REAL ESTATE CENTER
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Going Up? What Mortgage Rate Changes Mean for Homebuyers

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The Takeaway

A small increase in the mortgage interest rate is likely in the next quarter or two. It should have little impact on the overall housing market but will affect buyers caught right on the edge of qualifying for a loan. These buyers will have to make a larger down payment or buy a slightly less expensive home.

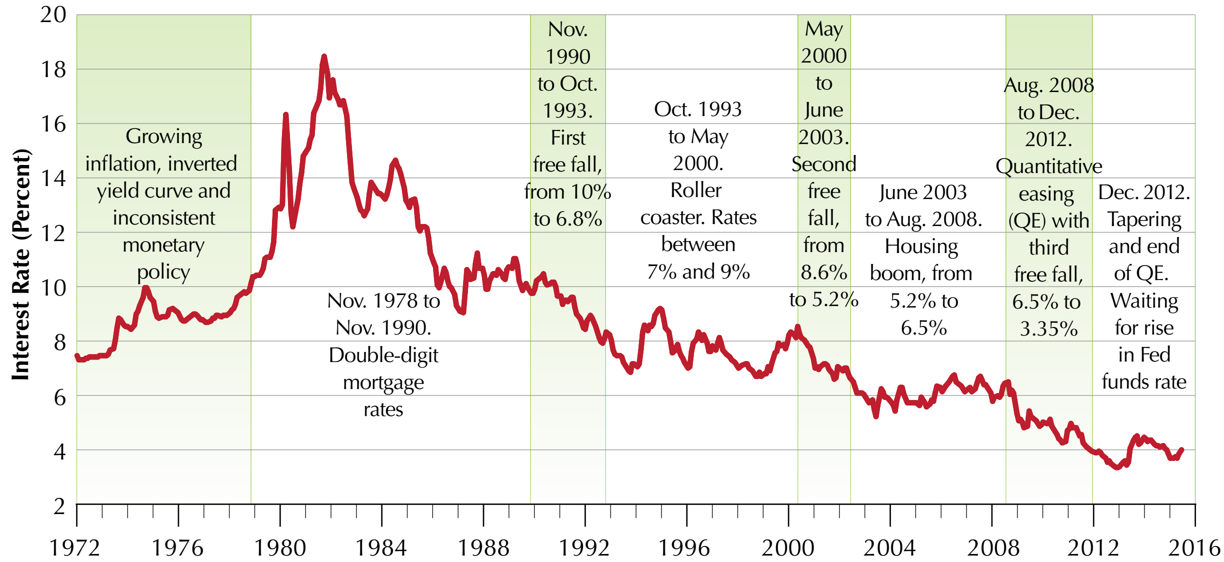
Manipulating the mortgage interest rate to encourage homebuying is nothing new. The Fed started lowering interest rates, especially the home mortgage rate, in the early 1980s. Between November 1978 and November 1990, except for a few months, the 30-year fixed mortgage rate was above 10 percent, peaking at 18.45 percent in October 1981. Although the Fed's main concern at that time was overall inflation, the mortgage interest rate was one of the costs it was trying to get under control to boost the residential market and stimulate general economic growth.

Since early 1991, the 30-year fixed mortgage rate has been almost steadily declining. Although volatile throughout the period, until spring 2013 each subsequent peak was lower than the previous peak and each subsequent low point was lower than the previous one (Figure 1).

The mortgage interest rate since November 1990 fell from 10 percent to an historical low of 3.35 in December 2012, a 22-year period during which the homeownership rate went from 64 percent to a peak of 69 percent and then slid to less than 64 percent again by first quarter 2015.

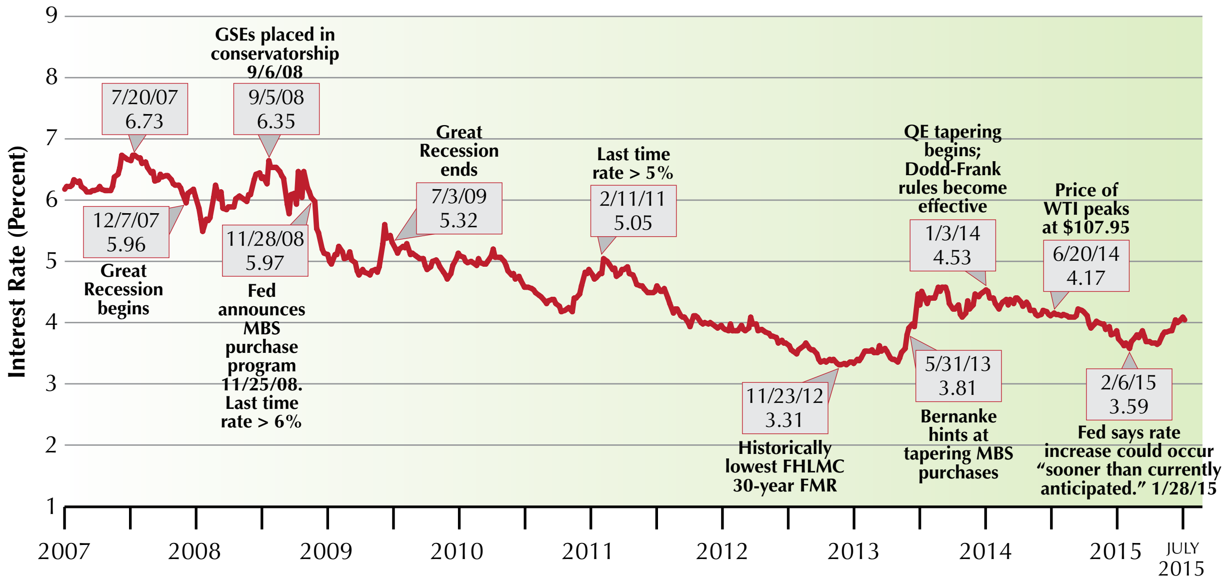
During the housing boom, the mortgage interest rate generally hovered in the 6 percent range, but as the housing bust and recession began in 2007, the Fed became far more directly active in the mortgage market. In December 2007, the 30-year fixed-rate was 5.96 percent. It rose to 6.35 percent when Fannie Mae and Freddie Mac were placed in conservatorship in September 2008 (Figure 2).

Figure 1. 30-Year Fixed Mortgage Rate History



Sources: Haver Analytics; Federal Home Loan Mortgage Corporation (Freddie Mac) and Real Estate Center at Texas A&M University

Figure 2. 30-Year Fixed Mortgage Rate: 2007 to Current



Sources: Federal Home Loan Mortgage Corporation (Freddie Mac) and Real Estate Center at Texas A&M University

The 30-year mortgage rate has not exceeded 8 percent since September 2000, 7 percent since April 2002, 6 percent since November 2008, and 5 percent since February 2011. During this time the Fed aggressively bought mortgage-backed securities from the government-sponsored entities to keep interest rates low and to provide liquidity to the housing market to foster housing activity.

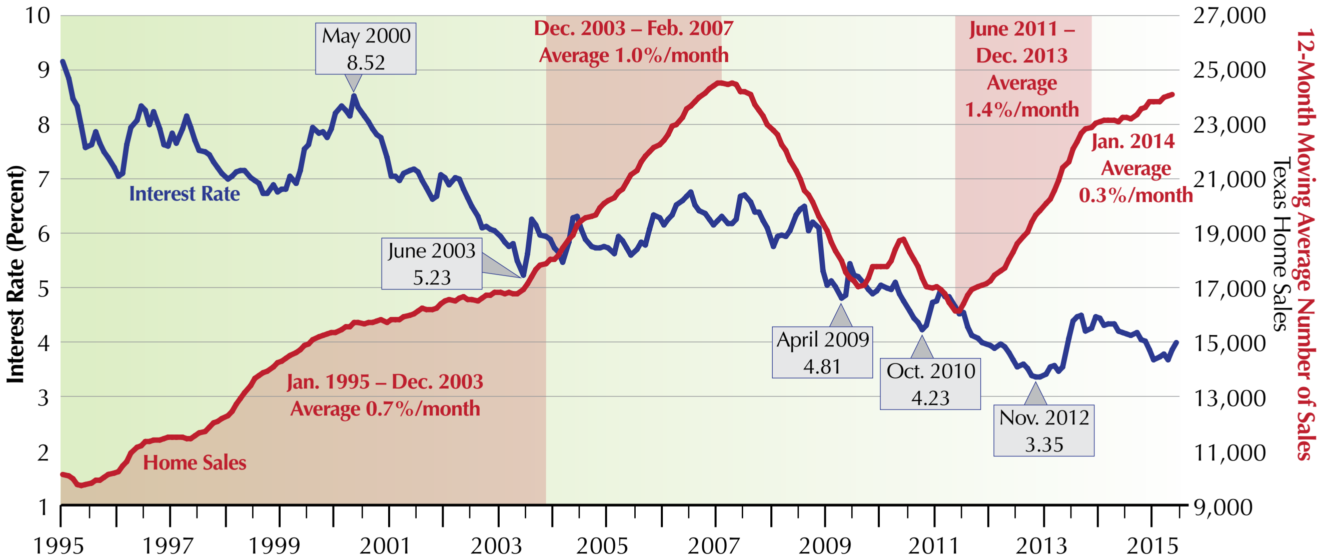
Throughout 2012 and the first half of 2013, the mortgage interest rate dropped below 4 percent. In May 2013, then Fed Chair Ben Bernanke gave a speech suggesting that the Fed might curtail its securities purchasing program in the future. The market jumped 1.23 percentage points from 3.35 percent on May 3 to 4.58 percent by August 23. By the time the Fed did start "tapering" its purchases of treasuries and mortgage-backed securities in January 2014, the mortgage rate stood at 4.53 percent and started a slow, steady decline. In effect, the market capitalized the expected action and subsequent rate hike almost six months before the actual event.

For the past year or more, most observers have been guessing when, not if, the Fed would start raising its target Fed funds rate to raise general interest rates. The Fed's principal weapon to influence economic activity is the cost of money, and for the past six years they have kept the Fed funds rate at zero. The Federal Open Market Committee announced after its January 2015 meeting that a rate increase could occur "sooner than currently anticipated." Since then, the mortgage rate has increased nearly one-half percentage point, from 3.59 percent to 4.04 percent. Again, the market may have already capitalized an expected future increase, causing current rates to rise.

Mortgage Interest Rates and the Texas Housing Market

Historically, monthly home sales in Texas have followed the expected inverse pattern relative to changes in the overall mortgage interest rate. As the rate declined sales increased, and when the rate increased sales tended to fall (Figure 3).

Figure 3. Texas Monthly Home Sales and 30-Year Mortgage Interest Rate



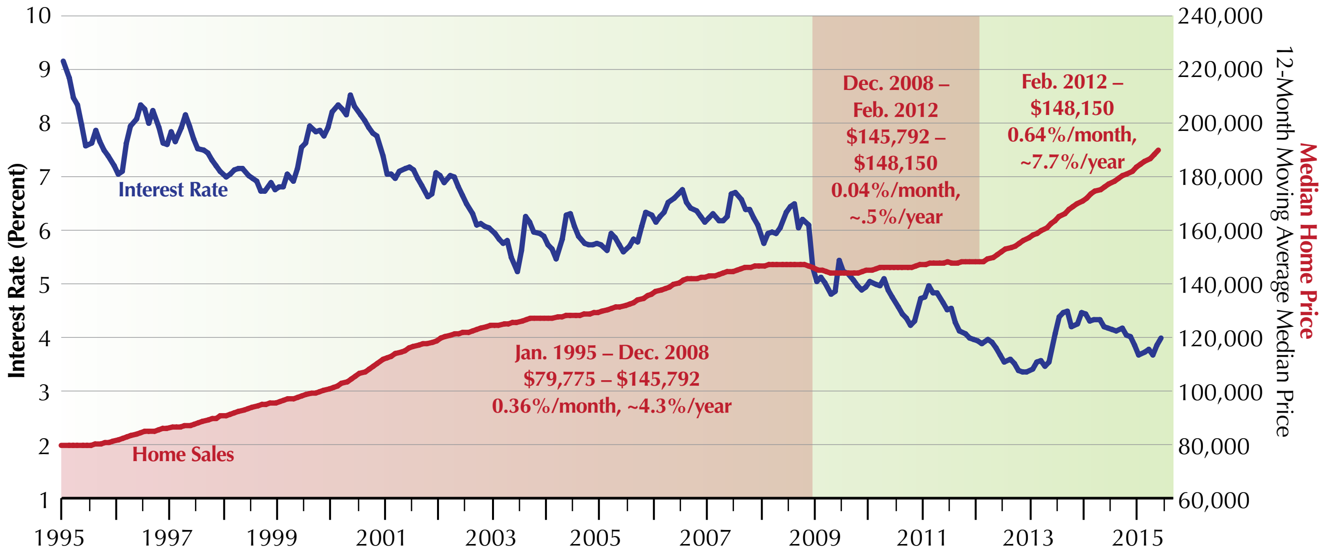
Sources: Federal Home Loan Mortgage Corporation (Freddie Mac) and Real Estate Center at Texas A&M University

Prior to the 2004–07 housing boom, monthly home sales in Texas grew at an average of 0.7 percent per month. During the boom, Texas monthly home sales increased at a full 1 percent per month before falling off at virtually the same pace during the 2007 recession until mid-year 2011. As Texas emerged from the effects of the recession and the state's economy expanded from both energy and nonenergy sectors, Texas home sales escalated at an even faster pace, growing an average 1.4 percent per month between June 2011 and year-end 2013. During this time, the U.S. housing market remained in the doldrums and the Fed specifically kept mortgage interest rates down to stimulate housing activity. In November and December 2012, the 30-year fixed mortgage rate hit its lowest recorded level at 3.35 percent.

Since the beginning of 2014, the pace of growth in home sales has reverted closer to the preboom level. The initial slowdown in home sales growth in the first half of 2014 was probably at least partially a result of the increase in the mortgage rate experienced after the bump in the spring of 2013. The continued slowdown in the home sales growth rate probably reflects growing uncertainty about the Texas economy as the price of oil and the rig count plummeted during the second half of 2014 and early 2015.

Though not as pronounced, home prices, like the volume of housing sale activity, broadly move inversely with the mortgage interest rate. In Texas, the median home price increased on average about 4.3 percent per year between January 1995 and December 2008. This includes the boom period when monthly home sales inflated roughly 12 percent per year, but prices did not increase at a correspondingly high rate. During the recessionary period of 2008–11, the median home price was essentially flat, increasing on average about 0.5 percent per year, including two years when the median price declined slightly (Figure 4).

Figure 4. Texas Median Home Price and the 30-Year Mortgage Interest Rate



Source: Real Estate Center at Texas A&M University

Since early 2012, the Texas median home price has increased around 7.7 percent per year, nearly double the annual rate of increase in the preboom years. The rapid rise in the median price occurred primarily because of the boom in the Texas economy and despite the precipitous jump in the mortgage interest rate in 2013. Over the long term, such a rapid increase in home prices is neither sustainable nor desirable. Affordability, especially to median-income and somewhat below median-income households, becomes a serious issue that might get worse if prices do not revert to their "normal" pace of increase. The current shortage in the supply of existing homes offered for sale and relatively subdued levels of new construction unbalance the housing supply-demand relationship toward higher prices.

Outlook for Higher Mortgage Interest Rates and Effect on Texas Housing

The outlook for a mortgage rate change varies greatly. The Fed has made no secret that it expects to increase rates at some point, most likely sometime in third or fourth quarter 2015. In Fannie Mae's recent "Monthly National Housing Survey," 50 percent of the respondents expected rates to go up in the next year; only 4 percent thought rates would go down. There was no indication in the survey of how much rates would change.

The uncertainty about rate changes also emerged in the recent New York Federal Reserve Bank "Housing Survey — 2015." The New York Fed reported an expected increase in the mortgage rate of one-half percentage point in 2015 and 1.5 percentage points within three years. But the findings were highly volatile. Respondents to the survey felt rates were almost equally likely to go down. The responses indicated that they believed there is about a 10 percent chance rates could go down by at least 1 percentage point and an equal 10 percent chance rates could increase by 2 percentage points or more. Most of the uncertainty incorporates recent international financial actions, the uncertainty about oil prices and the continued modest pace of domestic economic growth.

A change in the 30-year fixed mortgage interest rate results in a directly proportional change in the monthly payment homebuyers must pay. The computed payments in Table 1 and 2 assume a 15 percent down payment acquiring a 30-year fixed-rate mortgage that requires total monthly housing costs be no more than 38 percent of the buyer's monthly gross income (debt-to-income [DTI] qualifying ratio). The total monthly housing costs depicted in Table 1 include the mortgage payment of principal and interest (PI) plus allowances for property taxes (at an effective rate of 2.8 percent of the price of the home), utilities (electricity, gas, water and sewer estimated at an effective rate of 2 percent of the price) and insurance (at an effective rate of 0.8 percent of the price of the home), collectively referred to as TUI.

Table 1. Total Monthly Payments at Alternative Interest Rates for a Home Priced at:*

Rate (%)	$75,000	$100,000	$125,000	$150,000	$184,400	$200,000	$250,000	$300,000	$400,000	$500,000
3.00	618.77	825.03	1,031.29	1,237.55	$1,521.36	1,650.06	2,062.58	2,475.09	3,300.12	4,125.15
3.25	627.44	836.59	1,045.74	1,254.89	$1,542.68	1,673.18	2,091.48	2,509.78	3,346.37	4,182.96
3.50	636.27	848.35	1,060.44	1,272.53	$1,564.37	1,696.71	2,120.89	2,545.06	3,393.42	4,241.77
3.75	645.24	860.31	1,075.39	1,290.47	$1,586.42	1,720.63	2,150.79	2,580.94	3,441.26	4,301.57
4.00	654.35	872.47	1,090.59	1,308.70	$1,608.83	1,744.94	2,181.17	2,617.41	3,489.88	4,362.35
4.25	663.61	884.82	1,106.02	1,327.22	$1,631.60	1,769.63	2,212.04	2,654.45	3,539.26	4,424.08
4.50	673.01	897.35	1,121.69	1,346.02	$1,654.71	1,794.70	2,243.37	2,692.05	3,589.40	4,486.75
4.75	682.55	910.07	1,137.58	1,365.10	$1,678.16	1,820.13	2,275.17	2,730.20	3,640.27	4,550.33
5.00	692.22	922.97	1,153.71	1,384.45	$1,701.95	1,845.93	2,307.41	2,768.90	3,691.86	4,614.83
5.25	702.03	936.04	1,170.05	1,404.06	$1,726.06	1,872.08	2,340.10	2,808.12	3,744.16	4,680.20
5.50	711.97	949.29	1,186.61	1,423.93	$1,750.49	1,898.57	2,373.22	2,847.86	3,797.15	4,746.44
5.75	722.03	962.70	1,203.38	1,444.06	$1,775.23	1,925.41	2,406.76	2,888.11	3,850.81	4,813.52
6.00	732.21	976.28	1,220.36	1,464.43	$1,800.27	1,952.57	2,440.71	2,928.85	3,905.14	4,881.42
6.25	742.52	990.03	1,237.53	1,485.04	$1,825.61	1,980.05	2,475.07	2,970.08	3,960.11	4,950.13
6.50	752.94	1,003.92	1,254.91	1,505.89	$1,851.24	2,007.85	2,509.81	3,011.77	4,015.70	5,019.62
6.75	763.48	1,017.98	1,272.47	1,526.96	$1,877.15	2,035.95	2,544.94	3,053.93	4,071.90	5,089.88
7.00	774.13	1,032.17	1,290.22	1,548.26	$1,903.33	2,064.35	2,580.43	3,096.52	4,128.70	5,160.87
7.25	784.89	1,046.52	1,308.15	1,569.77	$1,929.78	2,093.03	2,616.29	3,139.55	4,186.07	5,232.58
7.50	795.75	1,061.00	1,326.25	1,591.50	$1,956.48	2,122.00	2,652.50	3,183.00	4,244.00	5,304.99
7.75	806.71	1,075.62	1,344.52	1,613.43	$1,983.44	2,151.23	2,689.04	3,226.85	4,302.47	5,378.09
8.00	817.77	1,090.37	1,362.96	1,635.55	$2,010.64	2,180.73	2,725.92	3,271.10	4,361.47	5,451.83
8.25	828.93	1,105.24	1,381.55	1,657.86	$2,038.07	2,210.49	2,763.11	3,315.73	4,420.97	5,526.22
8.50	840.18	1,120.24	1,400.30	1,680.36	$2,065.73	2,240.49	2,800.61	3,360.73	4,480.97	5,601.22
8.75	851.52	1,135.36	1,419.20	1,703.04	$2,093.61	2,270.72	2,838.41	3,406.09	4,541.45	5,676.81
9.00	862.95	1,150.60	1,438.24	1,725.89	$2,121.70	2,301.19	2,876.49	3,451.79	4,602.38	5,752.98

*Assumes 15 percent down, 30-year fixed-rate mortgage, 38 percent maximum debt-to-income ratio, 5.6 percent taxes, insurance and utilities
Source: Real Estate Center at Texas A&M University

In 2014, the median priced Texas home was $184,400, the highlighted column in Table 1. The total monthly payment (PITUI) for the median-priced home, therefore, could range from $1,521.36 per month at a 3 percent interest rate to as much as $2,121.70 if the rate equaled 9 percent, a difference of $600.34 per month. The difference in the total payment from a 3 percent to a 9 percent rate is 39.5 percent at all prices. The PI portion of the total payment would actually nearly double, increasing by 91 percent if the rate changed from 3 to 9 percent. Because the TUI portion of the total payment is assumed to be a fixed 5.6 percent of the price and does not vary by the interest rate, the total payment increases at a lesser rate.

Under the given assumptions, the property tax for the median priced home is $5,163.20 per year or $403.27 per month; utilities cost $307.33 per month or $3,688.00 per year; and property insurance costs $122.93 per month or $1,475.00 per year. The total monthly cost of TUI equals $860.53. At an interest rate of 4 percent, the monthly mortgage payment (PI) for the median-priced home equals $748.30, $112.23 less than the total TUI. For the median-priced home, the PI does not exceed the amount of TUI until the interest rate equals or exceeds 5.25 percent, resulting in a monthly PI of $865.52. The prevailing mortgage interest rate has not been as high as 5.25 percent since August 2008 (Table 2).

Applying the assumed qualifying ratio of 38 percent to the PITUI across the range of interest rates provides the required annual income a household must have to qualify for an 85 percent mortgage (Table 3).

The median Texas household income in 2014 was estimated to be approximately $54,524. Thus, the median-income household in Texas last year would qualify to buy the median-priced home as long as interest rates were no greater than 5.25 percent. With the current mortgage interest rate around 4 percent, Texas housing remains affordable even if household income is a fraction of the median. Even at 50 percent of median income ($27,250), households can essentially afford a $100,000 home if the interest rate is no greater than 4 percent, and can afford a $75,000 home at a rate as high as 9 percent.

Holding the down payment, qualifying ratio and estimated costs of TUI constant, a lower mortgage interest rate allows a given amount of income to buy a higher-priced property. The price of home relative to the amount of income required (the price-to-income multiplier) increases as the rate lowers. Comparing the required income to the price of

Table 2. Monthly Payments for Median-Priced Home: $184,400

Rate (%)	Mortgage Payment (PI)	Housing Payment (PITUI)	(PI) Percent of (PITUI)	Required Annual Income
3.00	660.82	1,521.36	43.4%	$48,043
3.25	682.14	1,542.68	44.2%	$48,716
3.50	703.83	1,564.37	45.0%	$49,401
3.75	725.89	1,586.42	45.8%	$50,097
4.00	748.30	1,608.83	46.5%	$50,805
4.25	771.07	1,631.60	47.3%	$51,524
4.50	794.18	1,654.71	48.0%	$52,254
4.75	817.63	1,678.16	48.7%	$52,995
5.00	841.41	1,701.95	49.4%	$53,746
5.25	865.52	1,726.06	50.1%	$54,507
5.50	889.95	1,750.49	50.8%	$55,278
5.75	914.69	1,775.23	51.5%	$56,060
6.00	939.74	1,800.27	52.2%	$56,851
6.25	965.08	1,825.61	52.9%	$57,651
6.50	990.70	1,851.24	53.5%	$58,460
6.75	1,016.61	1,877.15	54.2%	$59,278
7.00	1,042.80	1,903.33	54.8%	$60,105
7.25	1,069.24	1,929.78	55.4%	$60,940
7.50	1,095.95	1,956.48	56.0%	$61,784
7.75	1,122.90	1,983.44	56.6%	$62,635
8.00	1,150.10	2,010.64	57.2%	$63,494
8.25	1,177.54	2,038.07	57.8%	$64,360
8.50	1,205.19	2,065.73	58.3%	$65,234
8.75	1,233.07	2,093.61	58.9%	$66,114
9.00	1,261.17	2,121.70	59.4%	$67,001

*Assumes 15 percent down, 30-year fixed-rate mortgage, 38 percent maximum debt-to-income ratio, 5.6 percent taxes, insurance and utilities cost

Source: Real Estate Center at Texas A&M University

a house in Table 3 indicates that at a 3 percent rate, a given amount of income can qualify buyers to purchase a home priced at 3.84 times the income. As the rate increases, the multiplier effect declines to 3.24 at 6 percent and 2.75 at 9 percent. A household earning the $54,524 median income, for example, can effectively afford to buy a $209,000 home at a 3 percent interest rate but only a $150,000 home at a 9 percent rate. At 9 percent, the required income to buy the $184,400 median-priced home would be $67,000, an income 23 percent more than the current median.

Every 1 percentage point increase in the interest rate between 3 and 6 percent necessitates 5.8 percent more income to buy the same-priced home. For an increase in the rate from 6 to 7 percent, 5.7 percent more income is necessary; for an increase from 7 to 8 percent, 5.6 percent more; and from 8 to 9 percent, 5.5 percent more income is required. If rates were to suddenly jump from 3 to 5 percent, the required income to buy the same-priced home would have to increase by 12 percent. Similarly, if rates jumped from 3 to 6 percent, the required income would have to increase by slightly more than 18 percent.

Table 3. Annual Income Required for a Home Priced at:

Rate (%)	$75,000	$100,000	$125,000	$150,000	$184,400	$200,000	$250,000	$300,000	$400,000	Price Multiplier
3.00	$19,540	$26,054	$32,567	$39,080	$48,043	$52,107	$65,134	$78,161	$104,214	3.84
3.25	$19,814	$26,419	$33,023	$39,628	$48,716	$52,837	$66,047	$79,256	$105,675	3.79
3.50	$20,093	$26,790	$33,488	$40,185	$49,401	$53,580	$66,975	$80,370	$107,161	3.73
3.75	$20,376	$27,168	$33,960	$40,752	$50,097	$54,336	$67,920	$81,504	$108,671	3.68
4.00	$20,664	$27,552	$34,440	$41,328	$50,805	$55,103	$68,879	$82,655	$110,207	3.63
4.25	$20,956	$27,942	$34,927	$41,912	$51,524	$55,883	$69,854	$83,825	$111,766	3.58
4.50	$21,253	$28,337	$35,422	$42,506	$52,254	$56,675	$70,843	$85,012	$113,349	3.53
4.75	$21,554	$28,739	$35,924	$43,108	$52,995	$57,478	$71,847	$86,217	$114,956	3.48
5.00	$21,860	$29,146	$36,433	$43,719	$53,746	$58,293	$72,866	$87,439	$116,585	3.43
5.25	$22,169	$29,559	$36,949	$44,339	**$54,507**	$59,118	$73,898	$88,677	$118,237	3.38
5.50	$22,483	$29,977	$37,472	$44,966	$55,278	$59,955	$74,944	$89,932	$119,910	3.34
5.75	$22,801	$30,401	$38,001	$45,602	$56,060	$60,802	$76,003	$91,203	$121,605	3.29
6.00	$23,123	$30,830	$38,538	$46,245	$56,851	$61,660	$77,075	$92,490	$123,320	3.24
6.25	$23,448	$31,264	$39,080	$46,896	$57,651	$62,528	$78,160	$93,792	$125,056	3.20
6.50	$23,777	$31,703	$39,629	$47,554	$58,460	$63,406	$79,257	$95,109	$126,812	3.15
6.75	$24,110	$32,147	$40,183	$48,220	$59,278	$64,293	$80,366	$96,440	$128,586	3.11
7.00	$24,446	$32,595	$40,744	$48,892	$60,105	$65,190	$81,487	$97,785	$130,380	3.07
7.25	$24,786	$33,048	$41,310	$49,572	$60,940	$66,096	$82,620	$99,144	$132,192	3.03
7.50	$25,129	$33,505	$41,882	$50,258	$61,784	$67,010	$83,763	$100,516	$134,021	2.98
7.75	$25,475	$33,967	$42,459	$50,950	$62,635	$67,934	$84,917	$101,901	$135,867	2.94
8.00	$25,824	$34,433	$43,041	$51,649	$63,494	$68,865	$86,082	$103,298	$137,731	2.90
8.25	$26,177	$34,902	$43,628	$52,354	$64,360	$69,805	$87,256	$104,707	$139,610	2.87
8.50	$26,532	$35,376	$44,220	$53,064	$65,234	$70,752	$88,440	$106,128	$141,504	2.83
8.75	$26,890	$35,854	$44,817	$53,780	$66,114	$71,707	$89,634	$107,561	$143,414	2.79
9.00	$27,251	$36,335	$45,418	$54,502	$67,001	$72,669	$90,837	$109,004	$145,338	2.75

*Assumes 15 percent down, 30-year fixed-rate mortgage, 38 percent maximum debt-to-income ratio, 5.6 percent taxes, insurance and utilities cost
Source: Real Estate Center at Texas A&M University

On average, every one-quarter percentage point increase in the mortgage interest rate requires an additional 1.4 percent more income to qualify to buy the same-priced home. Since 1984, the average annual rate of growth in the nominal Texas median household income has been 2.8 percent. If the state achieves the average annual increase in median household income in the coming year, general housing affordability should not be greatly affected so long as rates do not increase by more than one-half percentage point. If the general mortgage interest rate increases by more than one-half point, either incomes will have to grow at an above-average rate or households will be forced to buy lower-priced homes.

What Can We Expect?

It seems likely that interest rates will move upward sometime in late 2015 or early 2016. Recent economic and employment data indicate inflation and unemployment are approaching levels that could signal a rate increase by the Fed. The Fed has held its baseline rate at near zero for more than six years and appears nervous about continuing at that level too much longer for fear of overstimulating the economy. On the other hand, international events, such as Greece's default and ongoing bailout, uncertainty in the energy sector with oil and gas prices dropping and the still relatively lackluster expansion in the overall economy, may constrain Fed actions for awhile.

As of now, it's unclear when rates will change. If rates are not increased in 2015, the probability of a rate hike, or perhaps more than one rate hike, increases significantly in 2016. It also appears likely that when the Fed does increase the rate, it will do so in small, incremental amounts over time rather than raising rates substantively in the short term.

Most research about changes in mortgage terms on the housing market concludes that a change in down payment requirements generally affects the housing market more than an interest rate change. However, as down payment requirements are normally more flexible and not as fixed, the shorter-term impact of a rate change can be more pronounced. The major impact, as with many changes, is most felt by households on the edge of qualifying or not qualifying to buy a home. Even a small change in the interest rate can mean a nearly 1.5 percent increase in the income required to qualify for a home. As a consequence, the household is forced to buy a somewhat less expensive home to qualify for a loan and afford the non-mortgage monthly costs.

A mortgage interest rate increase dampens effective housing demand to some degree. Quite often, though, the psychological impact may be more pronounced than the actual economic impact. Prospective buyers become nervous about making a housing commitment, and consequently do nothing. One countereffect, of course, that comes from the psychological influence is a short-term increase in homebuying activity in anticipation of future rate increases.

When mortgage interest rates do increase, it is highly unlikely they will change more than one-quarter to one-half percentage point. While this may sway buyers on the margin for loan qualifying, the overall market should not be greatly affected. In fact, any shift in demand that occurs may actually bring better balance between supply and demand. Whatever level of impact results, it will more likely be felt by lower-income and first-time buyers, as these groups tend to be more on the margin for loan qualifying than higher-income and repeat buyers.

In the longer run, the mortgage rate may wind up reverting to the 5 to 6 percent range. Such a significant move would have a much more pronounced impact on the market, but this magnitude of change will probably be some time in coming.

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