7 percent) followed by Victoria (2.5 percent), Houston-Sugar Land-Baytown (2.5 percent) and Longview (2.4 percent). Odessa posted the smallest average per capita income growth rate (1.6 percent), followed by El Paso (1.8 percent), and Beaumont-Port Arthur, Killeen-Temple-Fort Hood, Sherman-Denison, Waco and Wichita Falls (2.0 percent).

Maximum and Minimum Income Growth Rates

Amarillo, with a per capita income growth rate of 14.6 percent in 1970, had the highest income growth, followed by Odessa (13.7 percent in 1981), Lubbock (13.6 percent in 1973) and Midland (13.4 percent 2000) (Table 2, second and third columns). Midland experienced a sharp drop (15.5 percent) in

per capita personal income in 1983 followed by Odessa (-14.7 percent) in the same year. These sharp rises and drops in per capita personal income of Odessa and Midland can be attributed to oil price fluctuations.

Income Growth Rate Volatility

Odessa ranked first in income volatility (3.7 percent) followed by Midland (2.7 percent), Amarillo and Sherman-Denison (1.8 percent) (Table 2, fourth column). San Antonio recorded the least income volatility (0.9 percent) followed by Longview and Waco (1.1 percent).

A comparison of employment growth rates and volatilities with growth rates and volatilities of real per capita income shows less volatility in income growth than in employment growth among the Texas metropolitan areas. When people lose or quit their jobs, they have other sources of income such as unemployment benefits and incomes from savings and investments.

Fluctuations in per capita personal income in several Texas metro areas, notably the petroplexes of Odessa and Midland, have been mainly attributable to crude oil price fluctuations in international markets. Although the state's oil extraction industry has been shrinking over the past three decades, international oil price fluctuations still have significant impact on smaller Texas metro areas.

Several research studies carried out at the Real Estate Center on the relationships between the state's regional economic growth rates and indicators for the state's real estate industry revealed that home sales, building permits and rental activities in Texas regions are more related to growth rates and volatility of regional real per capita personal income than to regional employment growth rates and volatilities.

These findings are welcome news given that the state's regional per capita income indicators are much more stable than employment indicators. For long-run business planning, real estate professionals may need to look more at changes in regional per capita income and less at short-run employment fluctuations.

Table 1. Economic Indicators for Texas Employment Growth and Volatility

Region	Mean	Maximum	Minimum	Volatility
United States	1.4	3.5	-1.5	1.0
Texas	2.2	4.8	-1.4	0.7
Abilene	1.3	5.4	-2.1	1.3
Amarillo	1.8	8.5	-1.4	0.9
Austin–Round Rock	4.0	8.0	-3.5	0.7
Beaumont–Port Arthur	0.8	9.7	-3.0	2.9
Brownsville–Harlingen	2.9	6.4	-0.6	0.7
College Station–Bryan	2.6	6.2	-0.8	0.6
Corpus Christi	1.3	5.2	-1.2	1.0
Dallas–Plano–Irving	2.4	6.0	-3.7	1.1
El Paso	1.5	4.7	-2.3	0.9
Fort Worth–Arlington	2.2	5.6	-1.9	0.9
Houston–Sugar Land–Baytown	2.1	5.5	-1.0	0.8
Killeen–Temple–Fort Hood	2.7	7.5	-1.9	0.7
Laredo	4.1	10.1	-6.9	0.7
Longview	2.0	6.2	-2.6	0.7
Lubbock	1.6	4.5	-2.6	0.9
Midland	2.1	8.4	-8.6	1.6
McAllen–Edinburg–Mission	4.4	8.3	-0.7	0.4
Odessa	2.0	9.0	-7.3	1.6
San Angelo	1.2	4.9	-3.1	1.5
San Antonio	2.6	5.6	-1.1	0.6
Sherman–Denison	1.1	6.2	-5.8	2.4
Tyler	2.4	6.3	-1.1	0.6
Victoria	1.6	8.9	-5.0	1.5
Waco	1.4	5.2	-1.3	1.1
Wichita Falls	1.0	5.1	-3.7	1.9

Sources: Texas Workforce Commission and Real Estate Center at Texas A&M University

Table 2. Economic Indicators for Texas Real Per Capita Income Growth and Volatility

Region	Mean	Maximum	Minimum	Volatility
United States	2.1	6.3	-1.5	0.9
Texas	2.3	6.1	-2.8	1.1
Abilene	2.3	9.5	-6.3	1.6
Amarillo	2.1	14.6	-3.3	1.8
Austin–Round Rock	2.7	12.1	-4.8	1.3
Beaumont–Port Arthur	2.0	9.9	-4.3	1.5
Brownsville–Harlingen	2.1	9.0	-3.8	1.2
College Station–Bryan	2.2	10.3	-5.8	1.4
Corpus Christi	2.2	7.7	-5.3	1.3
Dallas–Fort Worth–Arlington	2.2	7.4	-2.4	1.3
El Paso	1.8	9.9	-6.6	1.5
Houston–Sugar Land–Baytown	2.5	7.0	-6.1	1.3
Killeen–Temple–Fort Hood	2.0	11.4	-4.1	1.6
Laredo	2.3	8.5	-9.8	1.5
Longview	2.4	8.8	-3.1	1.1
Lubbock	2.3	13.6	-4.4	1.7
McAllen–Edinburg–Mission	2.2	7.1	-2.4	1.1
Midland	2.2	13.4	-15.5	2.7
Odessa	1.6	13.7	-14.7	3.7
San Angelo	2.2	9.1	-1.7	1.2
San Antonio	2.3	7.9	-2.8	0.9
Sherman–Denison	2.0	12.5	-4.2	1.8
Tyler	2.3	7.6	-2.8	1.2
Victoria	2.5	8.3	-5.6	1.4
Waco	2.0	5.7	-3.3	1.1
Wichita Falls	2.0	7.6	-3.3	1.4

Sources: Bureau of Economic Analysis and Real Estate Center at Texas A&M University



MAYS BUSINESS SCHOOL

Texas A&M University
2115 TAMU
College Station, TX 77843-2115

<http://recenter.tamu.edu>
979-845-2031

DIRECTOR

GARY W. MALER

ADVISORY COMMITTEE

DAVID E. DALZELL, CHAIRMAN Abilene	D. MARC McDOUGAL, VICE CHAIRMAN Lubbock
JAMES M. BOYD Houston	BARBARA A. RUSSELL Denton
CATARINA G. CRON Houston	DOUGLAS A. SCHWARTZ El Paso
TOM H. GANN Lufkin	RONALD C. WAKEFIELD San Antonio
JACQUELYN K. HAWKINS Austin	JOHN D. ECKSTRUM, EX-OFFICIO Conroe