

Homeownership has been an essential element of the “American dream” since Colonial times. Despite a plethora of government-created home finance programs aimed at helping more citizens become homeowners, the fact remains that to own a home, buyers must earn sufficient incomes to pay the component costs of homeownership (mortgage principal and interest, taxes, insurance and utilities).

Historically low interest rates during the first half of this decade boosted the national homeownership rate to a record 69 percent. These low rates offset higher home prices, causing national housing affordability to climb, according to the National Association of Realtors.

However, rising home prices and component homeownership costs coupled with slower household income growth have prompted concerns about future homeownership affordability. This article looks at the component costs of homeownership and how increases — even small ones — in these costs may significantly affect affordability.

For an expanded version of this report, go to recenter.tamu.edu/pdf/1789.pdf.

Required Income And Component Costs

Homeownership affordability rests on the relationship between household

Table 1. Required Income to Purchase Home Based on Specified Assumptions

	6 percent, fixed-rate mortgage 30 percent, monthly housing costs/monthly income 3 percent of home value 0.8 percent of home value 2 percent of home value 15 percent 85 percent, 30-year		
Interest Rate			
Qualifying ratio			
Local Taxes			
Property Insurance			
Utilities			
Down payment			
Loan			
House Price	Total Monthly Housing Cost	Required Income to Qualify	Maximum Home Price Multiplier
\$20,000	\$198.59	\$7,944	2.52
30,000	297.89	11,915	2.52
40,000	397.18	15,887	2.52
50,000	496.48	19,859	2.52
60,000	595.77	23,831	2.52
70,000	695.07	27,803	2.52
75,000	744.71	29,789	2.52
80,000	794.36	31,774	2.52
90,000	893.66	35,746	2.52
100,000	992.95	39,718	2.52
125,000	1,241.19	49,648	2.52
150,000	1,489.43	59,577	2.52
175,000	1,737.66	69,507	2.52
200,000	1,985.90	79,436	2.52
225,000	2,234.14	89,366	2.52
250,000	2,482.38	99,295	2.52
275,000	2,730.62	109,225	2.52
300,000	2,978.85	119,154	2.52
350,000	3,475.33	139,013	2.52
400,000	3,971.81	158,872	2.52
450,000	4,468.28	178,731	2.52
500,000	4,964.76	198,590	2.52

Source: Real Estate Center at Texas A&M University

Table 2. Maximum House Price at Different Income Levels With 2.52 Maximum Price Multiplier

Household Income	Maximum House Price
\$10,000	\$25,200
15,000	37,800
20,000	50,400
25,000	63,000
30,000	75,600
35,000	88,200
40,000	100,800
45,000	113,400
50,000	126,000
55,000	138,600
60,000	151,200
65,000	163,800
70,000	176,400
75,000	189,000
80,000	201,600
85,000	214,200
90,000	226,800
95,000	239,400
100,000	252,000
105,000	264,600
110,000	277,200
115,000	289,800
120,000	302,400
125,000	315,000
130,000	327,600
140,000	352,800
150,000	378,000

Source: Real Estate Center at Texas A&M University

income and total monthly ownership costs. A set of base assumptions (Table 1) has been used to determine the amount of income required to finance a home purchased at various price levels.

For a \$125,000 home, annual cost of property insurance is \$1,000; property taxes \$3,750; and utilities \$2,500. Total monthly costs for those components are \$83.33, \$312.50 and \$208.33, respectively, for a total of \$604.17. The monthly mortgage payment is an additional \$637.02, about 51 percent of the total monthly cost of \$1,241.19, which is about 1 percent of the home price.

Table 1 data reveal that a buyer can afford to purchase a house priced at a maximum of 2.52 times annual income. If household income is \$50,000, a buyer

can qualify for a home priced at no more than \$126,000 ($2.52 \times \$50,000$). If the qualifying ratio increases or if interest rates, taxes, property insurance or utility costs go up, the price multiplier decreases, pushing the maximum price of an “affordable” home down.

Under the base assumptions (Table 1), for each \$5,000 increment of income, the maximum home price increases by \$12,600 (Table 2). The lower the total monthly housing costs, the higher the multiplier. If different financing terms, other costs or both are applied to different income levels, the multiplier is affected accordingly. For example, if high-income households make larger down payments, the total amount financed (and hence the monthly payment) declines, resulting in a greater maximum price multiplier.

Mortgage Interest Rates A Prime Factor

As mortgage interest rates increase, total monthly ownership costs rise, and the number of households that can afford a given-priced home declines. Assuming other housing costs remain constant, required income increases and the price multiplier declines as mortgage interest rates increase (Table 3). The highlighted 6 percent interest rate line is the same as Table 1.

At a 3 percent mortgage interest rate, a household can qualify to purchase a home priced 2.97 times its annual income; at 9 percent, however, that figure drops to 2.14 times income — 28 percent less. A \$150,000 home at a 3 percent interest rate requires an income of \$50,500. But at 9 percent, an annual income of \$70,000 is required — 39 percent more. For households earning less, a \$150,000 home is simply unaffordable.

The price multiplier illustrates how the affordability index in one geographic area may differ from another based on different mortgage interest rates (Table 3). The pattern of required income indicates how a given-priced home becomes less affordable at higher mortgage interest rates.

The required income increase column in Table 3 reveals that for every

Table 3. Required Income, Maximum Price Multiplier at Different Mortgage Interest Rates*

Mortgage Interest Rate (percent)	Annual Income Required for a Home Priced at								Maximum Price Multiplier	Required Income Increase (percent)
	\$75,000	\$125,000	\$150,000	\$175,000	\$200,000	\$250,000	\$300,000	\$400,000		
3.00	25,251	42,085	50,502	58,919	67,336	84,170	101,004	134,671	2.97	
3.25	25,598	42,663	51,196	59,728	68,261	85,326	102,391	136,521	2.93	1.37
3.50	25,951	43,251	51,901	60,551	69,202	86,502	103,803	138,403	2.89	1.38
3.75	26,309	43,849	52,619	61,389	70,159	87,698	105,238	140,317	2.85	1.38
4.00	26,674	44,457	53,348	62,240	71,131	88,914	106,696	142,262	2.81	1.39
4.25	27,044	45,074	54,089	63,104	72,119	90,148	108,178	144,237	2.77	1.39
4.50	27,420	45,701	54,841	63,981	73,121	91,402	109,682	146,243	2.74	1.39
4.75	27,802	46,337	55,604	64,871	74,139	92,673	111,208	148,277	2.70	1.39
5.00	28,189	46,982	56,378	65,774	75,171	93,963	112,756	150,341	2.66	1.39
5.25	28,581	47,635	57,162	66,689	76,217	95,271	114,325	152,433	2.62	1.39
5.50	28,979	48,298	57,957	67,617	77,276	96,595	115,914	154,553	2.59	1.39
5.75	29,381	48,969	58,762	68,556	78,350	97,937	117,524	156,699	2.55	1.39
6.00	29,789	49,648	59,577	69,507	79,436	99,295	119,154	158,872	2.52	1.39
6.25	30,201	50,335	60,402	70,469	80,535	100,669	120,803	161,071	2.48	1.38
6.50	30,618	51,030	61,235	71,441	81,647	102,059	122,471	163,295	2.45	1.38
6.75	31,039	51,732	62,079	72,425	82,771	103,464	124,157	165,543	2.42	1.38
7.00	31,465	52,442	62,930	73,419	83,907	104,884	125,861	167,814	2.38	1.37
7.25	31,895	53,159	63,791	74,423	85,055	106,318	127,582	170,109	2.35	1.37
7.50	32,330	53,883	64,660	75,437	86,213	107,767	129,320	172,427	2.32	1.36
7.75	32,769	54,614	65,537	76,460	87,383	109,228	131,074	174,765	2.29	1.36
8.00	33,211	55,352	66,422	77,492	88,563	110,703	132,844	177,125	2.26	1.35
8.25	33,657	56,095	67,315	78,534	89,753	112,191	134,629	179,506	2.23	1.34
8.50	34,107	56,845	68,215	79,584	90,953	113,691	136,429	181,906	2.20	1.34
8.75	34,561	57,601	69,122	80,642	92,162	115,203	138,243	184,325	2.17	1.33
9.00	35,018	58,363	70,036	81,708	93,381	116,726	140,072	186,762	2.14	1.32

Source: Real Estate Center at Texas A&M University
 *Based on Table 1 assumptions except interest rate

one-quarter of 1 percent (0.25 percent) increase in the interest rate, required income increases by an average of 1.37 percent. If interest rates increase by 1 percentage point, say from 5 percent to 6 percent, the required income to purchase the same house increases by nearly 5.5 percent. As required income increases, households earning less than the new required amount are forced to acquire lower-priced homes, thus lowering overall housing affordability.

If the prevailing mortgage interest rate increases from 5 percent to 6 percent, the price multiplier declines from 2.66 to 2.52. Instead of being able to qualify for a \$133,000 home, a household with \$50,000 income would be limited to a home priced no more than \$126,000. Every quarter-percent increase in the interest rate causes the maximum price multiplier to decrease by an average of 0.035 and the maximum home price

to decline by an average of \$6,900 (the actual decline is greater at lower interest rates and less at higher rates).

Affordability Distribution and Interest Rates

According to the 2004 American Community Survey (ACS) data from the U.S. Census Bureau, almost half of all Texas households have an annual income less than \$40,000. The nearly 1.8 million households earning less than \$20,000 (nearly 23 percent of all households), cannot afford a home priced greater than about \$50,000 under the base assumptions (Table 1). The next 1.9 million households, with \$20,000 to \$40,000 annual income (approximately 25 percent of total Texas households), cannot afford a home priced greater than about \$100,000.

Based on the estimated affordability distribution in Table 4, 4.476 million

households, or 57.5 percent of all Texas households, cannot afford to purchase a house priced more than \$125,000. Approximately 2.8 million or 35.9 percent of all Texas households cannot afford to buy a home priced more than \$75,000 (with principal, interest, taxes, utilities and insurance totalling no more than \$745 monthly).

Changes in mortgage interest rates significantly alter the number of households that can afford a home in a given price range. If the rate rises from 6 percent to 7 percent, the maximum home price multiplier declines from 2.52 to 2.38, and affordability distribution changes from that shown in Table 4 to that in Table 5.

A 1 percent change in the interest rate does not affect all households and price ranges the same. The maximum-priced home for some households changes to a lower-priced home within the same price range, while the maximum-priced home for others on the margin falls into the next lower price range.

A 1 percent increase in the mortgage interest rate causes a considerable downward shift in the maximum home price affordability. At 7 percent, 158,352 or 5.7 percent fewer households can afford a home priced greater than \$75,000 than if the rate were 6 percent. And at 7 percent, nearly 62 percent of all Texas households would be limited to a home priced no more than \$125,000.

Based on percentage change, the greatest declines in number of households that can afford homes within specific price ranges (potential demand) are in the \$400,000–\$500,000 and in the \$200,000–\$250,000 brackets. The number of households in the \$175,000–\$200,000 bracket jumps by more than 30 percent as households previously in the \$200,000–\$250,000 bracket are forced into less expensive homes.

Property Taxes Take Big Bite

Local property taxes typically rank second only to the monthly mortgage payment in the total monthly cost of a home. Over the years, numerous studies, theories and explanations have emerged regarding the relationship between local

Table 4. Texas Housing Affordability Distribution: Households by Maximum-Priced Affordable Home

Highest Priced Home	Number of Households	Percent of Total
< \$75,000	2,794,399	35.9
75,000–125,000	1,681,135	21.6
125,000–150,000	643,074	8.3
150,000–175,000	508,043	6.5
175,000–200,000	417,904	5.4
200,000–250,000	627,228	8.1
250,000–300,000	374,290	4.8
300,000–400,000	382,883	4.9
400,000–500,000	161,618	2.1
> \$500,000	200,278	2.6
Totals	7,790,853	100.0

Sources: U.S. Census Bureau, 2004 American Community Survey and Real Estate Center at Texas A&M University

Table 5. Texas Housing Affordability Distribution, 6 and 7 Percent Mortgage Interest Rates

Highest Home Price	At 7 Percent Interest		At 6 Percent Interest		Difference	Percent Change
	Number of Households	Percent of Households	Number of Households	Percent of Households		
<\$75,000	2,952,751	37.9	2,794,399	35.9	158,352	5.7
75,000–125,000	1,863,107	23.9	1,681,135	21.6	181,972	10.8
125,000–150,000	552,300	7.1	643,074	8.3	-90,774	-14.1
150,000–175,000	456,365	5.9	508,043	6.5	-51,678	-10.2
175,000–200,000	548,811	7	417,904	5.4	130,907	31.3
200,000–250,000	410,449	5.3	627,228	8.1	-216,779	-34.6
250,000–300,000	377,961	4.9	374,290	4.8	3,671	1.0
300,000–400,000	376,091	4.8	382,883	4.9	-6,792	-1.8
400,000–500,000	100,702	1.3	161,618	2.1	-60,917	-37.7
>\$500,000	152,315	2	200,278	2.6	-47,963	-23.9

Sources: U.S. Census Bureau, 2004 American Community Survey and Real Estate Center at Texas A&M University

taxes, home values and homeownership. Clearly, local property taxes affect home affordability by increasing the monthly cost of ownership. The value relationship is not as obvious or consistent.

Property owners expect to pay property taxes; a value impact typically arises if actual taxes differ substantially from perceived “fair” taxes relative to the services provided. Research indicates that the value-depressing effect of property taxes can be offset if the market places sufficient value on the services provided by the tax.

An example of this is the local school tax rate. Studies consistently show that the value of homes in perceived “desirable” school districts is greater than similar properties located in “less desirable” school districts, even if the desirable local school property tax rate is higher. Families bid up the prices of homes to live in desirable school districts despite higher property taxes.

Buyers may also value other local services (such as fire and police protection, planning and code enforcement, road maintenance or other government services) or lower total state and local taxes higher than the “cost” of higher property taxes. If the market does not value the benefits of local services more than the cost of providing the services, the value-depressing effects of higher taxes may

be substantial, especially if actual taxes significantly exceed perceived “fair” taxes for the area.

The value impact of local property taxes may depend on how the market views the property tax relative to the total tax burden, which includes all other state and local taxes, collectively, on a per capita or percentage of income basis. If relatively high property taxes are offset by lower other taxes, any negative property tax value impact may again be reversed.

The 2004 per capita property tax collections show Texas ranked 14th nationally in property tax burden (Table 6). However, with no state income tax and with other state and local taxes somewhat lower, Texas’ relative total local tax burden is substantially less than most other states. Projected 2006 data indicate Texas ranks 36th in the total state and local tax burden per capita and 45th in total state and local tax burden as a percentage of income.

All 13 states with per capita property tax burdens greater than Texas’ experienced higher rates of home price appreciation than Texas during first quarter 2006, according to Office of Federal Housing Enterprise Oversight (OFHEO) data. Despite the relatively low total state and local tax burden, Texas ranked 43rd in home price

Table 6. Texas and Selected States Ranked by Effective Tax Burdens

State and Local Property Tax Collections Per Capita Fiscal Year 2004			Effective State and Local Tax Burdens by State Rank Projected for 2006					
State	Collections Per Capita	Rank		Tax Burden Per Capita Rank	Per Capita State and Local Taxes		Tax Burden as Percent of Income Rank	Tax Burden as a Percent of Income
U.S. Total	\$1,086		United States		\$4,072	United States		10.6
New Jersey	\$2,099	1	District of Columbia	1	8,092	Maine	1	13.5
New York	\$1,677	5	New York	3	5,734	Ohio	4	12
Illinois	\$1,407	10	California	11	4,451	Connecticut	10	11.3
Texas	\$1,254	14	Pennsylvania	20	4,057	California	14	10.9
Nebraska	\$1,148	17	Indiana	24	3,796	South Carolina	30	10.2
Washington	\$1,029	23	Oregon	31	3,492	Arizona	34	10.1
California	\$963	30	Texas	36	3,368	Florida	40	9.7
Tennessee	\$608	42	Oklahoma	44	3,129	Texas	45	9.4
New Mexico	\$441	49	Arkansas	46	3,088	Delaware	49	8.4
Alabama	\$367	51	Alaska	51	2,598	Alaska	51	6.6

Sources: Tax Foundation, U.S. Department of Commerce, U.S. Bureau of Economic Analysis and U.S. Census Bureau

appreciation in the first quarter OFHEO report with a 5.9 percent increase compared with a 12.5 percent national rate.

Effective Local Property Tax Rates

The effective property tax rate represents total property taxes paid for all purposes (school, city, county and special jurisdictions) expressed as a percentage of the property's market value. The effective rate includes all nominal tax rates as well as homestead and any other assessment exemptions. If a property is assessed and taxed at 100 percent of market value, the effective tax rate equals the nominal tax rate; if a property is assessed for less than its

market value, or if an exemption or other deduction is applied, the effective rate is lower than the nominal rate. Table 7 indicates the required income to purchase different priced homes in increments of effective property tax rates.

The highlighted 3 percent local tax rate reflects the same price multiplier as in Tables 1 and 2 for a 6 percent mortgage interest rate. With all other assumptions constant, the price multiplier increases overall 27.3 percent as the effective tax rate decreases, going from 2.16 at a 5.0 percent effective rate to 2.75 at a 2.0 percent effective rate.

On average, household income must increase 8.2 percent for every 1 percentage point increase in the effective

Table 7. Required Income and Home Price Multiplier, Selected Local Effective Property Tax Rates*

Local Tax Rate (percent)	Annual Income Required for a Home Priced at:								Maximum Price Multiplier	Required Increased Income (percent)
	\$75,000	\$125,000	\$150,000	\$175,000	\$200,000	\$250,000	\$300,000	\$400,000		
2.0	27,289	45,481	54,577	63,673	72,769	90,962	109,154	145,539	2.75	0.92
2.1	27,539	45,898	55,077	64,257	73,436	91,795	110,154	146,872	2.72	0.92
2.2	27,789	46,314	55,577	64,840	74,103	92,628	111,154	148,206	2.70	0.91
2.3	28,039	46,731	56,077	65,423	74,769	93,462	112,154	149,539	2.67	0.9
2.4	28,289	47,148	56,577	66,007	75,436	94,295	113,154	150,872	2.65	0.89
2.5	28,539	47,564	57,077	66,590	76,103	95,128	114,154	152,206	2.63	0.88
2.6	28,789	47,981	57,577	67,173	76,769	95,962	115,154	153,539	2.61	0.88
2.7	29,039	48,398	58,077	67,757	77,436	96,795	116,154	154,872	2.58	0.87
2.8	29,289	48,814	58,577	68,340	78,103	97,628	117,154	156,206	2.56	0.86
2.9	29,539	49,231	59,077	68,923	78,769	98,462	118,154	157,539	2.54	0.85
3	29,789	49,648	59,577	69,507	79,436	99,295	119,154	158,872	2.52	0.85
3.1	30,039	50,064	60,077	70,090	80,103	100,128	120,154	160,206	2.50	0.84
3.2	30,289	50,481	60,577	70,673	80,769	100,962	121,154	161,539	2.48	0.83
3.3	30,539	50,898	61,077	71,257	81,436	101,795	122,154	162,872	2.46	0.83
3.4	30,789	51,314	61,577	71,840	82,103	102,628	123,154	164,206	2.44	0.82
3.5	31,039	51,731	62,077	72,423	82,769	103,462	124,154	165,539	2.42	0.81
3.6	31,289	52,148	62,577	73,007	83,436	104,295	125,154	166,872	2.40	0.81
3.7	31,539	52,564	63,077	73,590	84,103	105,128	126,154	168,206	2.38	0.8
3.8	31,789	52,981	63,577	74,173	84,769	105,962	127,154	169,539	2.36	0.79
3.9	32,039	53,398	64,077	74,757	85,436	106,795	128,154	170,872	2.34	0.79
4	32,289	53,814	64,577	75,340	86,103	107,628	129,154	172,206	2.32	0.78
4.1	32,539	54,231	65,077	75,923	86,769	108,462	130,154	173,539	2.30	0.77
4.2	32,789	54,648	65,577	76,507	87,436	109,295	131,154	174,872	2.29	0.77
4.3	33,039	55,064	66,077	77,090	88,103	110,128	132,154	176,206	2.27	0.76
4.4	33,289	55,481	66,577	77,673	88,769	110,962	133,154	177,539	2.25	0.76
4.5	33,539	55,898	67,077	78,257	89,436	111,795	134,154	178,872	2.24	0.75
4.6	33,789	56,314	67,577	78,840	90,103	112,628	135,154	180,206	2.22	0.75
4.7	34,039	56,731	68,077	79,423	90,769	113,462	136,154	181,539	2.20	0.74
4.8	34,289	57,148	68,577	80,007	91,436	114,295	137,154	182,872	2.19	0.73
4.9	34,539	57,564	69,077	80,590	92,103	115,128	138,154	184,206	2.17	0.73
5.0	34,789	57,981	69,577	81,173	92,769	115,962	139,154	185,539	2.16	0.72

Source: Real Estate Center at Texas A&M University

*Based on Table 1 assumptions, except for variations in effective tax rate

**Table 8. Texas Housing Affordability Distribution:
Maximum-Priced Affordable Home at Selected Effective
Property Tax Rate Percentages***

Maximum Home Price	2 Percent Property Tax Rate		3 Percent Property Tax Rate		4 Percent Property Tax Rate	
	Number of Households	Percent of Households	Number of Households	Percent of Households	Number of Households	Percent of Households
<\$75,000	2,547,816	32.7	2,794,399	35.9	3,030,067	38.9
75,000–125,000	1,629,091	20.9	1,681,135	21.6	1,962,871	25.2
125,000–150,000	619,114	7.9	643,074	8.3	500,151	6.4
150,000–175,000	535,593	6.9	508,043	6.5	429,251	5.5
175,000–200,000	460,064	5.9	417,904	5.4	566,572	7.3
200,000–250,000	616,904	7.9	627,228	8.1	345,317	4.4
250,000–300,000	453,687	5.8	374,290	4.8	359,049	4.6
300,000–400,000	487,881	6.3	382,883	4.9	380,296	4.9
400,000–500,000	172,605	2.2	161,618	2.1	88,695	1.1
>\$500,000	268,097	3.4	200,278	2.6	128,585	1.7

Sources: U.S. Census Bureau, 2004 American Community Survey and Real Estate Center at Texas A&M University

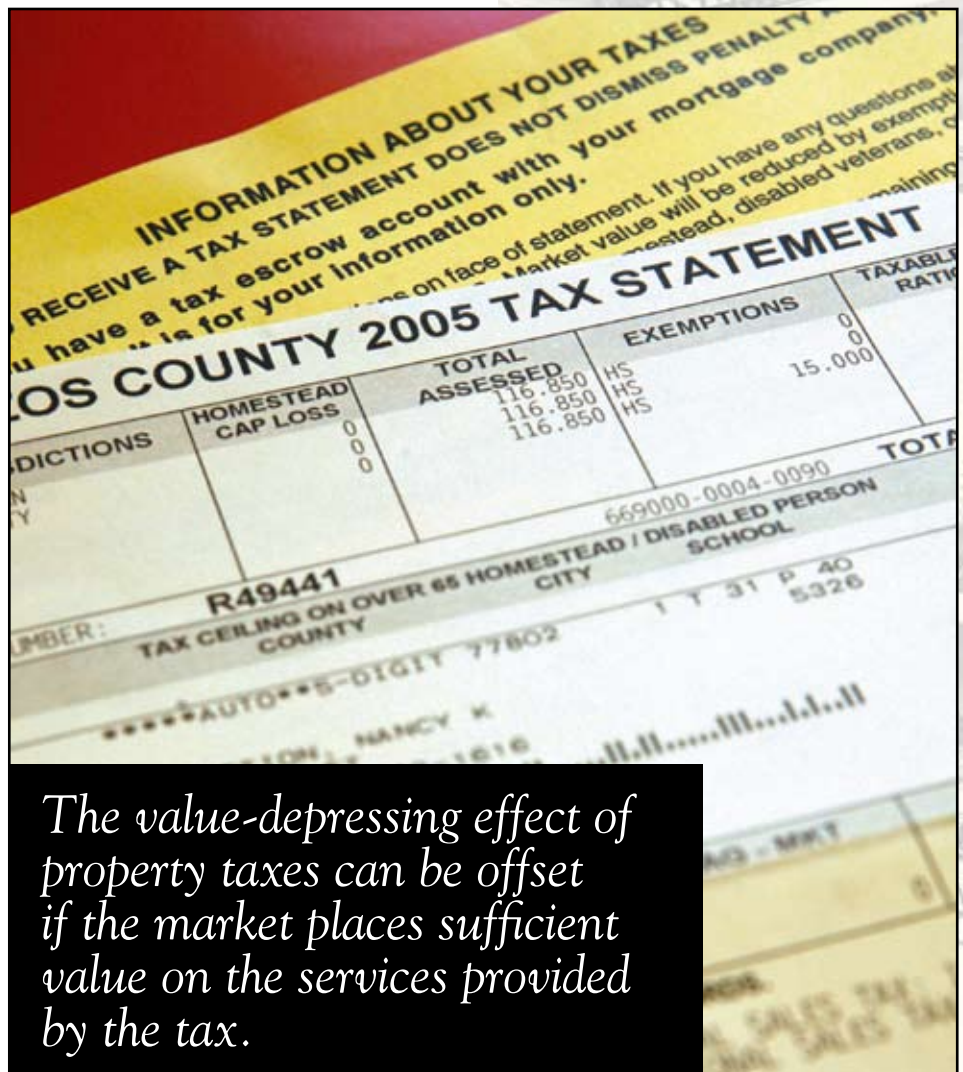
*Based on Table 1 assumptions

tax rate to afford the same home. Conversely, a 1 percentage point decline in the rate reduces the required income. If the local effective tax rate declines from 3 percent to 2.5 percent, income required to purchase a \$125,000 home declines from \$49,648 to \$47,564, a 4.2 percent decrease. Households with income between these two amounts would now be able to qualify for a \$125,000 home, whereas they could not qualify at the higher tax rate.

Affordability Distribution And Property Tax Rates

Combining the required income to qualify for different home prices under the base assumptions (Table 1) with the statewide household income distribution reported in the ACS results in a distribution of Texas housing affordability based on 2 percent, 3 percent and 4 percent effective property tax rates (Table 8).

Based on the estimated affordability distribution in Table 8 at the base-case assumed 3 percent effective tax rate, 4.476 million households, or 57.5 percent of all Texas households, cannot afford to purchase a house unless it is priced less than \$125,000. If the effective tax rate is 2 percent, 4.177 million or 53.6 percent of Texas households are limited to a home priced at \$125,000 or less. At a 4 percent tax rate, 4.993 million



The value-depressing effect of property taxes can be offset if the market places sufficient value on the services provided by the tax.



or 64.1 percent of all Texas households cannot afford a home priced greater than \$125,000.

Changes in the effective property tax rate create a significant downward shift in maximum home price affordability that is reflected in the maximum home price multiplier. An increase from a 2 percent tax rate to a 3 percent rate reduces the price multiplier from 2.75 to 2.52. The multiplier is further reduced to 2.32 if the tax rate increases from 3 percent to 4 percent.

The number of households forced to shift to lower-priced homes as the property tax rate increases depends on the number of households on the margin as required income changes to meet the 30 percent qualifying ratio test. For example, at a 2 percent rate, the required income for a \$125,000 home is \$45,481 but that increases to \$49,648 at a 3

percent tax rate, a 9.2 percent difference. Marginal households are those households that earn an amount between these two levels and are forced to acquire less expensive homes at the higher rate.

An increase in the property tax rate from 2 percent to 3 percent increases the number of households limited to a home priced less than \$125,000 by about 300,000 households (Table 8). If the effective property tax rate rises from 3 percent to 4 percent, the number of households that can afford a home priced no greater than \$125,000 increases from nearly 4.48 million to 4.99 million or 517,400 households.

An interesting phenomenon within the examples is the increase in the number of households that can afford a home priced in the \$175,000–\$200,000 bracket as the rate changes from 2 percent to 4 percent. The higher number of households in the \$175,000–\$200,000 bracket at a 4 percent tax rate reflects the downward shift of marginal-income households from the higher home price brackets. Marginal-income households in the \$125,000–\$150,000 and the \$150,000–\$175,000 brackets shifted downward into the two lowest brackets.

Insurance and Utility Costs Must Be Figured In

Mortgage lenders require that buyers carry property insurance to protect the collateral value of the property, and prudent property owners carry coverage to protect their investments against catastrophic losses. Property insurance costs are a relatively low monthly home cost component and, therefore, typically cause only modest shifts in home affordability as they change. In general, every 1 percentage point increase in the effective insurance rate requires 8 percent more household income to qualify for a mortgage on the same priced home.

Typically, insurance rates do not change rapidly or dramatically. However, as many Texas property owners discovered after the hurricanes and floods of the past several years, it can happen.



Typically, insurance rates do not change rapidly or dramatically. However, it can happen.

Table 9. Required Income, Home Price Multiplier at Different Property Insurance Rates*

Property Insurance Rate (percent)	Annual Income Required for a Home Priced at:								Maximum Price Multiplier	Required Increased Income (percent)
	\$75,000	\$125,000	\$150,000	\$175,000	\$200,000	\$250,000	\$300,000	\$400,000		
0.3	\$28,539	\$47,564	\$57,077	\$66,590	\$76,103	\$95,128	\$114,154	\$152,206	2.63	
0.4	28,789	47,981	57,577	67,173	76,769	95,962	115,154	153,539	2.61	0.88
0.5	29,039	48,398	58,077	67,757	77,436	96,795	116,154	154,872	2.58	0.87
0.6	29,289	48,814	58,577	68,340	78,103	97,628	117,154	156,206	2.56	0.86
0.7	29,539	49,231	59,077	68,923	78,769	98,462	118,154	157,539	2.54	0.85
0.8	29,789	49,648	59,577	69,507	79,436	99,295	119,154	158,872	2.52	0.85
0.9	30,039	50,064	60,077	70,090	80,103	100,128	120,154	160,206	2.50	0.84
1.0	30,289	50,481	60,577	70,673	80,769	100,962	121,154	161,539	2.48	0.83
1.1	30,539	50,898	61,077	71,257	81,436	101,795	122,154	162,872	2.46	0.83
1.2	30,789	51,314	61,577	71,840	82,103	102,628	123,154	164,206	2.44	0.82
1.3	31,039	51,731	62,077	72,423	82,769	103,462	124,154	165,539	2.42	0.81
1.4	31,289	52,148	62,577	73,007	83,436	104,295	125,154	166,872	2.40	0.81
1.5	31,539	52,564	63,077	73,590	84,103	105,128	126,154	168,206	2.38	0.8
1.6	31,789	52,981	63,577	74,173	84,769	105,962	127,154	169,539	2.36	0.79
1.7	32,039	53,398	64,077	74,757	85,436	106,795	128,154	170,872	2.34	0.79
1.8	32,289	53,814	64,577	75,340	86,103	107,628	129,154	172,206	2.32	0.78
1.9	32,539	54,231	65,077	75,923	86,769	108,462	130,154	173,539	2.30	0.77
2.0	32,789	54,648	65,577	76,507	87,436	109,295	131,154	174,872	2.29	0.77
2.1	33,039	55,064	66,077	77,090	88,103	110,128	132,154	176,206	2.27	0.76
2.2	33,289	55,481	66,577	77,673	88,769	110,962	133,154	177,539	2.25	0.76
2.3	33,539	55,898	67,077	78,257	89,436	111,795	134,154	178,872	2.24	0.75
2.4	33,789	56,314	67,577	78,840	90,103	112,628	135,154	180,206	2.22	0.75
2.5	34,039	56,731	68,077	79,423	90,769	113,462	136,154	181,539	2.20	0.74

Source: Real Estate Center at Texas A&M University
 *Based on Table 1 assumptions except property insurance rate

Utilities are nonoptional house costs and are typically more volatile than interest rates, property tax rates or insurance rates. As the costs of energy generation and water-sewer services rise, they increasingly influence homeownership affordability. Some lenders include a monthly “other costs” component (typically assumed to include utility and maintenance costs) to the qualifying ratio for loan approval. Other lenders do not incorporate utility costs into their underwriting calculations, even though these expenses are major factors in overall affordability and potential loan default.

Utilities are defined as electricity, natural or propane gas and water-sewer services. Utility costs vary according to weather, home size, quality of construction, insulation, size of family and usage. They are highly seasonal and can vary significantly based on the local utility company’s efficiency and business practices. Nevertheless, interesting insights about housing cost impacts and affordability can be gained by looking at variations

in effective utility costs. Effective utility costs are actual total utility costs expressed as a percentage of property value.

Because annual utility costs represent a significant portion of total monthly housing expenses, the traditional PITI (principal, interest, taxes and insurance) cost measure expands to PITUI (principal, interest, taxes, utilities and insurance). For simplicity, mortgage insurance costs for a greater-than-80-percent loan have been omitted.

A relatively modest change in the utility rate generates a fairly substantial shift in overall housing affordability. A 1 percentage point change in utility costs is not abnormal, and such a change can mean thousands of Texas households cannot afford the same-priced home.

Property Insurance Rates

Estimated required incomes to qualify for a home at selected prices and the maximum home price multiplier over a range of effective property insurance rates are shown in Table 9. The

Table 10. Required Income, Maximum Home Price Multiplier at Different Effective Utility Rates*

Effective Annual Utility Rate (percent)	Annual Income Required for a Home Priced at:								Maximum Price Multiplier	Required Increased Income (percent)
	\$75,000	\$125,000	\$150,000	\$175,000	\$200,000	\$250,000	\$300,000	\$400,000		
0.50	\$26,039	\$43,398	\$52,077	\$60,757	\$69,436	\$86,795	\$104,154	\$138,872	2.88	
0.75	26,664	44,439	53,327	62,215	71,103	88,878	106,654	142,206	2.81	2.40
1.00	27,289	45,481	54,577	63,673	72,769	90,962	109,154	145,539	2.75	2.34
1.25	27,914	46,523	55,827	65,132	74,436	93,045	111,654	148,872	2.69	2.29
1.50	28,539	47,564	57,077	66,590	76,103	95,128	114,154	152,206	2.63	2.24
1.75	29,164	48,606	58,327	68,048	77,769	97,212	116,654	155,539	2.57	2.19
2.00	29,789	49,648	59,577	69,507	79,436	99,295	119,154	158,872	2.52	2.14
2.25	30,414	50,689	60,827	70,965	81,103	101,378	121,654	162,206	2.47	2.10
2.50	31,039	51,731	62,077	72,423	82,769	103,462	124,154	165,539	2.42	2.06
2.75	31,664	52,773	63,327	73,882	84,436	105,545	126,654	168,872	2.37	2.01
3.00	32,289	53,814	64,577	75,340	86,103	107,628	129,154	172,206	2.32	1.97
3.25	32,914	54,856	65,827	76,798	87,769	109,712	131,654	175,539	2.28	1.94
3.50	33,539	55,898	67,077	78,257	89,436	111,795	134,154	178,872	2.24	1.90
3.75	34,164	56,939	68,327	79,715	91,103	113,878	136,654	182,206	2.20	1.86
4.00	34,789	57,981	69,577	81,173	92,769	115,962	139,154	185,539	2.16	1.83
4.25	35,414	59,023	70,827	82,632	94,436	118,045	141,654	188,872	2.12	1.80
4.50	36,039	60,064	72,077	84,090	96,103	120,128	144,154	192,206	2.08	1.76
4.75	36,664	61,106	73,327	85,548	97,769	122,212	146,654	195,539	2.05	1.73
5.00	37,289	62,148	74,577	87,007	99,436	124,295	149,154	198,872	2.01	1.70

Source: Real Estate Center at Texas A&M University

*Based on Table 1 assumptions except for effective utility rate

Table 11. Texas Households by Maximum-Priced Affordable Home at Selected Effective Insurance Rates

Maximum Home Price	0.5 Percent Insurance Rate		0.8 Percent Insurance Rate		1.1 Percent Insurance Rate	
	Number of Households	Percent of Households	Number of Households	Percent of Households	Number of Households	Percent of Households
<\$75,000	2,720,424	34.9	2,794,399	35.9	2,865,730	36.8
75,000–125,000	1,665,522	21.4	1,681,135	21.6	1,692,900	21.7
125,000–150,000	635,886	8.2	643,074	8.3	641,676	8.2
150,000–175,000	516,308	6.6	508,043	6.5	514,857	6.6
175,000–200,000	443,247	5.7	417,904	5.4	392,561	5.0
200,000–250,000	611,436	7.8	627,228	8.1	619,286	7.9
250,000–300,000	398,109	5.1	374,290	4.8	374,205	4.8
300,000–400,000	421,748	5.4	382,883	4.9	344,019	4.4
400,000–500,000	157,549	2.0	161,618	2.1	158,059	2.0
>\$500,000	220,624	2.8	200,278	2.6	187,561	2.4

Sources: U.S. Census Bureau, 2004 American Community Survey and Real Estate Center at Texas A&M University

*Based on Table 1 assumptions

0.8 percent assumed base case from Table 1 is highlighted. The effective cost of property insurance reflects the annual premium as a percentage of total property value.

For every 1 percentage point increase in the effective property insurance rate, required income must increase on average about 8 percent for a household to be able to afford the same priced home. To afford a \$150,000 home at an effective

insurance cost of 0.5 percent (\$750 premium cost), a household needs an income of around \$58,100. If insurance costs increase to 1 percent (\$1,500 premium cost), required income is \$60,600, or 4.3 percent more. The maximum price multiplier increases a total of only 23.5 percent across the range of effective property insurance rates, from 2.13 at the highest rate to 2.63 at the lowest.

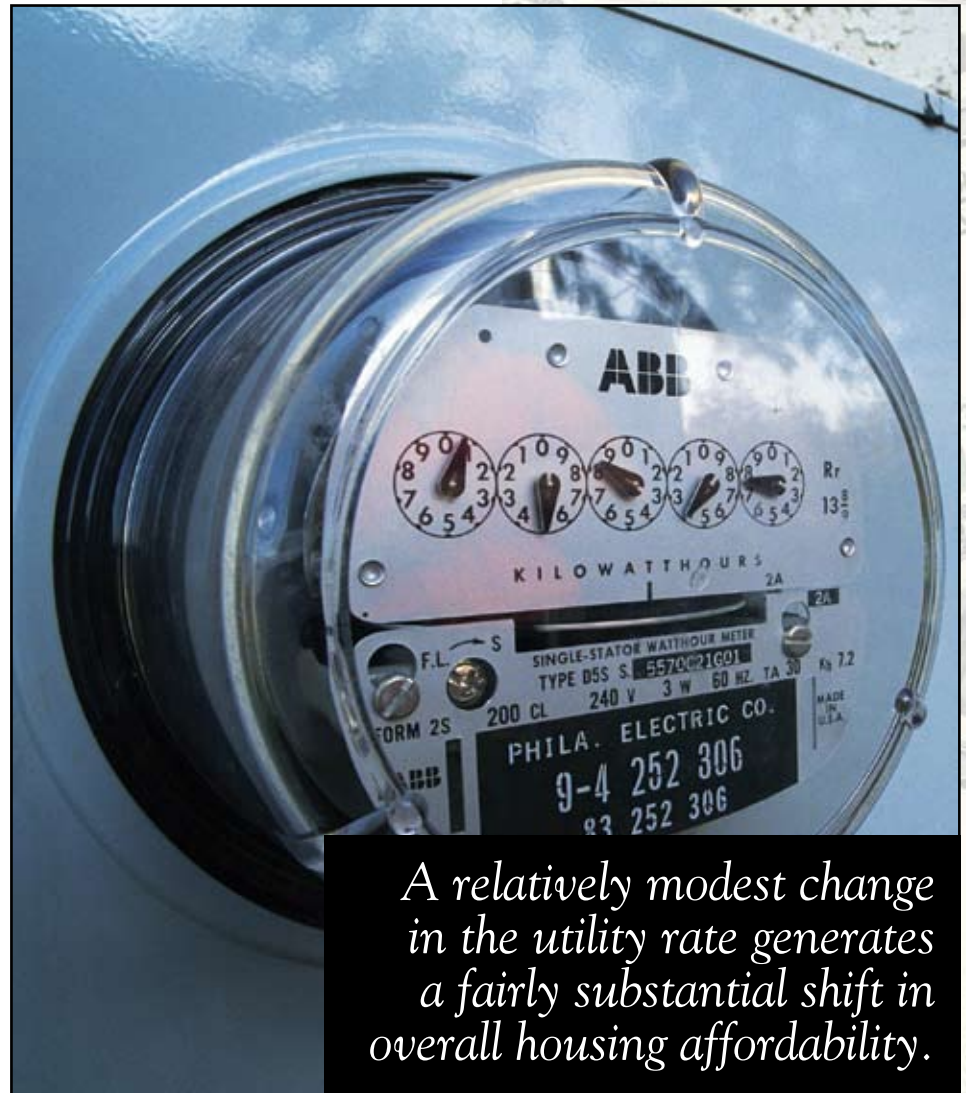
Utility Costs

A 1 percentage point increase in effective utility rate requires an average 8.1 percent increase in income for a buyer to qualify for the same home (Table 10). This effect is stronger at lower utility rates than at higher rates. An increase from 1 percent to 2 percent requires a 9.2 percent increase in income to qualify for a \$125,000 home; from 2 to 3 percent requires an 8.4 percent income increase; and from 3 to 4 percent requires 7.7 percent more income. The maximum price multiplier ranges from 2.01 at a 5 percent utility rate to 2.88 at a 0.5 percent rate, roughly a 43 percent difference. The multiplier range is similar to the ranges for mortgage interest rates and effective property tax rates.

Affordability Distribution, Property Insurance, Utility Rates

Combining the required income to qualify for different home prices under the base assumptions (Table 1) with the ACS statewide household income distribution results in Texas housing affordability distribution for selected effective insurance and utility rates (Tables 11 and 12).

Based on the estimated affordability distribution in Tables 11 and 12 for 0.8 percent insurance cost and a 2 percent utility rate (the base-case assumptions), 4.476 million households, or 57.5 percent of all Texas households, cannot afford to



A relatively modest change in the utility rate generates a fairly substantial shift in overall housing affordability.

Table 12. Texas Households by Maximum-Priced Affordable Home at Selected Effective Utility Rates

Highest Home Price	1 Percent Utility Rate		2 Percent Utility Rate		3 Percent Utility Rate	
	Number of Households	Percent of Households	Number of Households	Percent of Households	Number of Households	Percent of Households
<\$75,000	2,547,816	32.7	2,794,399	35.9	3,030,067	38.9
75,000–125,000	1,629,091	20.9	1,681,135	21.6	1,716,738	22.0
125,000–150,000	619,114	7.9	643,074	8.3	630,523	8.1
150,000–175,000	535,593	6.9	508,043	6.5	537,854	6.9
175,000–200,000	460,064	5.9	417,904	5.4	339,934	4.4
200,000–250,000	616,904	7.9	627,228	8.1	579,112	7.4
250,000–300,000	453,687	5.8	374,290	4.8	359,049	4.6
300,000–400,000	487,881	6.3	382,883	4.9	289,935	3.7
400,000–500,000	172,605	2.2	161,618	2.1	142,777	1.8
>\$500,000	268,097	3.4	200,278	2.6	164,864	2.1

Sources: U.S. Census Bureau, 2004 American Community Survey and Real Estate Center at Texas A&M University
*Based on Table 1 assumptions



purchase a house unless it is priced less than \$125,000.

Changes in the effective insurance rate create a relatively modest downward shift in maximum home price affordability. The changes are reflected in the maximum home price multiplier: an increase from a 0.5 percent rate to a 0.8 percent rate reduces the price multiplier from 2.58 to 2.52 and further reduces it to 2.46 if the rate increases from 0.8 percent to 1.1 percent.

The number of households forced to buy a lower-priced home as insurance

Changes in the utility rate cause a more substantial shift in housing affordability.

At a 1 percent effective utility cost, the maximum home price multiplier equals 2.75, at 2 percent, 2.52 and at 3 percent the multiplier becomes 2.32. At a 2 percent utility rate, the required income for a \$125,000 home is \$49,648; this increases to \$53,814 at a 3 percent utility rate, representing a \$4,166 increase or 8.4 percent additional income required.

Again, the number of households forced to shift to lower priced homes as the utility rate changes depends on the number of marginal households as

Changes in the effective insurance rate create a relatively modest downward shift in maximum home price affordability.

rates change depends on the number of marginal households as required income changes to meet the 30 percent qualifying ratio test. At a 0.5 percent rate, the required income for a \$125,000 home is \$48,398; but at 0.8 percent, that jumps to \$49,648, a modest \$1,250 or 2.6 percent difference.

If the insurance rate rises to 0.8 percent, the number of households limited to a home priced less than \$125,000 increases by 89,588 households (Table 11). If the effective property tax rate rises from 0.8 percent to 1.1 percent, the number of households that can afford a home priced no more than \$125,000 increases from 4.48 million to 4.56 million or 83,096 households.

the required income adjusts to meet the 30 percent qualifying ratio test. Under the base assumption with a 2 percent effective utility rate, 4.476 million or 57.5 percent of all Texas households cannot afford a home priced more than \$125,000. If all other costs are constant and the utility rate is 1 percent, 4.177 million or about 300,000 fewer Texas households are limited to a \$125,000 home. If effective utility costs reach 3 percent, 4.747 million or 271,271 more Texas households are limited to a home priced no higher than \$125,000. ♣

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THE TAKEAWAY

How do each of the component costs of homeownership — mortgage payment, property taxes, insurance and utilities — affect home affordability? Using a standard set of financing and ownership cost assumptions, the author finds that:

<u>a 1 percentage point increase in:</u>	<u>increases required income by:</u>
Mortgage interest rate	5.5 percent
Effective property tax rate	8.2 percent
Effective insurance rate	8.0 percent
Effective utility costs	8.1 percent

Based on reported 2004 household income distribution, 2.8 million Texas households (35.9 percent) cannot afford a home priced over \$75,000; 4.48 million households (57.5 percent) cannot afford a home priced more than \$125,000.



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