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MEASURING UP SUPPLY, DEMAND AND HOME PRICE APPRECIATION

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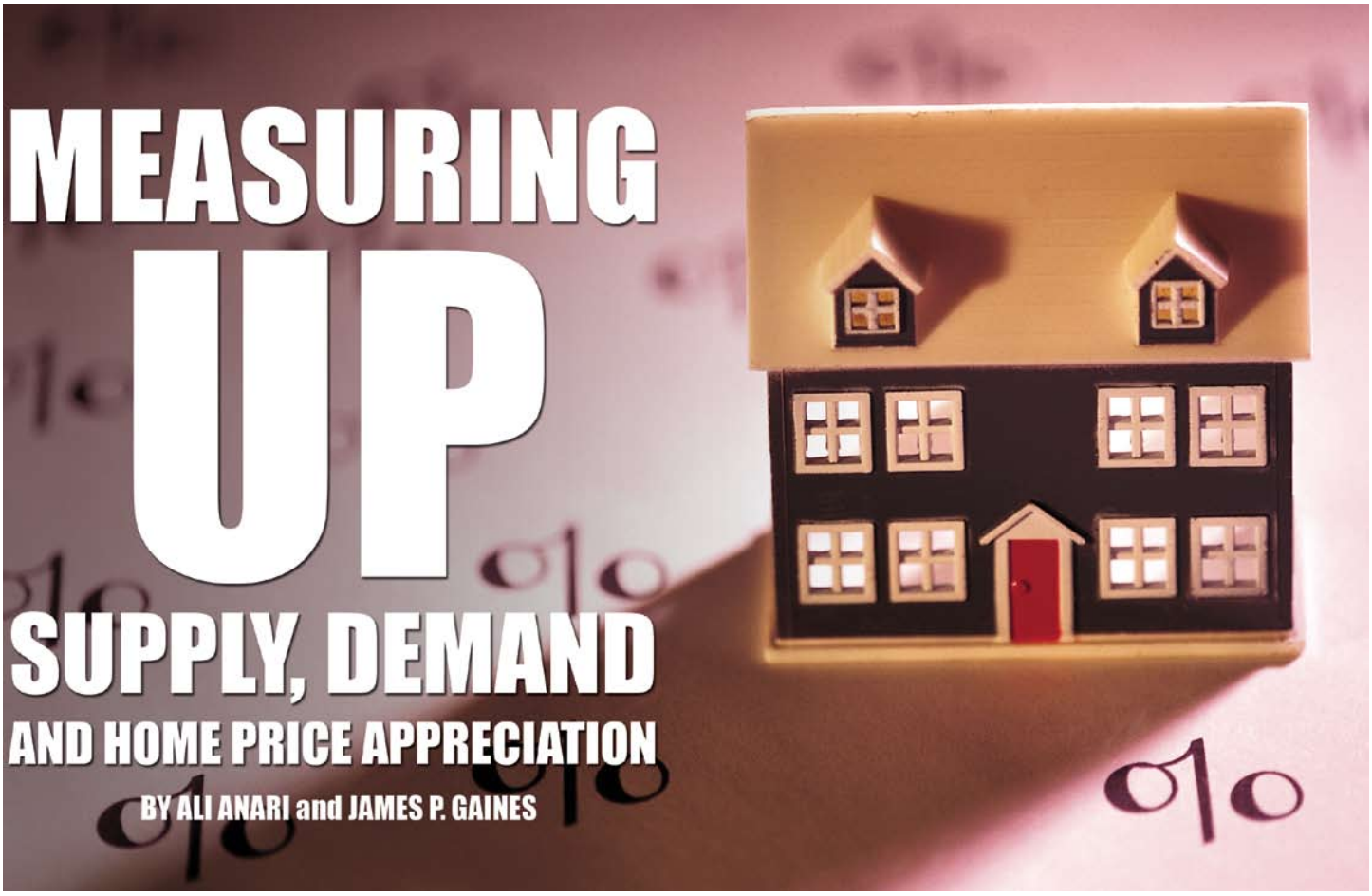


Home prices rise and fall based on changes in housing demand and supply.

A strong increase in demand causes prices to increase; a strong increase in supply causes prices to fall. The magnitude of a housing boom, such as the one the nation has experienced the past several years, depends on how much demand exceeds supply.

A housing bust results if supply vastly surpasses demand, and the severity of a bust depends on the level of excess supply.

From 2001–04 the average price of homes sold in Texas rose 9.3 percent compared with a nationwide average of 25.6 percent (Table 1). The U.S. rate of home price increase was greatly influenced by unusually high increases in the East and West Coast boom markets.

Texas' residential price increase was 64 percent lower than the U.S. rate, and none of the Texas metropolitan areas experienced home price appreciation equal to the U.S. average. Corpus Christi and Galveston, reflecting the "coastal" boom prior to Hurricane Katrina, posted home price appreciation greater than 22 percent. Meanwhile, Austin–San Marcos' modest 2.8 percent growth was below the rate of inflation for the period, a legacy of the high-tech industry bust.

The lower-than-national-average Texas home price appreciation rate was not the result of weaker demand for Texas homes. In fact, the number of homes sold in Texas rose 36 percent compared with a national increase of 28.7 percent. Home sales in Brownsville-Harlingen and Galveston increased more than 50 percent; in McAllen-Edinburg-Mission and Corpus Christi sales rose by about 35 percent.

The number of housing units in Texas rose 5.9 percent from 2001–04 compared with 4.1 percent for the United States, reflecting a robust home construction market. McAllen-Edinburg-Mission ranked first in growth rate of housing units

Table 1. Percent Growth Rates of Housing Market Indicators, 2001–04

	Home Price	Home Sales*	Housing Units
United States	**25.6**	**28.7**	**4.1**
Texas	**9.3**	**36.0**	**5.9**
Austin–San Marcos	2.8	22.7	9.0
Beaumont–Port Arthur	13.7	17.9	2.0
Brownsville-Harlingen	15.6	53.4	8.3
Corpus Christi	22.8	34.9	3.1
Dallas	9.2	16.0	7.2
Fort Worth–Arlington	8.9	19.2	6.9
Galveston	22.7	51.7	6.7
Houston	10.8	24.4	7.8
El Paso	10.7	17.9	5.2
McAllen-Edinburg-Mission	13.4	35.3	11.3
San Antonio	15.9	26.0	5.9

Sources: U.S. Census Bureau and Real Estate Center at Texas A&M University
*Includes only sales reported through local MLSs, so understates total actual sales.

Table 2. Population, Population Growth, Home Sales, Home Permits and Price Appreciation in Major Texas Metropolitan Areas

	Period	Average Population	Population Growth	Single-Family Permits	New People Per Permit	Home Sales	New Population Per Home Sale	Sales Per Person	Average Months Inventory*	Change in Average Home Price (Percent)
Houston	1980–84	3,448,364	489,181	111,084	4.40	71,467	6.84	48.25	NA	64.5
	1985–89	3,656,989	49,407	34,075	1.45	128,986	0.38	28.35	NA	–14.6
	1990–94	3,993,063	485,376	59,532	8.15	159,342	3.05	25.06	9.8	20.1
	1995–99	4,437,465	472,922	91,895	5.15	211,153	2.24	21.02	6.5	29.6
	2000–04	4,961,084	532,141	153,760	3.46	290,589	1.83	17.07	5.3	28.1
Dallas	1980–84	2,154,517	277,306	75,864	3.66	82,569	3.36	26.09	NA	54.7
	1985–89	2,497,003	283,485	68,922	4.11	81,813	3.47	30.52	NA	0.7
	1990–94	2,772,762	330,559	67,694	4.88	98,533	3.35	28.14	11.2	28.6
	1995–99	3,181,011	472,416	98,776	4.78	172,230	2.74	18.47	5.5	29.5
	2000–04	3,694,685	431,592	135,912	3.18	243,399	1.77	15.18	5.3	23.9
San Antonio	1980–84	1,220,408	129,106	23,166	5.57	39,753	3.25	30.70	NA	87.0
	1985–89	1,371,571	117,361	16,159	7.26	29,944	3.92	45.80	NA	–7.8
	1990–94	1,468,756	133,899	18,083	7.40	34,874	3.84	42.12	11.5	23.3
	1995–99	1,629,408	153,824	37,208	4.13	57,844	2.66	28.17	8.3	16.6
	2000–04	1,782,848	163,499	49,935	3.27	86,188	1.90	20.69	5.3	28.1
Austin	1980–84	640,083	122,595	28,666	4.28	27,129	4.52	23.59	NA	84.8
	1985–89	801,602	124,202	17,016	7.30	29,363	4.23	27.30	NA	–11.4
	1990–94	916,824	157,077	22,170	7.09	43,740	3.59	20.96	6.2	31.3
	1995–99	1,115,467	216,973	48,495	4.47	70,213	3.09	15.89	4.7	35.7
	2000–04	1,343,869	206,373	59,657	3.46	98,089	2.10	13.70	5.0	21.7
Fort Worth–Arlington	1980–84	1,082,199	166,559	43,088	3.87	24,565	6.78	44.05	NA	54.3
	1985–89	1,291,769	178,357	37,213	4.79	18,508	9.64	69.80	NA	21.6
	1990–94	1,429,268	139,490	27,004	5.17	16,933	8.24	84.41	13.8	2.6
	1995–99	1,594,423	194,554	40,058	4.86	24,649	7.89	64.69	5.7	21.3
	2000–04	1,805,710	207,177	65,896	3.14	37,162	5.57	48.59	5.4	23.3

Sources: U.S. Census Bureau and Real Estate Center at Texas A&M University
*NA = Data not available

at more than 11 percent, followed by Austin–San Marcos and Brownsville-Harlingen at 9 and 8.3 percent, respectively.

Supply-Demand Changes Over Time

One simple approach to evaluate the factors that impact home price appreciation considers home sales (demand) and building permits (supply) relative to the population and population growth over time. The five-year interval data in Table 2 reveal the relative strength in demand for housing in the major Texas metropolitan areas and the equally strong production rate of new homes.

The 1980–84 period reflects market conditions in Texas just prior to the oil bust, during which home prices increased an average of 69.1 percent in the five major markets. The 1985–89 period shows the depths of the economic bust, during which home prices declined by an average of 2.3 percent. Only the Fort Worth-Arlington market had a significant price increase between 1985 and 1989.

The two 1990s intervals were generally a time of recovery for both the Texas economy and the housing market. During this time, the average home price increased modestly in most market areas.

The 2000–04 period covers the current housing boom. Average home price increases were greater during this five-year than during the '90s but still less than the rate of increase from 1980–84. Only Austin was significantly below the '90s appreciation rates, reflecting the high-tech bust that hit the area between 1999–01.

Changes in the rate of new supply indicate the strong Texas construction market. Before the oil bust, on average the major Texas markets permitted one new unit for every 4.4 people added to the population, ranging from one new unit per 5.6 additional people in San Antonio to one new unit per 3.7 people in Dallas.

During the early '90s recovery, the metro areas permitted one new unit per 6.5 new people on average, but production

jumped during the subsequent five years when one new permit was issued per 3.3 new residents on average. Recent permitting rates are fairly consistent and aggressive, ranging from one new unit per 3.1 new residents in Fort Worth-Arlington to one unit per 3.5 residents in Houston and Austin.

The demand for housing based on home sales reflects a strong market. From 1980–84, the five metro markets averaged one home sale for every five people added to the population or one sale for every 34.5 total residents. By 2000–04, the five metro areas averaged one home sale for every 3.3 additional people or one sale for every 23 residents. The 2000–04 sales-per-capita rate is 33 percent higher than the 1980–84 period.

The rate or degree of change in home prices reflects the relative changes in demand and supply.

Correlation of Price Changes To Supply-Demand Changes

A more sophisticated approach used to evaluate home price appreciation measures the statistical correlation between rates of change in home prices to changes in supply and demand.

Correlation measures vary from zero to 100. Zero is perfectly uncorrelated and 100 is perfectly correlated. Few things are perfectly correlated in either direction. Correlation can be positive (as one variable increases the other increases) or negative (as one variable increases the other decreases).

Applying basic correlation analysis to Table 1 data reveals a positive correlation of 0.50 between home sales growth rate and home price appreciation rate (Figure 1). The upward-sloping-to-the-right trend line indicates that the variables are positively correlated. As the rate of home sales increases, so does the rate of increase in home prices.

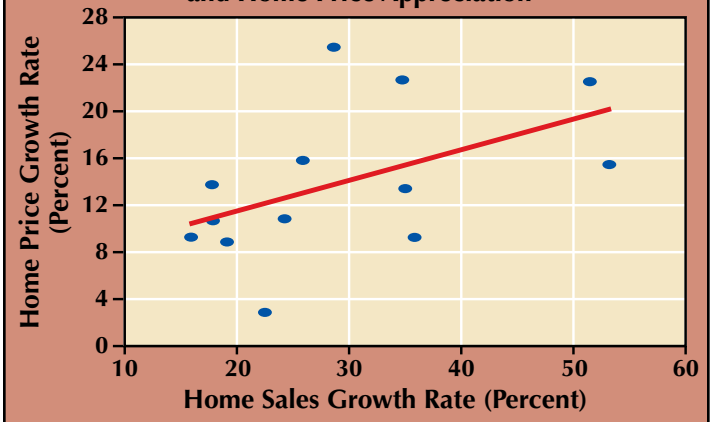
As expected, analysis of changes in average price and increases in supply of housing units yielded a negative correlation of 0.44, not quite as strong as home sales and in the opposite direction. This result is consistent with the notion that a greater supply of housing units acts to reduce the growth rate of home prices (Figure 2).

Better Measure of Market Activity And Home Price Changes

The positive relationship between home price appreciation and home sales and the negative relationship between home price appreciation and housing units suggest that employing a relative measure of sales to housing units (demand relative to supply) would produce a better measure of residential market activity. The data reveal a strong, positive correlation of 0.69 between home prices and home sales expressed as a percentage of housing units in 2004 (Table 3 and Figure 3).

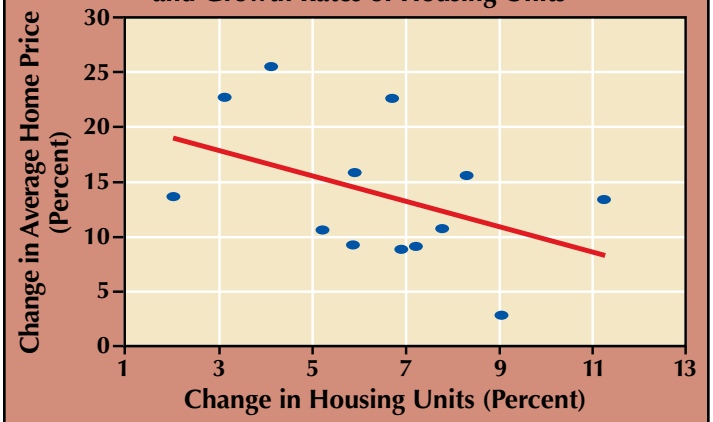
The rate or degree of change in home prices reflects the relative changes in demand and supply. The 2001–04 data suggest that while Texas' demand for housing increased significantly as evidenced by the increase in the number of homes sold, supply also grew, offsetting some potential appreciation in the average price. During this period, 6.5 percent of the national inventory of homes sold while only 3 percent of Texas' inventory changed hands.

Figure 1. Correlation Between Home Sales Growth Rate and Home Price Appreciation



Source: Real Estate Center at Texas A&M University

Figure 2. Correlation Between Home Price Appreciation and Growth Rates of Housing Units



Source: Real Estate Center at Texas A&M University

Table 3. Average Price of Homes Sold and Ratio of Home Sales to Housing Units, 2004

Area	Average Price of Homes Sold	Home Sales as a Percentage of Housing Units
United States	**190,592**	**6.5**
Texas	**164,100**	**3.0**
Austin–San Marcos	198,900	3.9
Beaumont–Port Arthur	121,800	1.3
Brownsville–Harlingen–San Benito	114,900	0.6
Corpus Christi	132,100	3.1
Dallas	194,100	3.6
Fort Worth–Arlington	128,862	2.0
Galveston	173,700	0.9
Houston	175,800	3.8
El Paso	116,400	2.5
McAllen-Edinburg-Mission	115,800	1.0
San Antonio	143,900	3.2

Sources: U.S. Census Bureau and Real Estate Center at Texas A&M University

The disparity in home sales compared to relative housing supply and demand helps explain the nearly 26 percent increase in home prices nationally versus the 9 percent increase in Texas between 2001 and 2004.

For an explanation of why Texas home prices have not appreciated as rapidly as those in other parts of the United States, see "What's Happening With Home Appreciation" at http://recenter.tamu.edu/pdf/1773.pdf.

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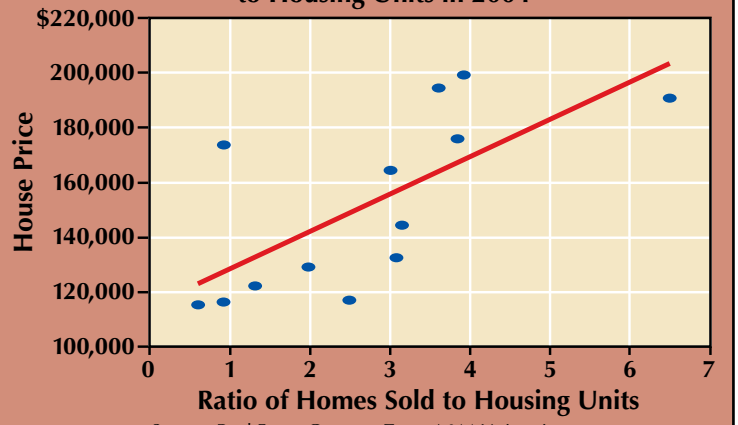
Figure 3. House Prices and the Ratio of Home Sales to Housing Units in 2004



Source: Real Estate Center at Texas A&M University

THE TAKEAWAY

From 2001–04, Texas' rate of average home price increase was 64 percent lower than the U.S. rate. While the demand for Texas housing increased significantly during those years, the corresponding growth in supply of housing units offset a great deal of the potential price increase.

The five major Texas metropolitan areas averaged one home sale for every 23 residents, down from one sale per 34.5 residents a decade earlier. Meanwhile, the state's major metro areas issued an average of one new single-family building permit for every 3.3 new residents, down from 4.4 new residents in 1980–84.

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