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Office of the Chief Economist

Insight & Outlook

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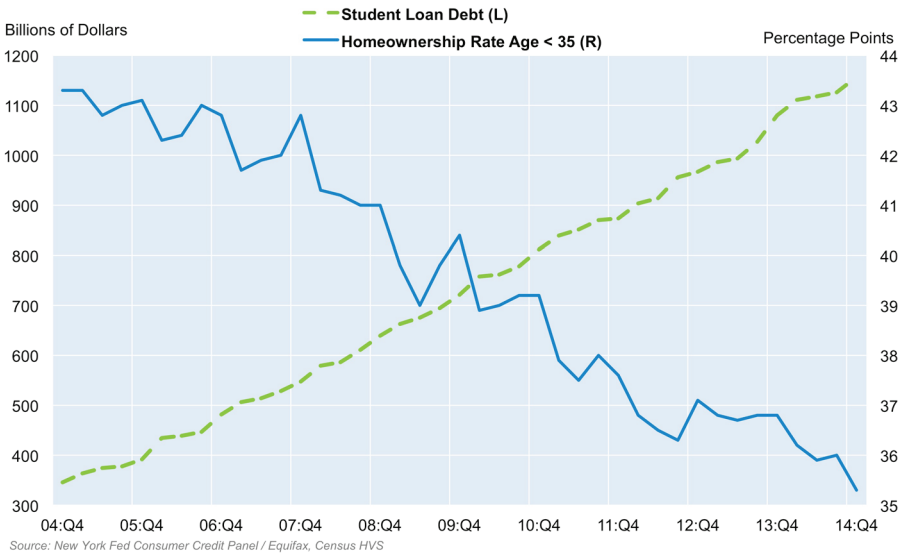
Forecast Summary	2015	2016
Real GDP Growth (%)	2.5	2.5
30-Year Fixed Mtg. Rate (%)	3.9	4.8
FMHPI House Price Appreciation (%)	4.9	3.9
1-4 Family Mortgage Originations ($ Billions)	1,530	1,400

Student loans and homeownership

Many housing experts expected the homeownership rate—which has been declining since 2004—to rebound as Millennials entered the housing market. Instead, the homeownership rate has continued to decline. Even the homeownership rate for the under-35-year-old segment of the market has declined *(Exhibit 1)*.

Exhibit 1: Causation or Coincidence?



Many theories have been advanced for the slower-than-average entry into homeownership of Millennials. Some analysts argue that the financial crisis reduced employment opportunities just as Millennials entered the labor force, delaying and perhaps permanently reducing the career development and financial accumulation of this

cohort. Other analysts have relied on sociological theories, arguing that Millennials have different attitudes towards marriage, family, and renting than prior generations.

One tempting potential explanation is the rapid growth of student loan debt in recent years. College attendance often increases during recessions, as limited job opportunities reduce the opportunity cost of education. During the Great Recession, many high school graduates who might not otherwise have gone to college decided to invest in a college education in hopes of enjoying higher wages once the recession ended. Similarly, some college graduates, failing to find adequate employment, went back for a graduate degree (with the added benefit of deferring repayment of the student loans from their undergraduate years).

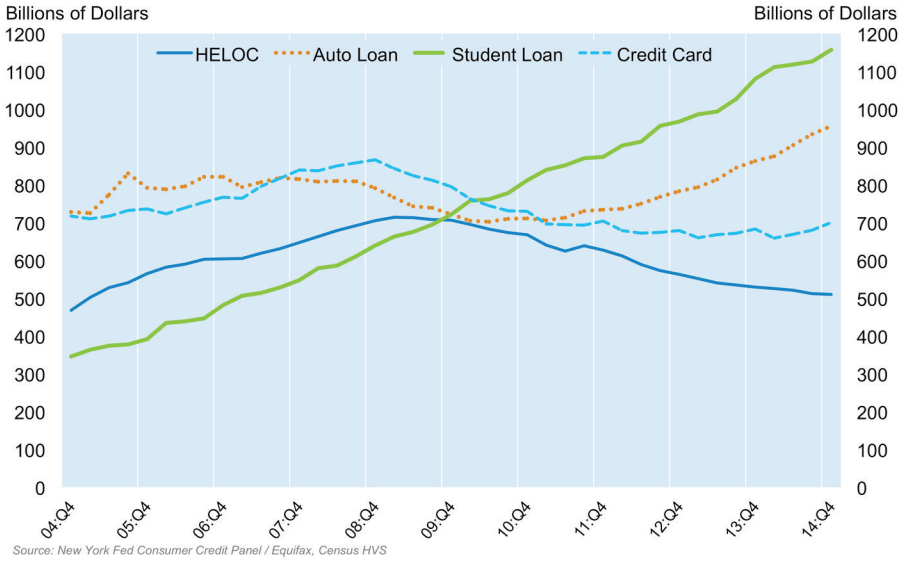
These decisions generated explosive growth in student debt during the Great Recession. The overhang of this debt may be making it harder for Millennials to accumulate down payments and to qualify for a mortgage. In addition, many students have been disappointed in the types of jobs and wages available to them post-college. At least in some cases, the expected returns on investment in education have failed to materialize. Finally, student loans have exhibited high delinquency and default rates, damaging the credit scores of many borrowers, thus raising an additional hurdle to homeownership for these borrowers.

Are the simultaneous growth in student loan debt and the decline in the Millennial homeownership rate just a coincidence, or is the burden of student debt a significant factor in the lower homeownership rates? While we can't answer that question definitively, there are some tantalizing clues in the data.

The recent history of student loan debt

A little over a decade ago in the fourth quarter of 2004, aggregate student loan debt stood at $346 billion dollars—less than home equity lending, credit card debt, and auto loans *(Exhibit 2)*.

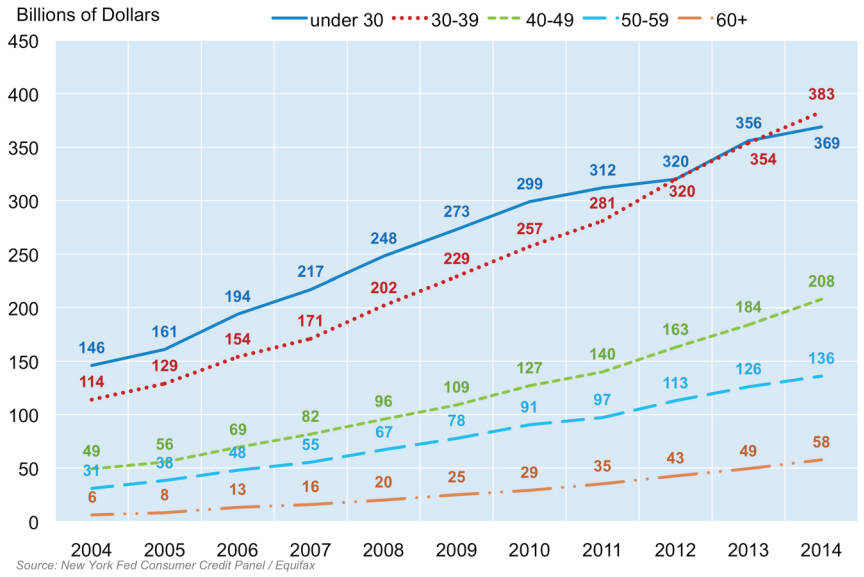
Exhibit 2: Non-Mortgage Balances



At the onset of the Great Recession, outstanding home equity debt, credit card debt, and auto loans declined, and only auto loans have returned to pre-recession levels. In contrast, student debt tripled over ten years, reaching

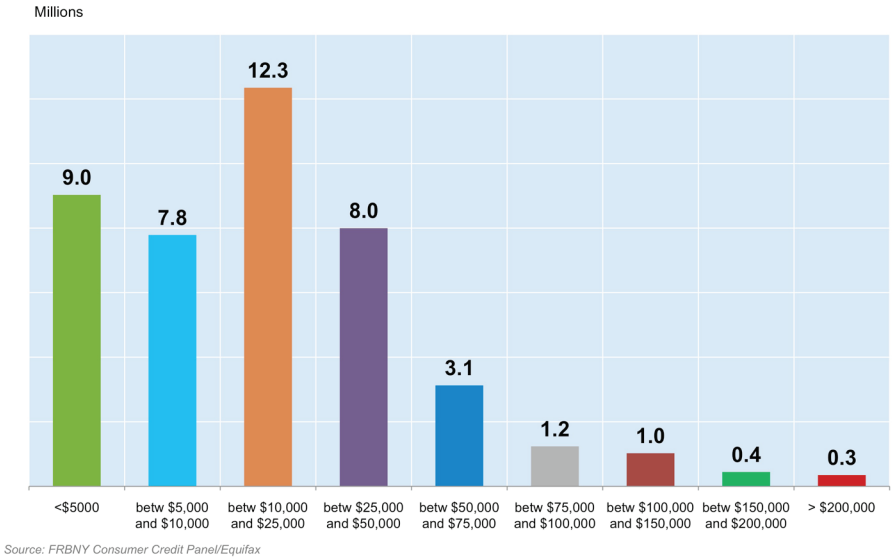
$1.2 trillion in the fourth quarter of 2014.[1] While aggregate student debt expanded for all age groups, the balances were concentrated among those under 30 years old and those between 30 and 39 years old *(Exhibit 3)*.

Exhibit 3: Total student loan balances by age group



The distribution of student loan debt is very uneven *(Exhibit 4)*. Many households have no student loan debt, and among those households with student loan debt many have very little. For others the debt burden is significant. At the end of 2014, over half of those with student debt had outstanding balances greater than $10,000. Nearly two million borrowers owed more than $100,000.

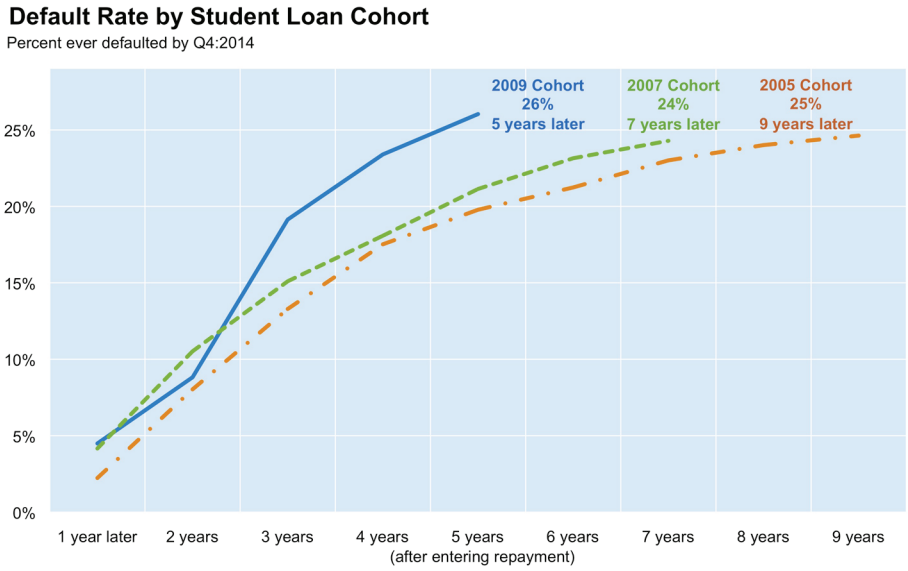
Exhibit 4: Distribution of student loan borrowers by 2014Q4 balance



1 Federal Reserve Bank of New York, Consumer Credit Panel: http://libertystreeteconomics.newyorkfed.org/2015/02/the_student_loan-landscape.html#.VgHTEk3ltoK

Student loans exhibit extraordinarily high rates of delinquency and default, and credit performance has gotten worse in recent years—default rates doubled between 2000 and 2011.[2] This poor credit performance has led to frequent headlines about the student debt crisis *(Exhibit 5)*. In June of this year, Moody's and Fitch put several securitized student loan issues on watch for ratings downgrades, citing signs of continued poor credit performance.[3] Poor performance on student loan repayment will affect a borrower's credit score and make it more difficult to qualify for a home mortgage.

Exhibit 5



Source: New York Fed Consumer Credit Panel / Equifax

Impact of student loan debt on homeownership

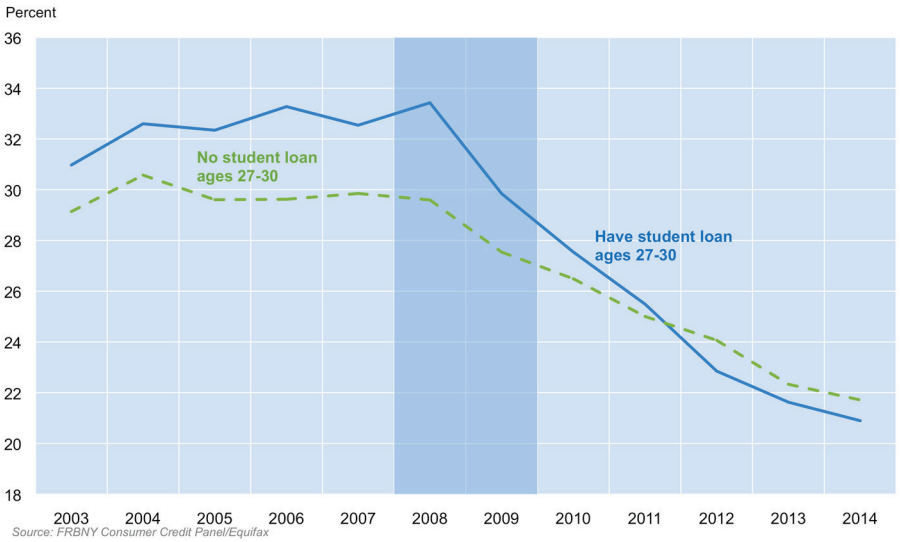
College graduates historically have enjoyed higher incomes than those who did not graduate from college. For instance, the University of California, Berkeley web site states that "a Berkeley education earns our graduates an additional $26,333 each year in income over those who did not go to college."[4] These higher incomes typically support a higher rate of homeownership. And prior to the Great Recession, the associated student loans did not appear to depress the homeownership rate. Before the crisis, homeownership rates of 27-to-30-year-olds with student loans (evidence of at least some college education) were 2 to 3 percent higher than homeownership rates of those with no student loans *(Exhibit 6)*. That gap began to close during the recession and reversed in 2011. By 2014 the homeownership rate of student loan borrowers was about one percentage point *lower* than the rate of non-borrowers.

2 Brookings conference paper by Looney and Yannelis. http://www.brookings.edu/about/projects/bpea/papers/2015/looney-yannelis-student-loan-defaults

3 Interestingly the loans backing the securities in question are guaranteed by the Federal government for a minimum 97 percent of defaulted principal and accrued interest. However, the combination of policies for deferring payments can extend the repayment of the original 10-year loans to as much as 25 years, significantly affecting the yield earned by investors in the securities.

4 http://admissions.berkeley.edu/costofattendance .

Exhibit 6: Proportion with home-secured debt at age 30



Note that student loan debt alone can't explain the low homeownership rate among Millennials. After all, the homeownership rate in this cohort has dropped 5 to 6 percentage points for student loan borrowers and non-borrowers alike.

Others have questioned the current impact of student loan debt on homeownership. A recent report by Zillow notes that student loan debt has only a small impact on the probability of homeownership for those who completed their degree.[5] For instance, a couple in their early 30s with no student loan debt and at least one bachelor's degree between them have a 70 percent chance of owning a home. A couple with $30,000 in student debt and at least one bachelor's degree have a 68 percent chance.

A recent Brookings Institution conference paper by Adam Looney of the U.S. Treasury and Constantine Yannelis of Stanford University helps make sense of these conflicting signals. Using recently released data from the Department of Education, they found that most of the increase in student loan defaults is associated with the rise in the number of borrowers at for-profit schools and, to a lesser-extent, two-year colleges, and certain other non-selective schools. In contrast, default rates have remained low among borrowers attending four-year public and non-profit private colleges. This also holds true for most graduate borrowers despite the recession and relatively high loan balances. This low-default-rate group comprises the vast majority of the federal student loan portfolio *(Exhibit 7)*.

Exhibit 7

5-Year Cohort Default Rates

	All	For Profit	2-Year	Non-Selective	Some Selective	Selective	Grad
2009	28%	47%	38%	27%	18%	10%	5%

5 http://www.zillow.com/blog/student-debt-effect-homeownership-182547/

These patterns of credit performance align with the homeownership patterns highlighted by Zillow. The probability of home ownership is associated with the type of degree *(Exhibit 8)*. Advanced and professional degree holders have a greater than 65 percent chance of owning a home. Those with no degree have a probability of home ownership less than half that. Zillow also found that higher student loan debt balances reduced the probability of homeownership, especially for those who did not complete their studies. The Zillow report noted that accumulating a down payment remains a challenge for first-time home buyers, even those with advanced degrees.

Exhibit 8: Homeownership rate by degree

Type of Degree	Probability of Homeownership (%)
Medical, Law, or Doctorate	70
Master	66
Bachelor	61
Associate	56
No Degree	30

Source: Zillow, Panel Study of Income Dynamics

Implications for mortgage lending

These findings suggest that it may be useful to think of student loan borrowers as being divided into three groups:

- **Successful investors:** Borrowers who completed their degrees and found that their post-college earnings are matching their expectations. Unless they are challenged to accumulate a down payment, student loan debt is not a significant deterrent to purchasing their first home. However, they may be delaying for other reasons;
- **Disappointed earners:** Graduates of four-year institutions whose return on their education investment is less-than-expected. They may not be able to find a job in their field and their wage income is lower than originally anticipated. Some of these borrowers took highly-specialized instruction in fields that deteriorated during their period of studies (for example, petroleum engineers graduating now). Their relatively low earnings and student debt burden may hinder homeownership for this group.
- **At-risk borrowers:** These are the borrowers identified by Looney and Yannelis in their analysis of the Department of Education data. Many of these borrowers are from less affluent groups. They may be economically worse off than before they started school—they have no improvement in their job prospects but they have significant student debts to repay. Delinquency and default on their student loans has hurt their credit scores.

This last group is a particular focus for Freddie Mac's efforts to support prudent, affordable lending to low-and-moderate income borrowers. The impact on credit scores of poor repayment performance may make it particularly difficult to assist some members of this group.

For the Disappointed Earners—and even some of the Successful Investors—Freddie Mac's Home Possible Advantage℠ program, with its option to pay as little as 3 percent down, may provide help in purchasing that first home.

A change just this month in Federal Housing Administration (FHA) policy will make it more difficult for some student loan borrowers to qualify for a mortgage. In the past, FHA did not take student debt into account in qualifying a borrower if the debt payments had been temporarily deferred for at least 12 months (a common practice). This policy may have been too generous; Freddie Mac takes a percentage of the debt into account when calculating an applicant's monthly debt-to-income (DTI) ratio. However, FHA's new policy uses a percentage that is twice as large as Freddie Mac's.

Conclusion

The low homeownership rate among Millennials is still something of a puzzle—it cannot be explained solely by the increase in student loan debt. However student debt plays a role—higher balances are associated with a lower probability of homeownership at every level of college and graduate education. And recent data has confirmed that student borrowers are not alike. Students who attended schools with less-certain educational benefits have not fared well. Borrowers who did not complete their studies have fared worst of all. These groups are likely to continue to affect the pattern of homeownership among Millennials.

Outlook: A tale of two economies

The macroeconomic engine has not kicked into gear yet, and the Fed's recent decision to defer increasing short-term interest rates suggests they share this view. At the same time, the housing market is on the way to having its best year since the recovery began. Keep in mind though that the housing sector is coming back from rock bottom and housing activity remains weak compared to historical norms.

Macroeconomy

Fed watchers must feel they are watching a revival of *Waiting for Godot*. Approaching every meeting of the Federal Open Market Committee (FOMC), the market braces itself for a Fed tightening, only to watch the FOMC delay any action for at least one more meeting.

Freddie Mac's support for student housing

The cost of student housing comprises a significant component of the overall cost of attending college. The University of California at Berkeley publishes estimates of the all-in cost of attendance to help students prepare for the financial burden of attending Cal. For the 2015-16 academic year, the tuition for an in-state resident is $13,432. Cal estimates the cost of living in a campus residence hall (room and board) at $14,388—almost a thousand dollars more than tuition and over 40 percent of the total estimated cost of attendance.

Most people are aware of Freddie Mac's support for affordable workforce rental housing. However many are unaware that Freddie Mac also provides financing for student housing through its multifamily division. So far in 2015, Freddie Mac has funded over $1.5 billion in loans for student housing providing over 30,000 units at colleges and universities across the country. Student housing is a growing sector of the multifamily market. Freddie Mac's participation in this sector plays a role in making college affordable for more students.

For some time, the Fed has been signaling they will increase the Federal funds rate just as soon as the data persuade the FOMC that labor markets have recovered and inflation is reliably expected to be at or above 2 percent. The unemployment rate dipped to 5.1 percent in August, a level that many consider consistent with full employment. We remain cautious on this front—a sharp decline in labor force participation accounts for essentially all the improvement in the unemployment rate since the end of the recession. Moreover, wage growth has been disappointing in this expansion.

In contrast, the inflation rate has not yet reached the Fed's 2 percent threshold. Arguably part of the shortfall can be attributed to the collapse in energy prices and the strengthening of the dollar. Fed comments at the Jackson Hole conference in August suggested the FOMC is looking beyond these transitory influences. However, according to the recent Atlanta Fed Business Inflation Expectations survey, firms have lowered their inflation projections for the coming 12 months, from 1.8 to 1.7 percent.

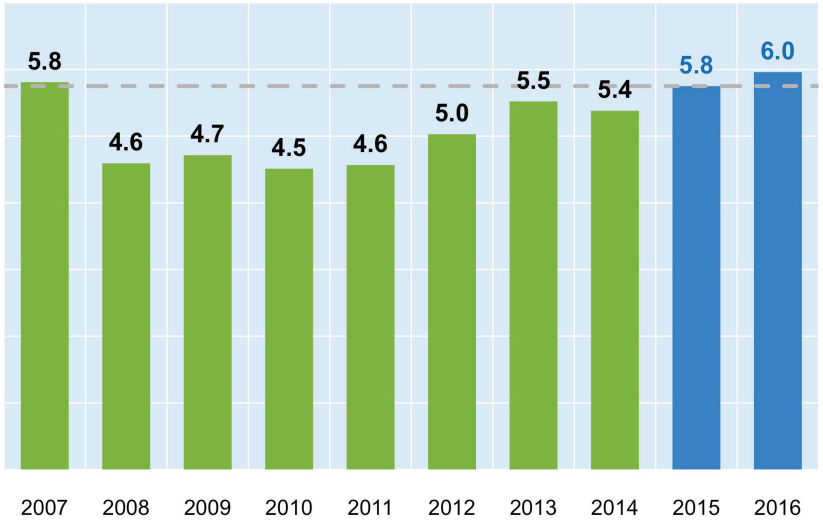
This mixed bag of economic indicators has left the FOMC divided. It is likely, however, that the recent turbulence emanating from China tipped the balance at the September meeting of the FOMC. In the absence of a clear economic signal, the Fed may have wanted to avoid adding any additional volatility to already skittish financial markets.

Housing: Best year in home sales since 2007, but...

The Good

At the current pace, home sales this year are expected to be the highest since 2007. Existing home sales in August fell a little short of expectations, but the inventory of existing homes for sale remained below the 6 month mark. The faster-than-expected decline in the unemployment rate is boosting demand for homes. A more significant contributor is likely the continued low level of mortgage rates, which has kept affordability high despite impressive gains in house prices. The interest rate on 30-year fixed rate mortgages averaged 3.90 percent in August, and the rate on 15-year fixed rate mortgages averaged 3.12 percent. Mortgage rates have remained relatively stable in recent weeks despite the wide swings in the stock market *(Exhibit 9)*.

Exhibit 9: Total Home Sales



Increased credit availability is another factor supporting the demand for housing. The Mortgage Credit Availability Index (MCAI) published by the Mortgage Bankers Association increased 0.5 percent in August on top of a larger increase in July.

Lastly, foreign demand for housing in the US remains strong. According to the National Association of Realtors 2015 Profile of International Home Buying Activity, from April 2014 through March 2015, total international home sales were about $104 billion and represented 8 percent of existing home sales.

The Not So Good

Housing remains relatively affordable in most of the country. However, at some point soon, the economic outlook will firm up enough for the Fed to begin raising short-term interest rates. Any increase in mortgage rates in response to the Fed tightening will chip away at affordability. As a rough rule of thumb, a quarter-point increase in mortgage rates is the financial equivalent of increasing house prices by 3 percent. For example, an increase in the 30-year mortgage rate from 4 to 5 percent has the same impact on affordability as increasing the price of a house from $200,000 to $225,000.

Forecast Updates

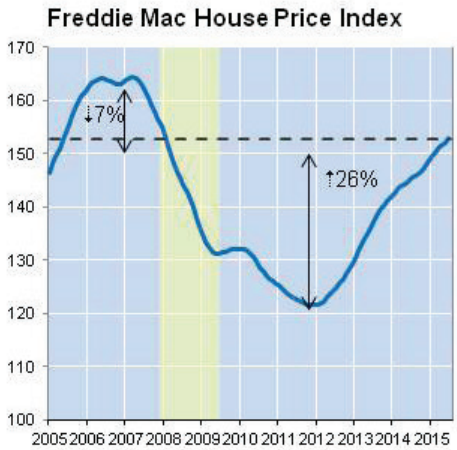
Economy: Our view on the near-term trajectory of the macroeconomy is largely unchanged from last month. While interest rates are expected to rise more slowly than we projected last month (see below), the effect on the general economy will be muted. Our economic growth and unemployment projections are largely unchanged from last month. Our outlook for inflation remains subdued, largely due to the lingering effects of declining oil prices. We expect inflation to rise gradually to a long-term average of about 2 percent.

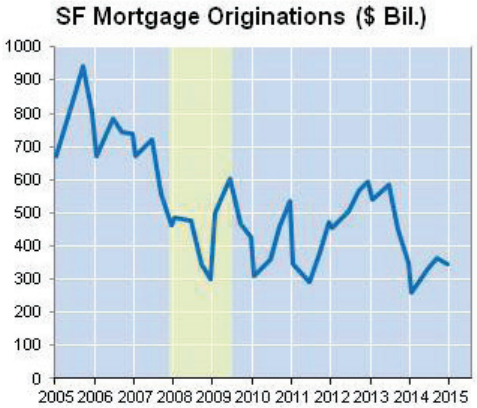
Based on the Fed's decision last week to defer an increase in the Federal funds rate, we lowered our 2015 and 2016 interest rate forecasts by 0.1 percent for both the 10-year constant maturity Treasury (CMT) and the 30-year fixed rate mortgage (FRM). The 10-year CMT forecasts for 2015 and 2016 are 2.2 percent and 2.9 percent, respectively. The 30-year FRM forecasts for 2015 and 2016 are 3.9 percent and 4.8 percent respectively. In light of the Fed's inaction, we revised down our short-term interest rate forecasts as well. Our 1-year CMT forecasts for 2015 and 2016 stand at 0.4 percent and 1.4 percent, respectively, down from 0.5 percent and 1.9 percent in our August forecast.

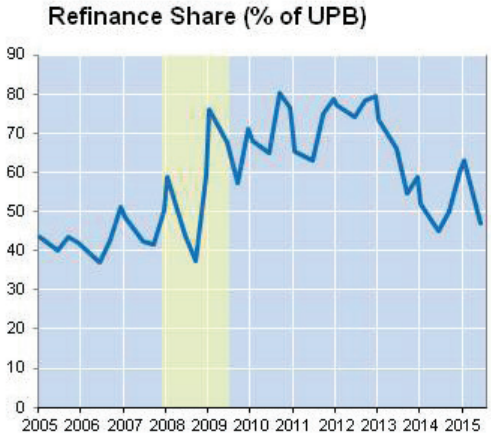
Housing: The Home Mortgage Disclosure Act (HMDA) data on mortgage originations was released in late September. Preliminary estimates indicate that origination volume was about $100 billion higher than we previously expected. We now estimate that total market originations in 2014 were $1,350 billion.

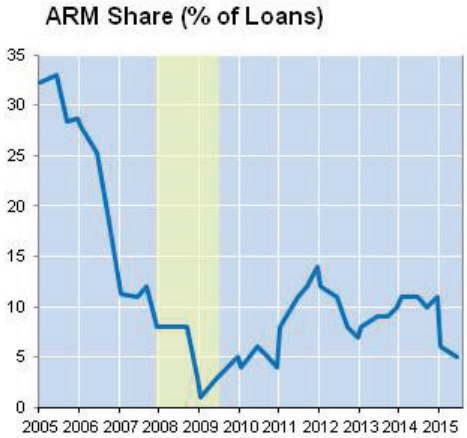
Due to the upward revision to 2014 and stronger-than-expected housing activity in the first half of 2015, we've increased our estimate of 2015 mortgage originations to $1.53 trillion and 2016 originations to $1.4 trillion. We've also increased our projection of 2015 home sales to 5.74 million units, which would be the best year since 2007. And we've revised the 2015 refinance share up to 48 percent of all single family mortgage originations.

Housing Snapshot A selection of key indicators





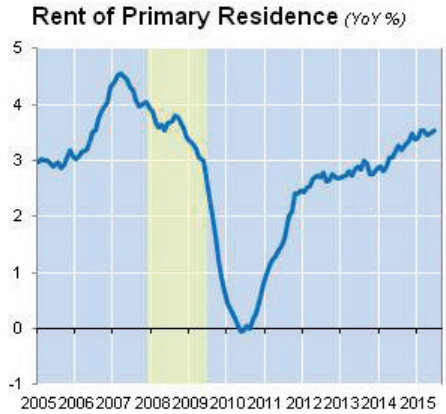


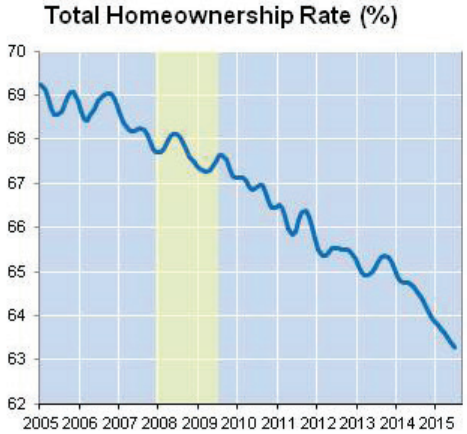


Homes for sale (Ths., NSA)
5000
4500
4000
3500
3000
2500
2000
1500
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

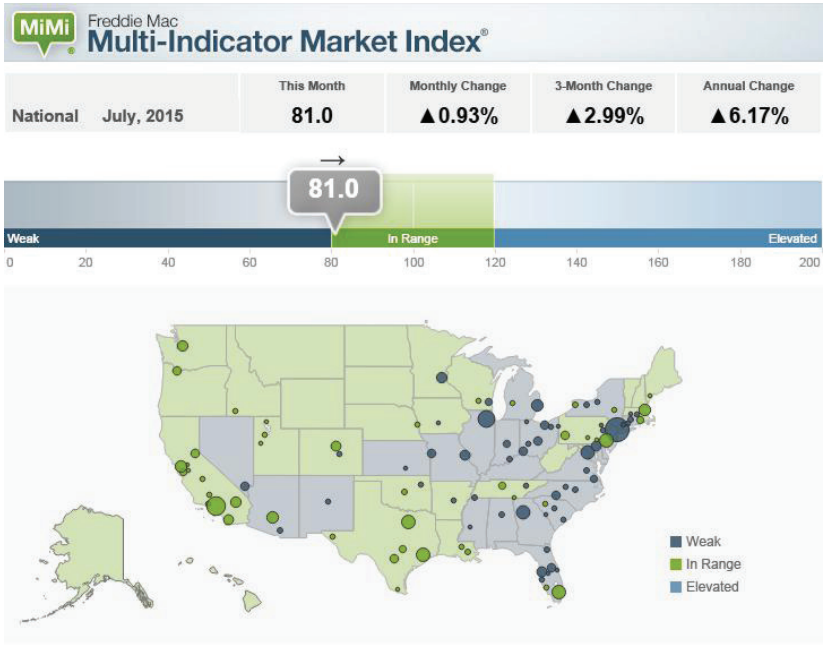
Homes for rent (Ths., NSA)
5000
4800
4600
4400
4200
4000
3800
3600
3400
3200
3000
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

Housing Starts (Ths., SAAR)
2500
2000
1500
1000
500
0
Long-run historical average
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


Rent of Primary Residence (YoY %)
5
4
3
2
1
0
-1
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


Total Homeownership Rate (%)
70
69
68
67
66
65
64
63
62
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

Negative Equity Share
30%
25%
20%
15%
10%
5%
0%
2009
2010
2011
2012
2013
2014



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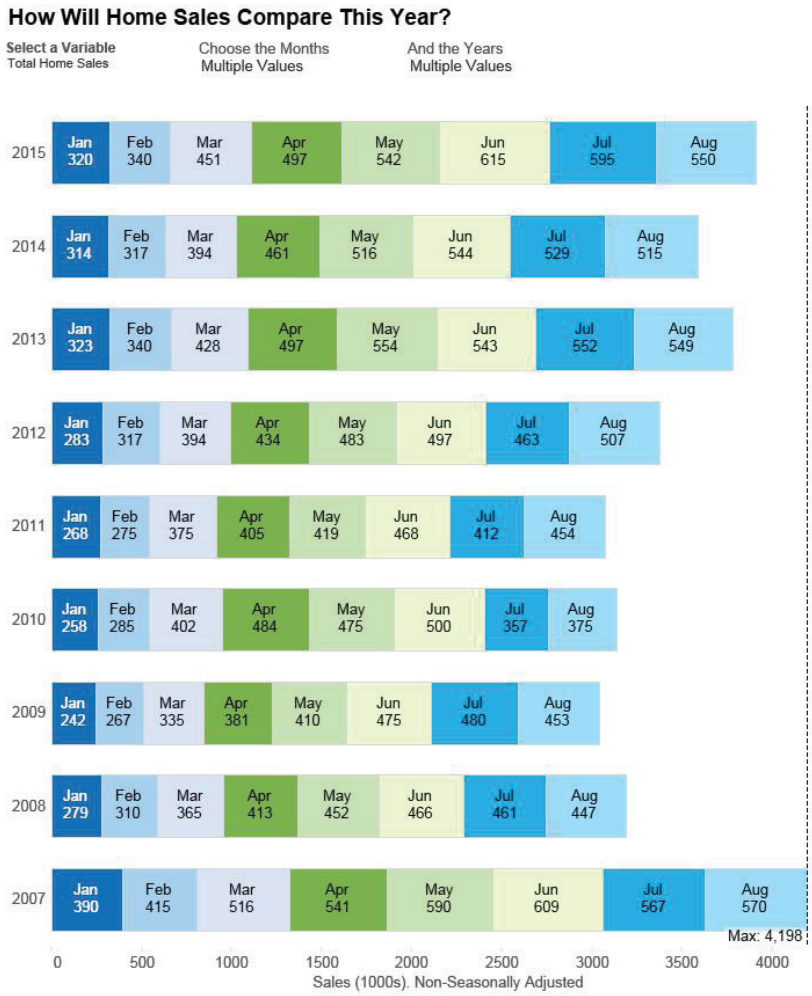


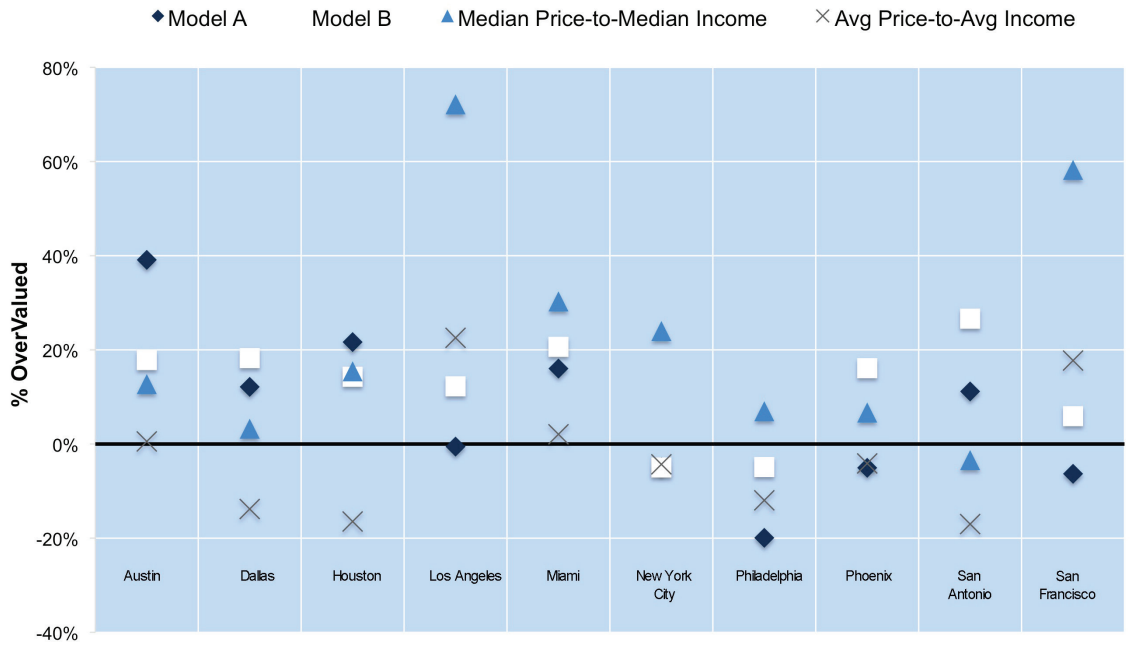
Source: National Association of Realtors, Census/HUD © 2015 Freddie Mac

In Closing: What Were They Thinking?

House prices nationally have recovered to within 5 percent of their June 2006 peak. And in some states and metro areas, house prices are significantly higher than their June 2006 levels. In contrast, the post-2009 expansion has been marked by relatively weak growth in income. As a result, the relatively high ratio of house prices to incomes in some metro areas has caught our attention. Should we be concerned, or are current house prices sustainable?

In last month's *Insight & Outlook*, we pointed out that statistics alone can't identify whether housing is overvalued or undervalued. We displayed four reasonable, but different, measures of housing valuation for ten metro areas (repeated as Exhibit 10 below). The results were disheartening—the metrics frequently disagreed. By one measure, homes in the Houston metro area were overvalued by 15 percent in March of this year. By another equally-intuitive measure, the same homes were *undervalued* by 16 percent. The valuation metrics weren't much better at pinpointing the sustainability of prices in other metro areas *(Exhibit 10)*.

Exhibit 10



Even when expert human judgment is added to the mix, it's still tough to tell whether housing is overvalued. As an example, the Federal Reserve couldn't come to a consensus about house prices in the bubble years leading up to the financial crisis. Researchers from Swarthmore College reviewed transcripts from the meetings of the Federal Open Market Committee (FOMC) to ascertain the Fed's view of house prices prior to the Great Recession.[6] Despite their access to extensive data and analysis, the members of the FOMC were divided. While some warned of a potential housing bubble, others argued just as vigorously that house prices could be supported on the basis of economic fundamentals. In mid-2005, one bubble skeptic on the FOMC went so far as to say "just for the hell of it,

6 Golub, Stephen, Ayse Kaya and Michael Reay. "What were they thinking? The Federal Reserve in the run-up to the 2008 financial crisis," *Review of International Political Economy*, 2014. The FOMC is the Fed committee that meets eight times a year to set monetary policy. The FOMC transcripts are made public after a five-year lag. The authors reviewed a wide range of Fed documents in addition to the FOMC transcripts.

I would like to offer the hypothesis that property values are too low rather than too high." And even those members worried about a bubble did not appear to foresee any systemic risk from a possible collapse of house prices.

This historical example and the information in our previous article should make everyone cautious about relying too heavily on statistical measures of housing valuation. However, in the interest of full disclosure, we have to admit that we have added our own metric to the mix. MiMi® (Multi-Indicator Market Index®) combines several indicators of current market conditions and compares the result to the long-term value of that combination to identify whether a market is currently weak, stable, or elevated. We find MiMi useful in developing a view of the overall stability of specific markets, but even MiMi isn't a replacement for a broader-ranging analysis with a heavy dose of judgment (and humility).

Despite the difficulties, we have an inescapable responsibility to make our best effort at assessing the sustainability of current house prices. The unpaid balance of Freddie Mac mortgage-backed securities currently stands at just over $1.5 trillion and our retained portfolio, while steadily declining, remains between $350 and $400 billion. That's a lot of mortgage credit risk. During the Great Recession, falling house prices inflicted enormous losses on the GSEs and on other holders of mortgage credit risk. To manage our risk exposure, we have to do the best job we can to spot warning signs of overvalued markets.

Sean Becketti, Chief Economist
Leonard Kiefer, Deputy Chief Economist
Penka Trentcheva, Statistician
Travell Williams, Statistician
Matthew Reyes, Financial Analyst

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September 2015 Economic and Housing Market Outlook

Revised 9/29/2015

Indicator	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	Annual Totals 2011	2012	2013	2014	2015	2016
Real GDP (%)	-0.9	4.6	4.3	2.1	0.6	3.9	**2.7**	**2.7**	**2.5**	**2.5**	**2.5**	**2.5**	1.7	1.3	2.5	2.5	**2.5**	**2.5**
Consumer Prices (%) a.	2.1	2.4	1.2	-0.9	-3.1	3.0	**2.3**	**1.3**	**2.4**	**2.3**	**2.1**	**2.1**	3.3	1.9	1.2	1.2	**0.9**	**2.2**
Unemployment Rate (%) b.	6.6	6.2	6.1	5.7	5.6	5.4	**5.2**	**5.1**	**5.1**	**5.1**	**5.0**	**5.0**	8.9	8.1	7.4	6.2	**5.3**	**5.1**
30-Year Fixed Mtg. Rate (%) b.	4.4	4.2	4.1	4.0	3.7	3.8	**4.0**	**4.2**	**4.4**	**4.6**	**4.9**	**5.1**	4.5	3.7	4.0	4.2	**3.9**	**4.8**
5/1 Hybrid Treas. Indexed ARM Rate (%) b.	3.1	3.0	3.0	3.0	2.9	2.9	**3.2**	**3.4**	**3.7**	**4.0**	**4.3**	**4.6**	3.3	2.8	2.9	3.0	**3.1**	**4.2**
1-Year Treas. Indexed ARM Rate (%) b.	2.5	2.4	2.4	2.4	2.4	2.5	**2.5**	**2.6**	**2.7**	**2.8**	**3.0**	**3.2**	3.0	2.7	2.6	2.4	**2.5**	**2.9**
10-Year Const. Mat. Treas. Rate (%) b.	2.8	2.6	2.5	2.3	2.0	2.2	**2.2**	**2.4**	**2.5**	**2.8**	**3.0**	**3.2**	2.8	1.8	2.4	2.6	**2.2**	**2.9**
1-Year Const. Mat. Treas. Rate (%) b.	0.1	0.1	0.1	0.2	0.2	0.3	**0.4**	**0.6**	**0.9**	**1.1**	**1.6**	**2.1**	0.2	0.2	0.1	0.1	**0.4**	**1.4**

Indicator	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	Annual Totals 2011	2012	2013	2014	2015	2016
Housing Starts c.	0.93	0.98	1.03	1.06	0.98	1.16	**1.20**	**1.25**	**1.30**	**1.35**	**1.45**	**1.50**	0.61	0.78	0.92	1.00	**1.15**	**1.40**
Total Home Sales d.	5.10	5.31	5.50	5.53	5.49	5.80	**5.85**	**5.80**	**5.85**	**5.95**	**5.95**	**6.10**	4.57	5.03	5.52	5.38	**5.74**	**5.96**
FMHPI House Price Appreciation (%) e.	1.6	0.8	1.1	1.5	1.6	1.2	**1.0**	**1.0**	**1.0**	**1.0**	**0.9**	**0.9**	-3.2	6.2	9.6	5.0	**4.9**	**3.9**
S&P/Case-Shiller® Home Price Index (%) f.	1.3	-0.1	1.2	2.1	1.1	0.2	**1.0**	**1.0**	**1.0**	**1.0**	**0.9**	**0.9**	-3.7	6.6	10.8	4.6	**3.3**	**3.9**
1-4 Family Mortgage Originations g.																		
Conventional	$200	$284	$306	$301	**$290**	**$379**	**$320**	**$240**	**$224**	**$340**	**$336**	**$220**	$1,206	$1,750	$1,570	$1,091	**$1,229**	**$1,120**
FHA & VA	$52	$63	$71	$73	$80	$81	**$80**	**$60**	**$56**	**$85**	**$84**	**$55**	$286	$372	$355	$259	**$301**	**$280**
Total	$252	$347	$377	$374	**$370**	**$460**	**$400**	**$300**	**$280**	**$425**	**$420**	**$275**	$1,492	$2,122	$1,925	$1,350	**$1,530**	**$1,400**
ARM Share (%) h.	11	11	10	11	6	5	**9**	**9**	**13**	**14**	**15**	**16**	11	10	9	11	**7**	**15**
Refinancing Share - Applications (%) i.	52	45	50	60	63	47	**45**	**40**	**39**	**38**	**36**	**33**	71	77	63	52	**49**	**37**
Refinancing Share - Originations (%) j.	46	36	39	48	**57**	**50**	**45**	**40**	**40**	**30**	**26**	**25**	64	70	59	42	**48**	**30**
Residential Mortgage Debt (%) k.	-0.8	0.4	1.4	1.8	-0.3	2.5	**2.0**	**2.5**	**2.5**	**3.0**	**3.0**	**3.5**	-2.1	-1.7	-0.5	0.7	**1.7**	**3.0**

Note: Quarterly and annual forecasts are shown in shaded areas; totals may not add due to rounding; quarterly data expressed as annual rates.
Annual forecast data are averages of quarterly values; annual historical data are reported as Q4 over Q4.

a. Calculations based on quarterly average of monthly index levels; index levels based on the seasonally-adjusted, all-urban consumer price index.
b. Quarterly average of monthly unemployment rates (seasonally-adjusted); Quarterly average of monthly interest rates.
c. Millions of housing units; quarterly averages of monthly, seasonally-adjusted levels (reported at an annual rate).
d. Millions of housing units; total sales are the sum of new and existing single-family homes;quarterly averages of monthly, seasonally-adjusted levels (reported at an annual rate).
e. Quarterly growth rate of Freddie Mac's House Price Index; seasonally-adjusted; annual rates for yearly data.
f. National composite index (quarterly growth rate), seasonally-adjusted; annual rates for yearly data.
g. Billions of dollars (not seasonally-adjusted); conventional for 2014 are Freddie Mac estimates.
h. Federal Housing Finance Agency (FHFA); quarterly averages of monthly shares of number of loans of conventional, home-purchase mortgage closings (not seasonally-adjusted).
i. MBA Applications Survey: activity by dollars, total market refi share percent for United States (not seasonally-adjusted).
j. Home Mortgage Disclosure Act for all single-family mortgages (not seasonally-adjusted); annual share is dollar-weighted average of quarterly shares (2014 estimated).
k. Federal Reserve Board; growth rate of residential mortgage debt, the sum of single-family and multifamily mortgages

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