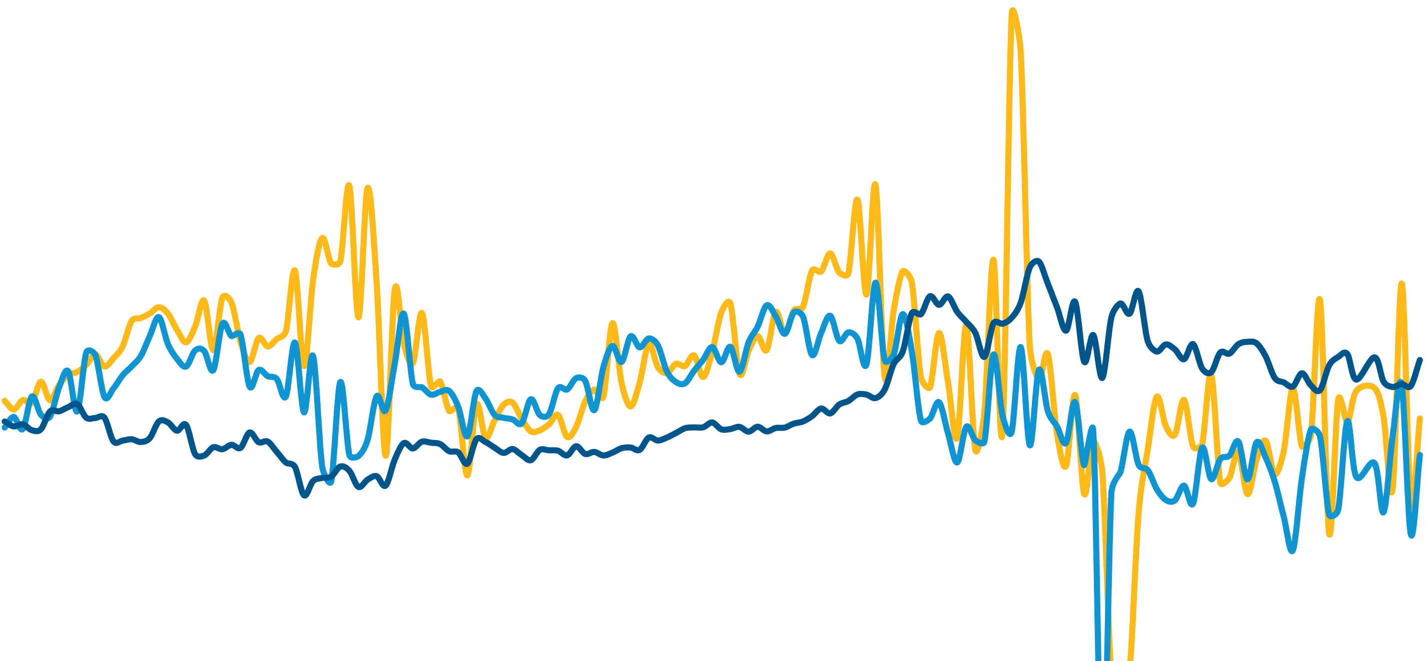
HOUSING FINANCE POLICY CENTER



HOUSING FINANCE AT A GLANCE

A MONTHLY CHARTBOOK

February 2019

URBAN INSTITUTE · ELEVATE · THE · DEBATE

ABOUT THE CHARTBOOK

The Housing Finance Policy Center's (HFPC) mission is to produce analyses and ideas that promote sound public policy, efficient markets, and access to economic opportunity in the area of housing finance. *At A Glance*, a monthly chartbook and data source for policymakers, academics, journalists, and others interested in the government's role in mortgage markets, is at the heart of this mission.

We welcome feedback from our readers on how we can make *At A Glance* a more useful publication. Please email any comments or questions to ataglance@urban.org.

To receive regular updates from the Housing Finance Policy Center, please visit here to sign up for our bi-weekly newsletter.

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CONTENTS

Overview

Credit Box

State of the Market

INTRODUCTION

After years of growth, commercial banks' agency MBS holdings are retreating

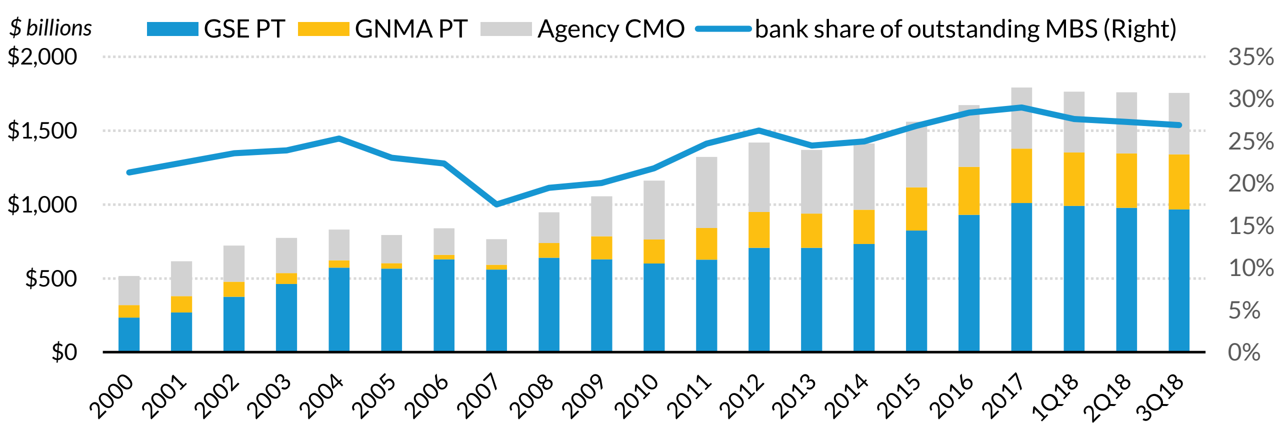
Commercial banks and thrifts institutions significantly ramped up their ownership of agency mortgage-backed securities (MBS) after the financial crisis began in 2008. The chart below shows total volume of agency pass-throughs and CMOs owned by banks and thrifts since 2000. Pass-through volume is broken out separately for Fannie Mae and Freddie Mac (the GSEs) and Ginnie Mae.

Banking institutions gradually increased their ownership of agency pass-throughs and CMOs from about $765 billion at year-end 2007 to a peak of nearly $1.8 trillion at the end of 2017. As a share of total agency MBS outstanding, they owned 17.5 percent at year-end 2007 compared to 29 percent at year-end 2017. Except for a few isolated quarterly declines (mostly during the bubble), bank holdings of agency MBS increased consistently from 2008 to 2017, driven mostly by growth in both Ginnie Mae and GSE pass-through MBS.

Banks increased their ownership of federally-backed agency MBS during the crisis in part due to low demand for loans from consumers and businesses, as well as reduced lender appetite for risk during the recession. However, as the economy improved, demand for loans slowly came back. Federal Reserve data show that bank commercial and industrial loans outstanding jumped by nearly $200 billion from year-end 2017 to year-end 2018; overall bank credit grew by $560 billion over the same period.

Additionally, dramatic flattening of the yield curve over the last year has reduced the spread between short-term borrowing rates and yields on agency MBS. Since the end of 2017, the spread between the current coupon MBS and the 3-month LIBOR rate has shrunk from 135 basis points to about 75 basis points. As a result, agency MBS are less attractive as an investment today than they were previously. In sum, less attractive returns on agency MBS and increased loan demand is likely leading banks to reduce their agency MBS holdings.

Bank and thrift agency MBS holdings



Source: Inside Mortgage Finance and Urban Institute

However, a turning point came in early 2018. After 14 consecutive quarterly increases, bank and thrift holdings of agency MBS fell slightly in Q1 2018. This was followed by small but back to back decreases in Q2 and Q3 2018 to $1.75 trillion, down $36 billion from the year-end 2017 peak level. All the decline came from GSE MBS; bank ownership of Ginnie MBS is up marginally since year-end 2017.

While the $36 billion decline is small, it is noteworthy because it signals the likely end of a recession-era trend.

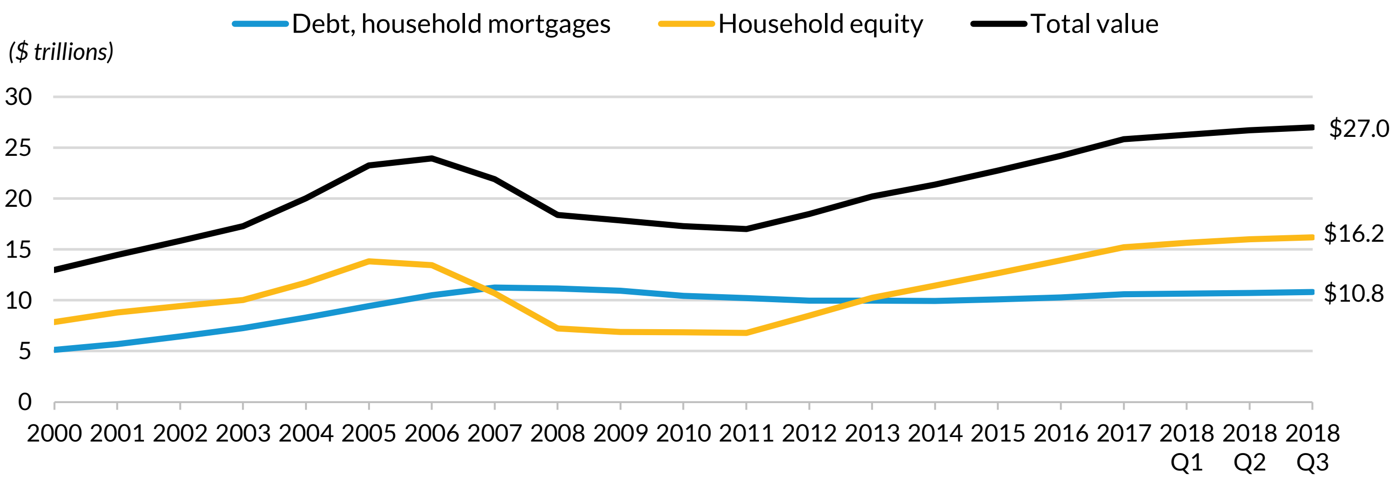
INSIDE THIS ISSUE

- Agency median FICO has dropped four points since November 2018, standing at 726 in January 2019 (page 17, top).
- Originator profitability, measured by OPUC, jumped in January 2019, likely driven by increased consumer demand for mortgages amid falling rates in 2019 (page 19).
- With the Federal Reserve now winding down its MBS holdings by $20 billion per month, the amount of Fed purchases has been minimal (page 31, bottom).
- Special quarterly feature includes GSE default, composition, loss severity, and repurchase indicators (pages 34-41).

MARKET SIZE OVERVIEW

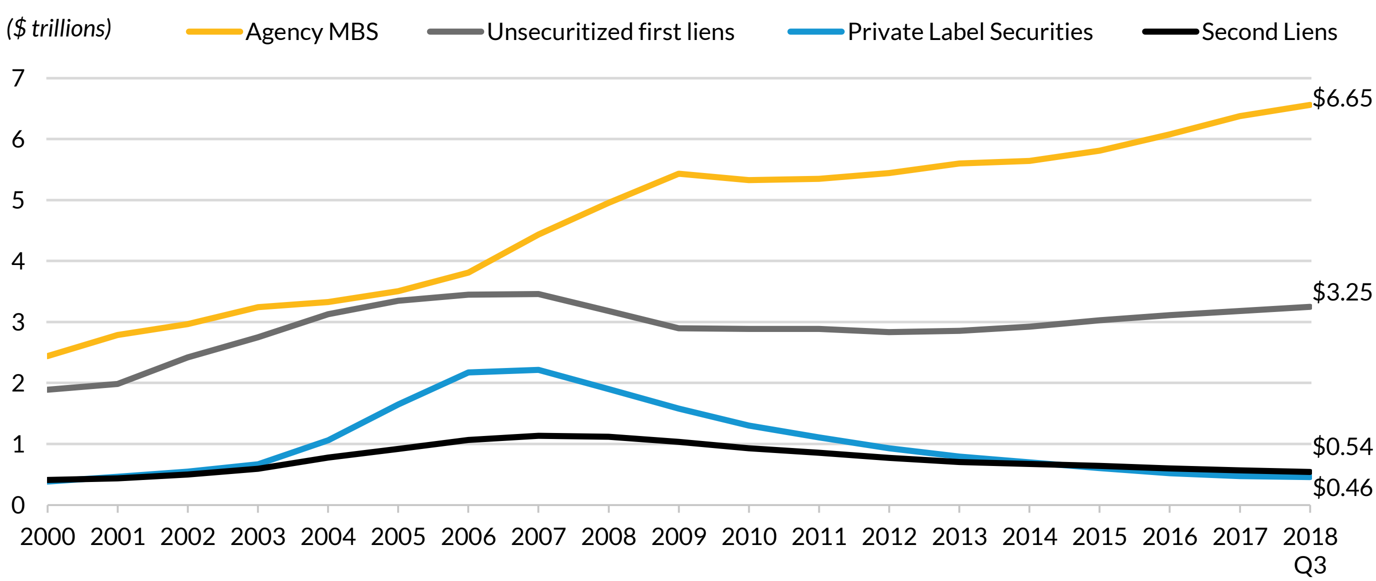
The Federal Reserve's Flow of Funds report has consistently indicated an increasing total value of the housing market driven by growing household equity since 2012, and 2018 Q3 was no different. While total mortgage debt outstanding was steady at $10.8 trillion, household equity reached a new high of $16.2 trillion, bringing the total value of the housing market to $27.0 trillion, 11 percent higher than the pre-crisis peak in 2006. Agency MBS make up 60.7 percent of the total mortgage debt outstanding, private-label securities make up 4.2 percent, and unsecuritized first liens make up 30.1 percent. Second liens comprise the remaining 4.9 percent of the total.

Value of the US Housing Market



Sources: Federal Reserve Flow of Funds and Urban Institute. *Last updated December 2018.*

Size of the US Residential Mortgage Market

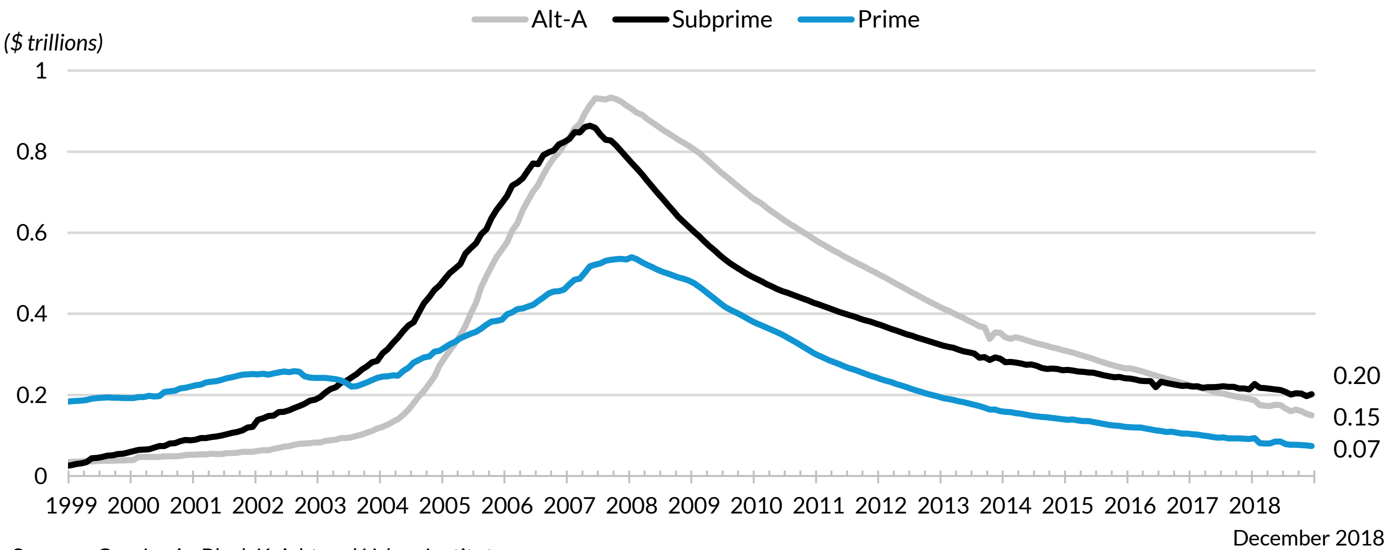


Sources: Federal Reserve Flow of Funds, Inside Mortgage Finance, Fannie Mae, Freddie Mac, eMBS and Urban Institute. *Last updated December 2018.* **Note:** Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions.

MARKET SIZE OVERVIEW

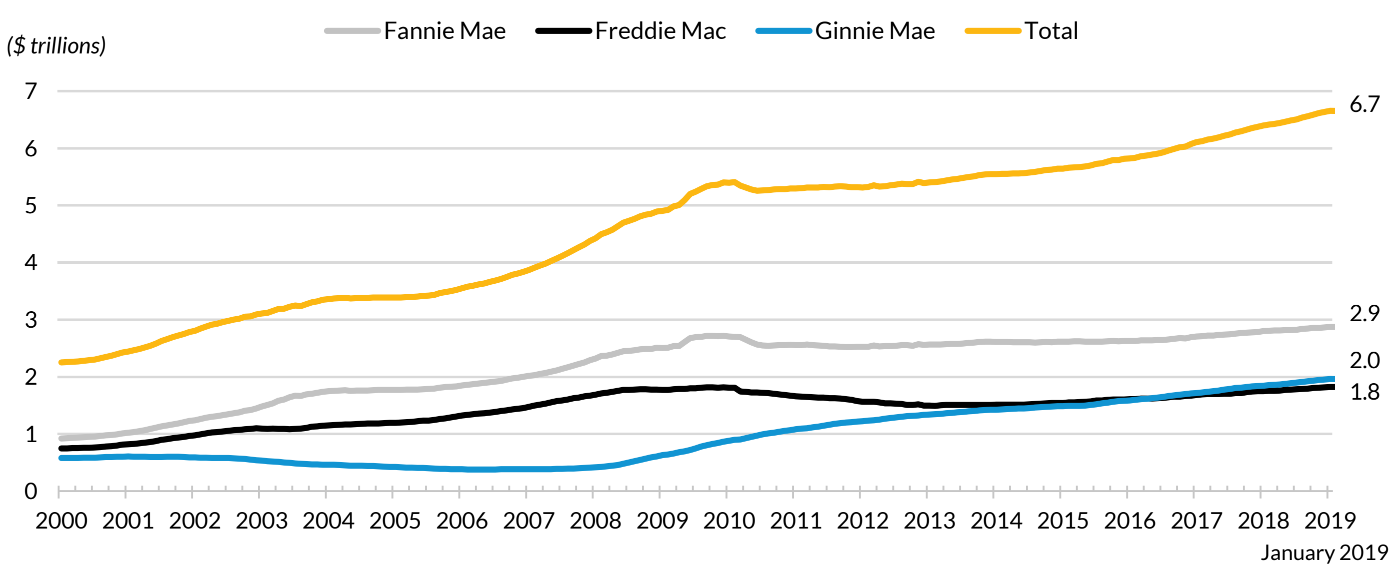
As of December 2018, debt in the private-label securitization market totaled $425 billion and was split among prime (17.3 percent), Alt-A (35.2 percent), and subprime (47.4 percent) loans. In January 2019, outstanding securities in the agency market totaled $6.7 trillion, 43.2 percent of which was Fannie Mae, 27.4 percent Freddie Mac, and 29.5 percent Ginnie Mae. Ginnie Mae has had more outstanding securities than Freddie Mac since May 2016.

Private-Label Securities by Product Type



Sources: CoreLogic, Black Knight and Urban Institute.

Agency Mortgage-Backed Securities



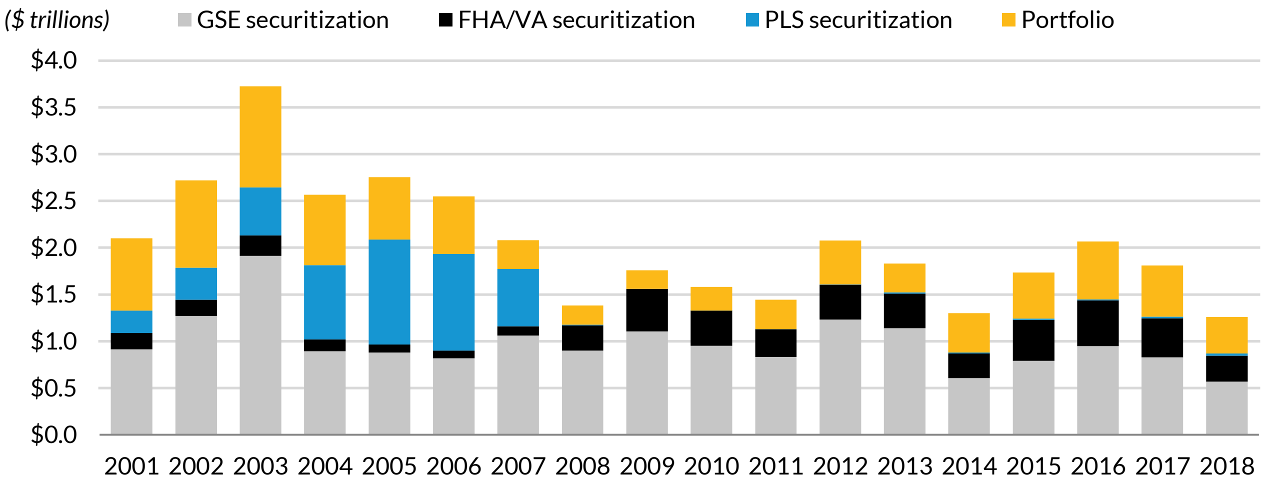
Sources: eMBS and Urban Institute.

OVERVIEW

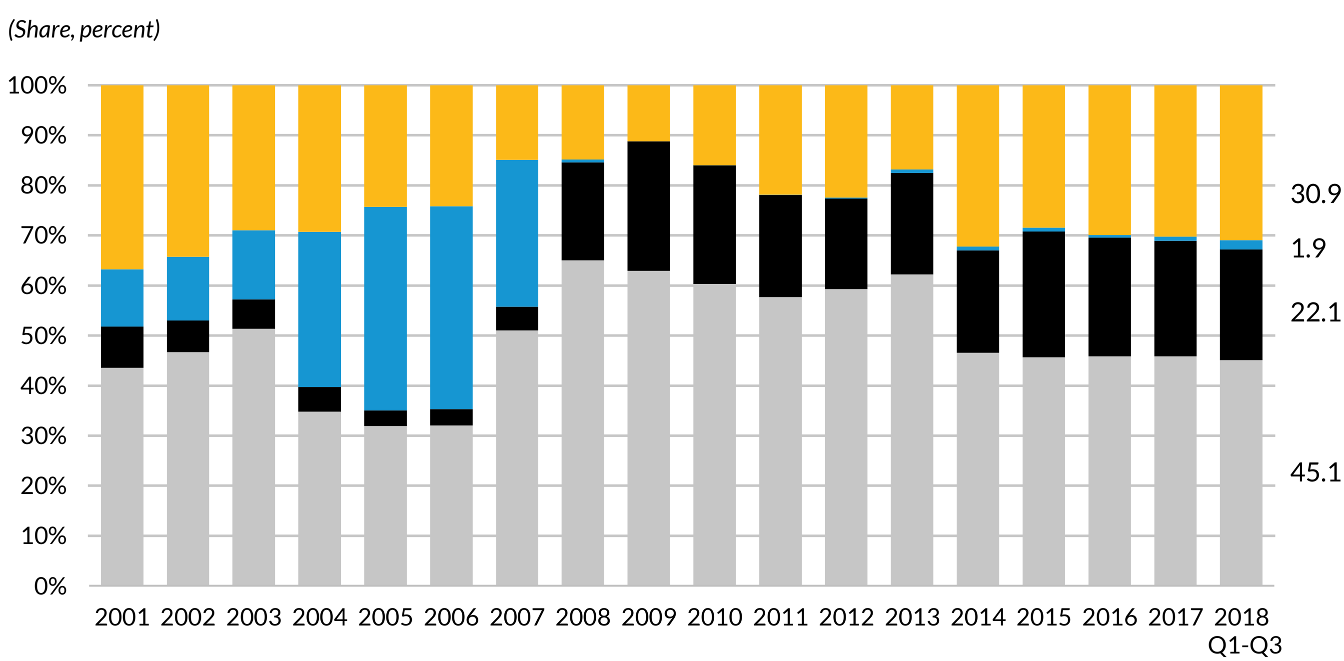
ORIGINATION VOLUME AND COMPOSITION

First Lien Origination Volume

First lien originations totaled $1.26 trillion in the first three quarters of 2018, down slightly from the same period in 2017, as higher interest rates curtailed refinance activity. The share of portfolio originations was 31 percent in the first three quarters of 2018, up from 30 percent in 2017. The GSE share was around 45 percent, down from 46 percent in 2017. The FHA/VA share was down slightly: 22 percent in the first three quarters of 2018 versus 23 percent in 2017. Private-label securitization was just under 2 percent through Q3 2018, higher than the 2017 share of 0.6 percent.



Sources: Inside Mortgage Finance and Urban Institute. *Last updated January 2019.*

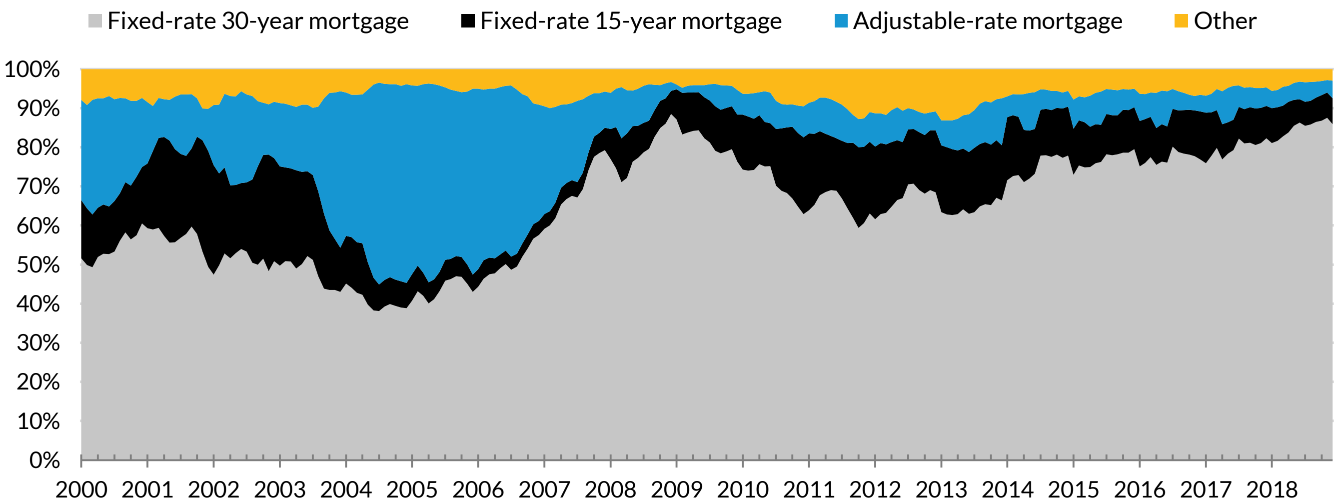


Sources: Inside Mortgage Finance and Urban Institute. *Last updated January 2019.*

PRODUCT COMPOSITION AND REFINANCE SHARE

Adjustable-rate mortgages (ARMs) accounted for as much as 52 percent of all new originations during the peak of the housing bubble (top chart). ARMs fell to a historic low of 1 percent in 2009, and then slowly increased to a high of 12 percent in December 2013. Since then, ARM share has declined to 4.5 percent as of December 2018. The 15-year fixed-rate mortgage, predominantly a refinance product, accounted for 6.6 percent of new originations in December 2018. The refinance share (bottom chart) is highly seasonal, typically increasing in winter months when purchase activity is low. Higher rates in fall 2018 drove the refi share down to historical lows, but it has since stabilized with rates falling in 2019.

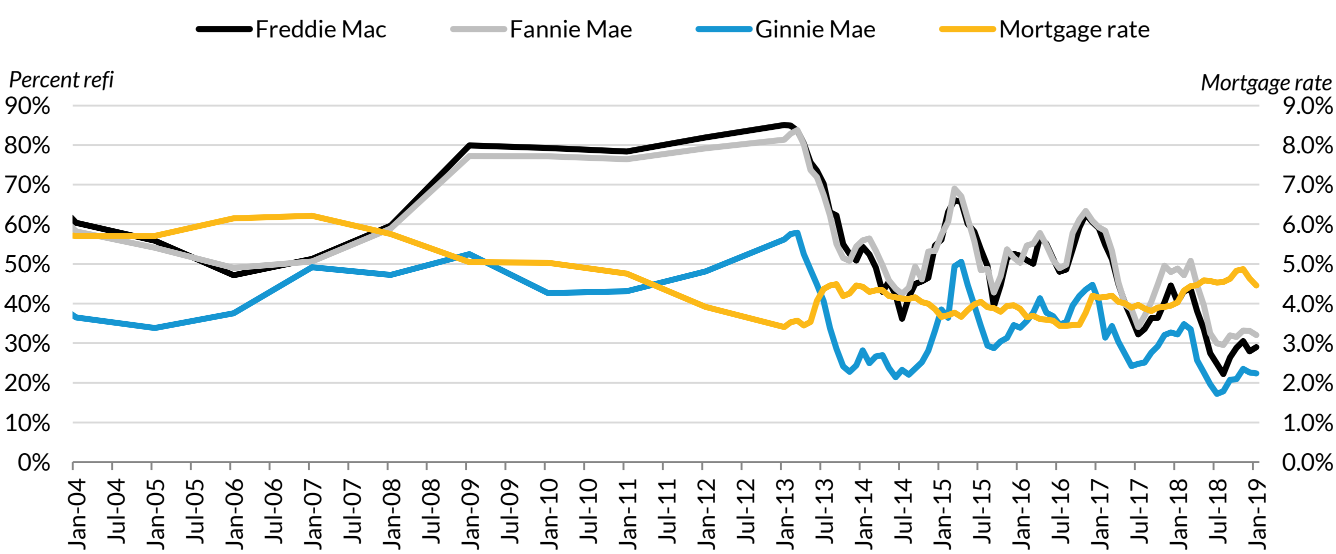
Product Composition



Sources: Black Knight, eMBS, HMDA, SIFMA and Urban Institute.
Note: Includes purchase and refinance originations.

December 2018

Percent Refi at Issuance

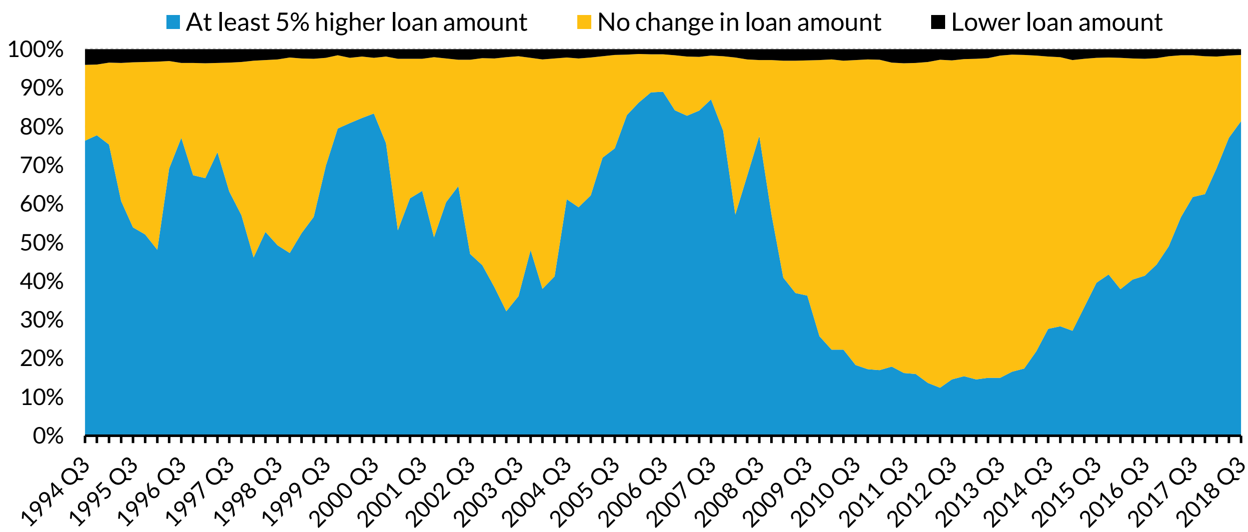


Sources: eMBS and Urban Institute.
Note: Based on at-issuance balance. Figure based on data from January 2019.

OVERVIEW
CASH-OUT REFINANCES

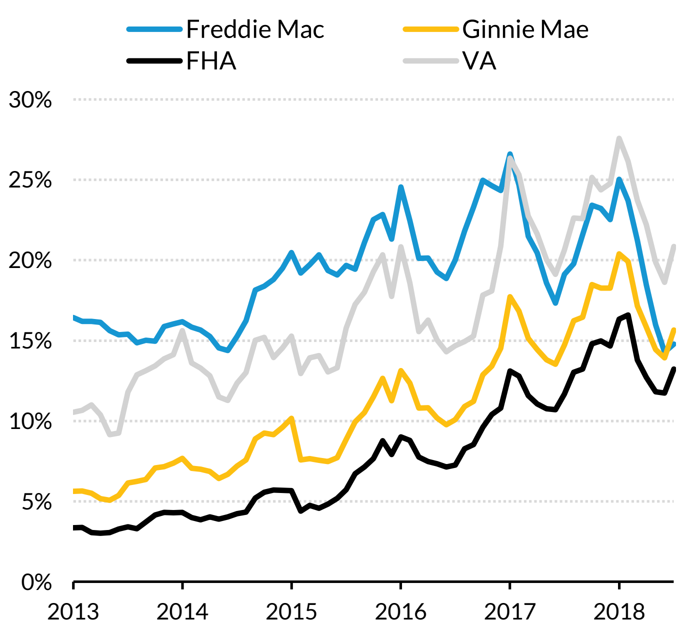
When mortgages rates are low, refinancing allows borrowers to save money by taking advantage of lower rates; hence the share of cash-out refinances tends to be small. But when rates are high, borrowers have no incentive to refinance for rate reduction. Thus, at higher rates, refinances are driven more by a desire to cash out, causing the cash-out share to be higher. In the third quarter of 2018, the cash-out share of all refinances was 81 percent, mostly reflecting the drop in rate refinances. FHA's cash-out refinance share remains the lowest. While the cash-out refinance share for conventional mortgages is close to bubble era peak, cash out volumes are substantially lower.

Loan Amount after Refinancing



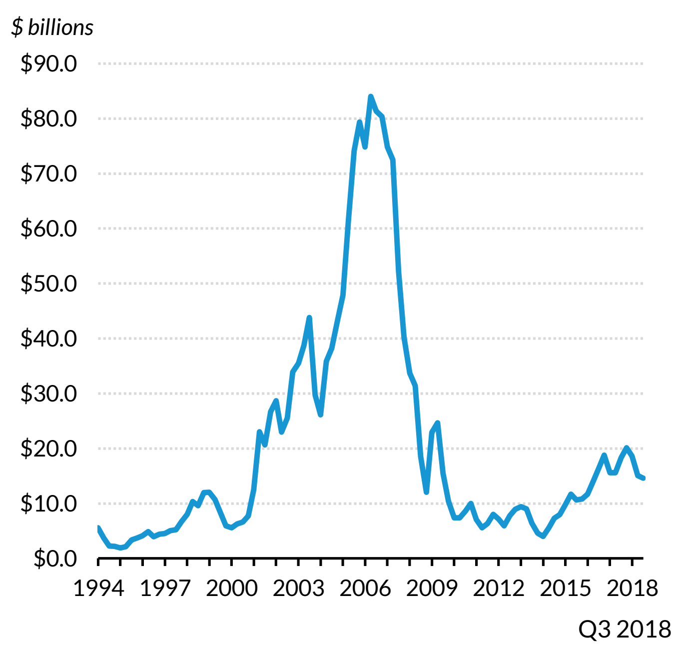
Sources: Freddie Mac and Urban Institute.
Note: Estimates include conventional mortgages only.

Cash-out Refi Share of All Originations



Sources: Freddie Mac and Urban Institute.
Note: Cash-out refinance data not available for Fannie Mae.
Data as of December 2018.

Cash-out Refi Volume



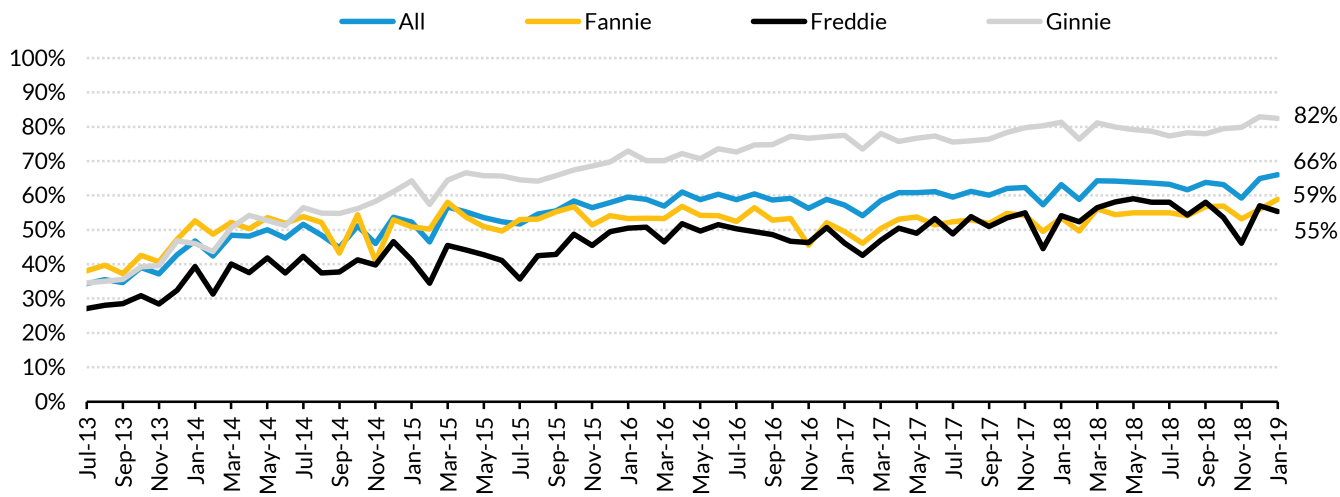
Sources: eMBS and Urban Institute.
Note: Estimates include conventional mortgages only.

OVERVIEW

AGENCY NONBANK ORIGINATION SHARE

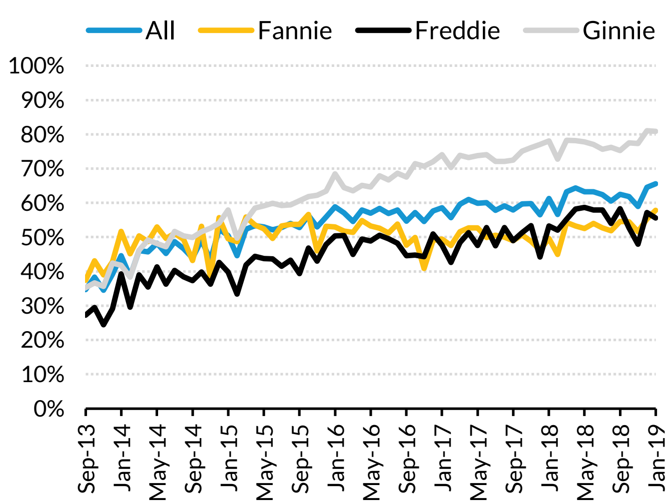
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, standing at 82 percent in January 2019. After increasing in December, Freddie Mac and Fannie Mae nonbank shares diverged in January, with Fannie growing to 59 percent and Freddie falling to 55 percent (note that these numbers can be volatile on a month to month basis.) The nonbank originator share is higher for Ginnie Mae refis than for purchase loans; for the GSEs, purchase and refi loans have a similar bank/nonbank mix.

Nonbank Origination Share: All Loans



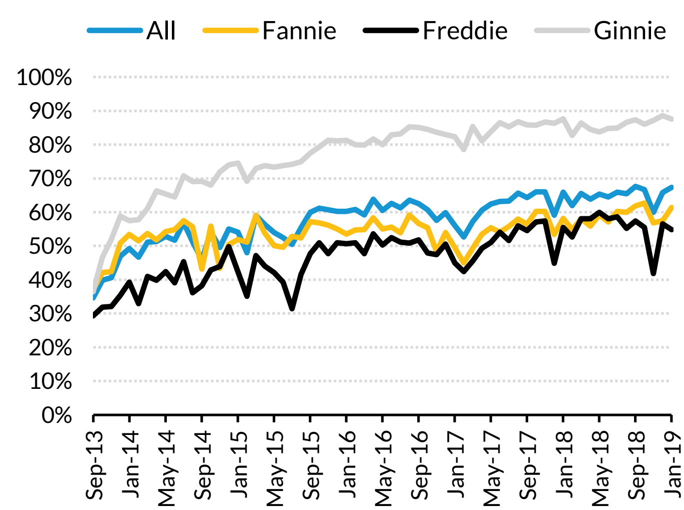
Sources: *eMBS and Urban Institute.*

Nonbank Origination Share: Purchase Loans



Sources: *eMBS and Urban Institute.*

Nonbank Origination Share: Refi Loans



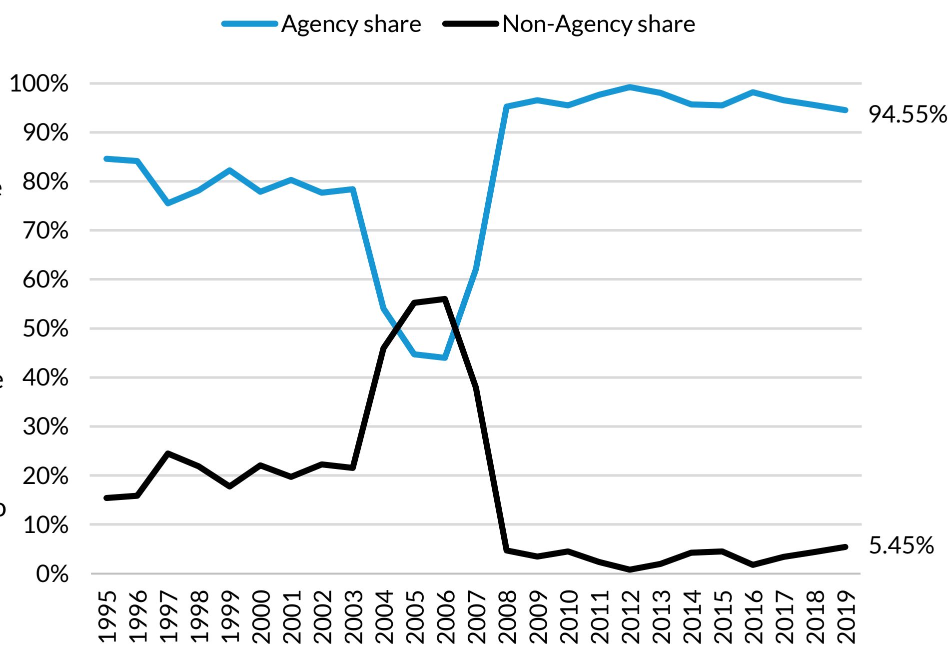
Sources: *eMBS and Urban Institute.*

OVERVIEW

SECURITIZATION VOLUME AND COMPOSITION

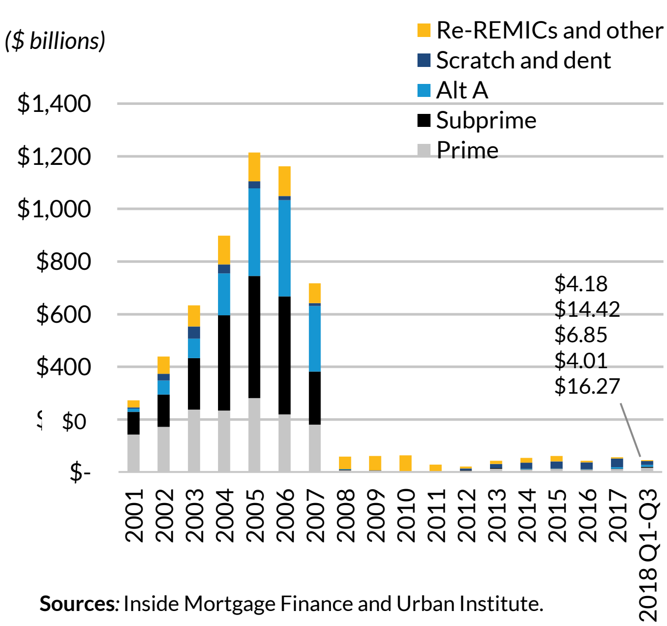
Agency/Non-Agency Share of Residential MBS Issuance

In January of 2019, the non-agency share of mortgage securitizations was 5.45%, compared to 4.41% for 2018. The non-agency securitization volume totaled $45.7 billion in the first three quarters of 2018, a 12 percent increase over the same period in 2017, but there is a change in the mix. Prime securitizations continued to surge through the third quarter, while scratch and dent were down from the same period in 2017. Non-agency securitizations continue to be tiny compared to pre-crisis levels.



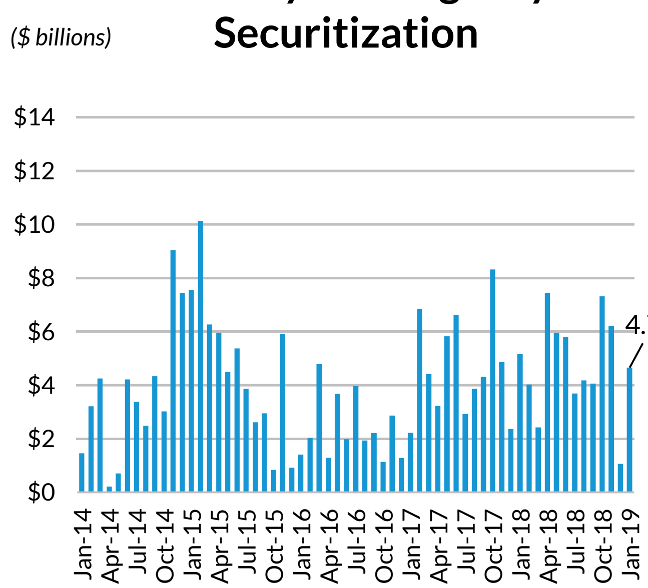
Sources: Inside Mortgage Finance and Urban Institute.
Note: Based on data from January 2019.

Non-Agency MBS Issuance



Sources: Inside Mortgage Finance and Urban Institute.

Monthly Non-Agency Securitization

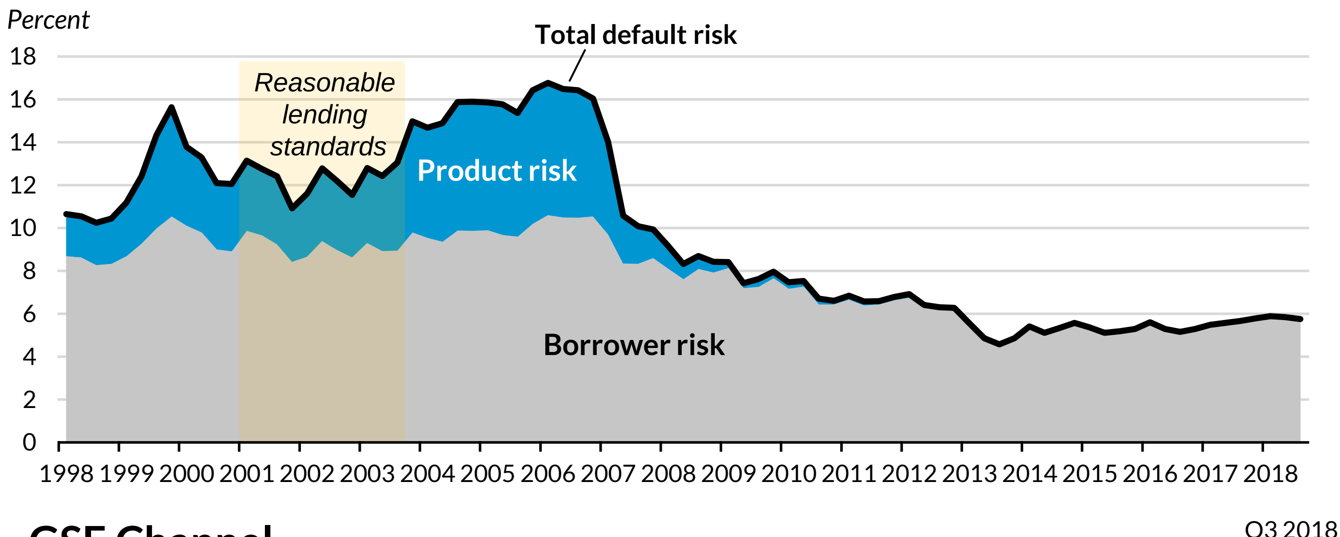


Sources: Inside Mortgage Finance and Urban Institute.

CREDIT BOX
HOUSING CREDIT AVAILABILITY INDEX

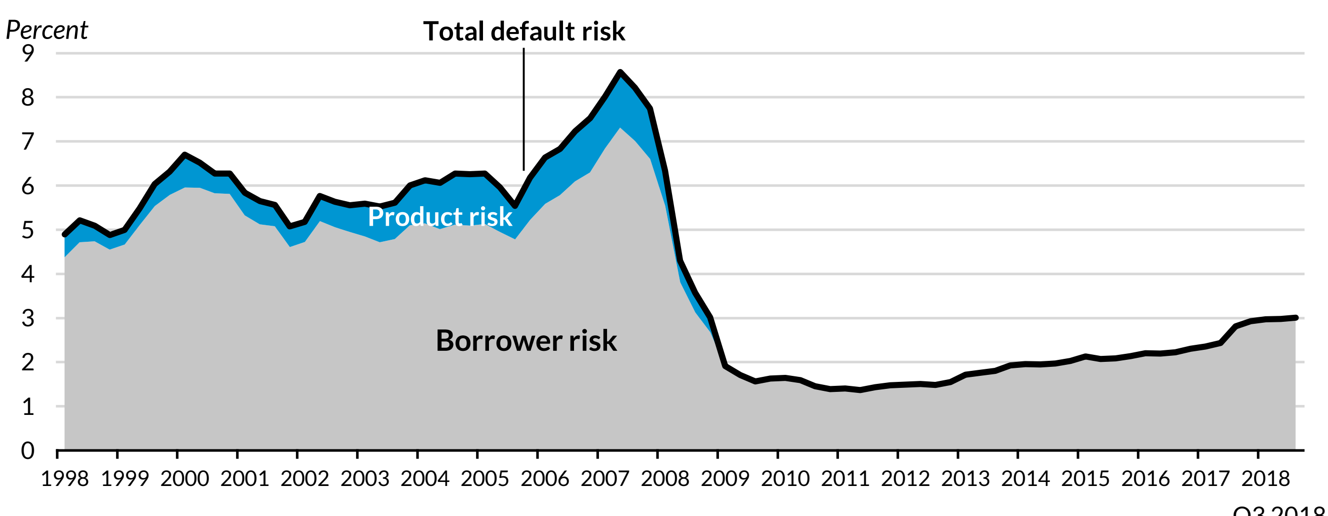
HFPC's Housing Credit Availability Index (HCAI) assesses lenders' tolerance for both borrower risk and product risk, calculating the share of owner-occupied purchase loans that are likely to go 90+ days delinquent over the life of the loan. The index shows that mortgage credit availability for all channels stood at 5.75 percent in the third quarter of 2018 (Q3 2018), down slightly from the previous quarter (5.84 percent). The decline was primarily driven by a shift in market composition, as the government channel, which caters to higher risk borrowers, lost market share to the portfolio channel which caters to lowest risk borrowers. More information about the HCAI is available here.

All Channels



GSE Channel

Between Q2 2011 and Q3 2018, the total risk taken by the GSE channel has more than doubled, from 1.4 percent to 3.0 percent. The GSE market has expanded the credit box for borrowers more effectively than the government channel has in recent years

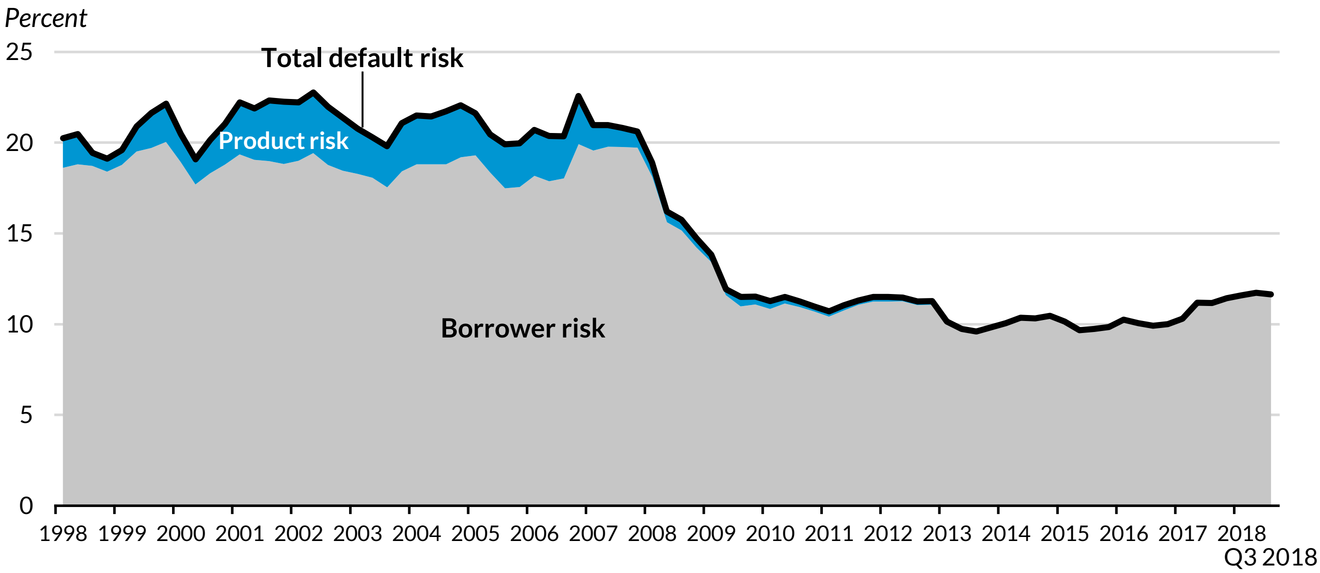


Sources: eMBS, CoreLogic, HMDA, IMF, and Urban Institute.
Note: Default is defined as 90 days or more delinquent at any point. *Last updated January 2019.*

CREDIT BOX
HOUSING CREDIT AVAILABILITY INDEX

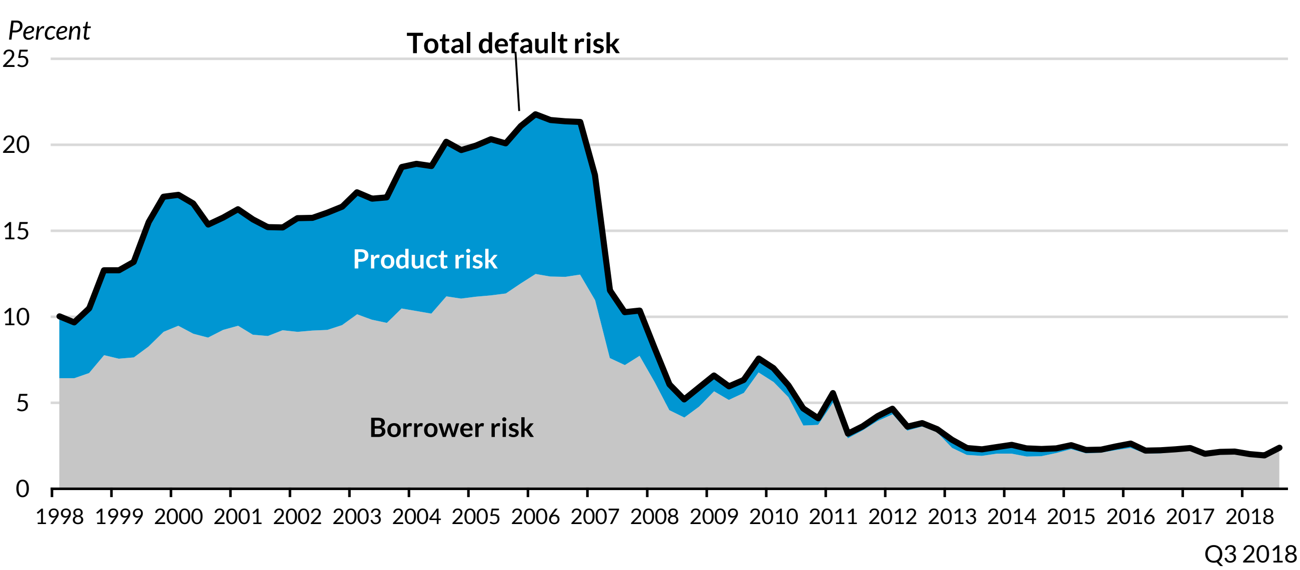
Government Channel

The total default risk taken by the government channel bottomed out at 9.6 percent in Q3 2013. Since then has risen to 11.7 percent, but is still about half the pre-bubble, normal range of 19 – 23 percent.



Portfolio and Private Label Securities Channel

The portfolio and private-label securities channels collectively experienced a substantial increase in product and total default risk during the run up to the bubble. This was followed by a sharp decline post-crisis. The total default risk taken by portfolio and PLS channels remains very low and stood at 2.4 percent in Q3 2018, in contrast to 15 to 18% in the early 2000s.



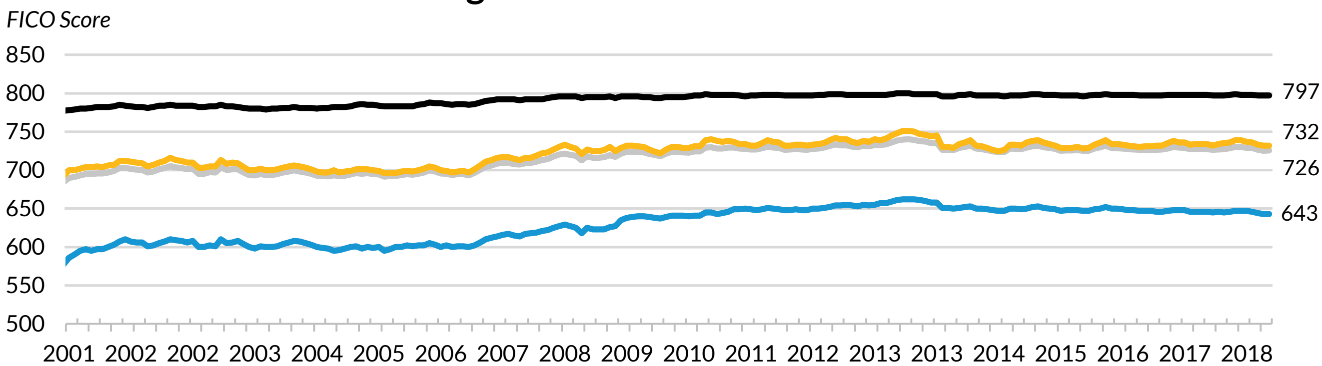
Sources: eMBS, CoreLogic, HMDA, IMF, and Urban Institute.
Note: Default is defined as 90 days or more delinquent at any point. *Last updated January 2019.*

CREDIT AVAILABILITY FOR PURCHASE LOANS

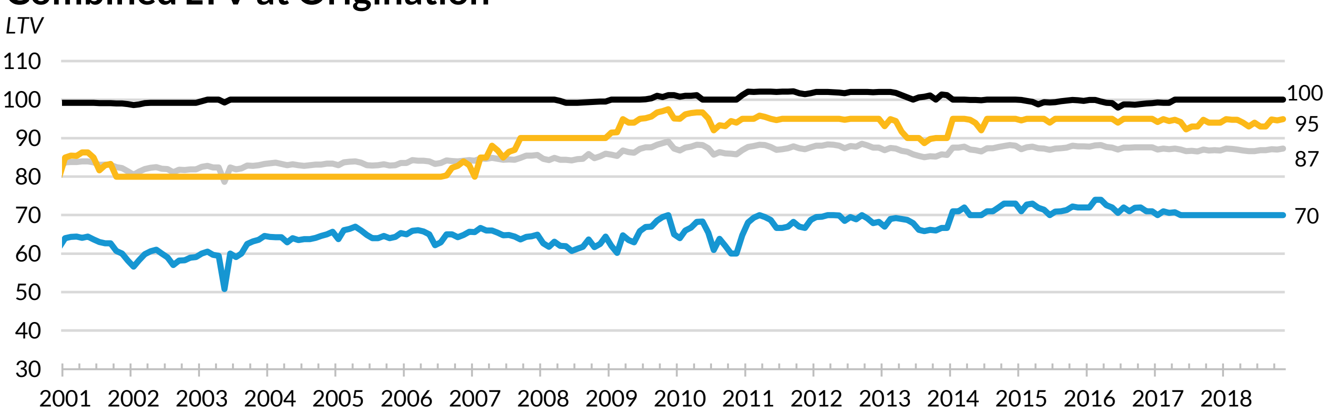
Access to credit remains tight, especially for lower FICO borrowers. Median FICO for current purchase loans is about 30 points higher than the pre-crisis level of around 700. The 10th percentile, which represents the lower bound of creditworthiness to qualify for a mortgage, was 643 in November 2018 compared to low-600s pre-bubble. Median LTV at origination of 95 percent remains relatively high, reflecting the rise of FHA and VA lending. Although current median DTI of 40 percent exceeds the pre-bubble level of 36 percent, higher FICO scores serve as a strong compensating factor.

Mean 90th percentile 10th percentile Median

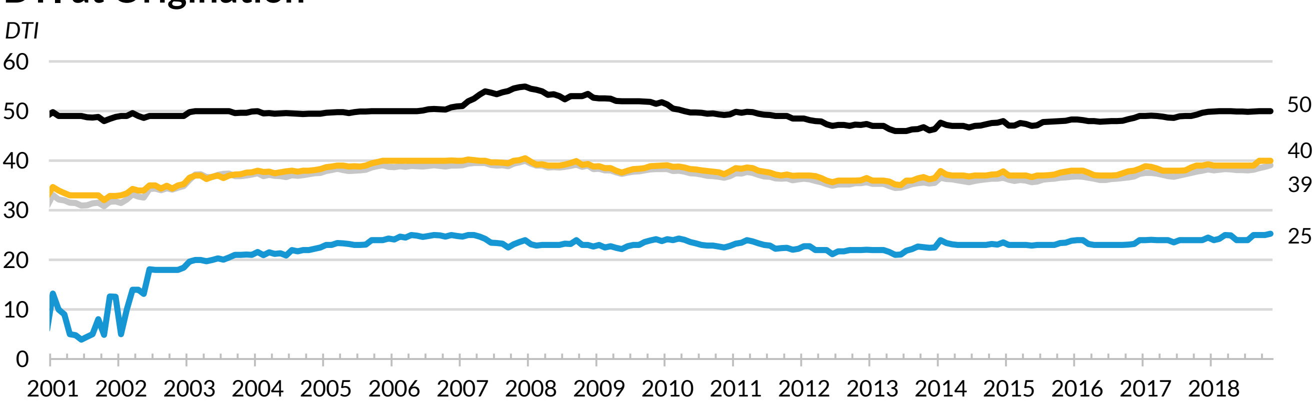
Borrower FICO Score at Origination



Combined LTV at Origination



DTI at Origination



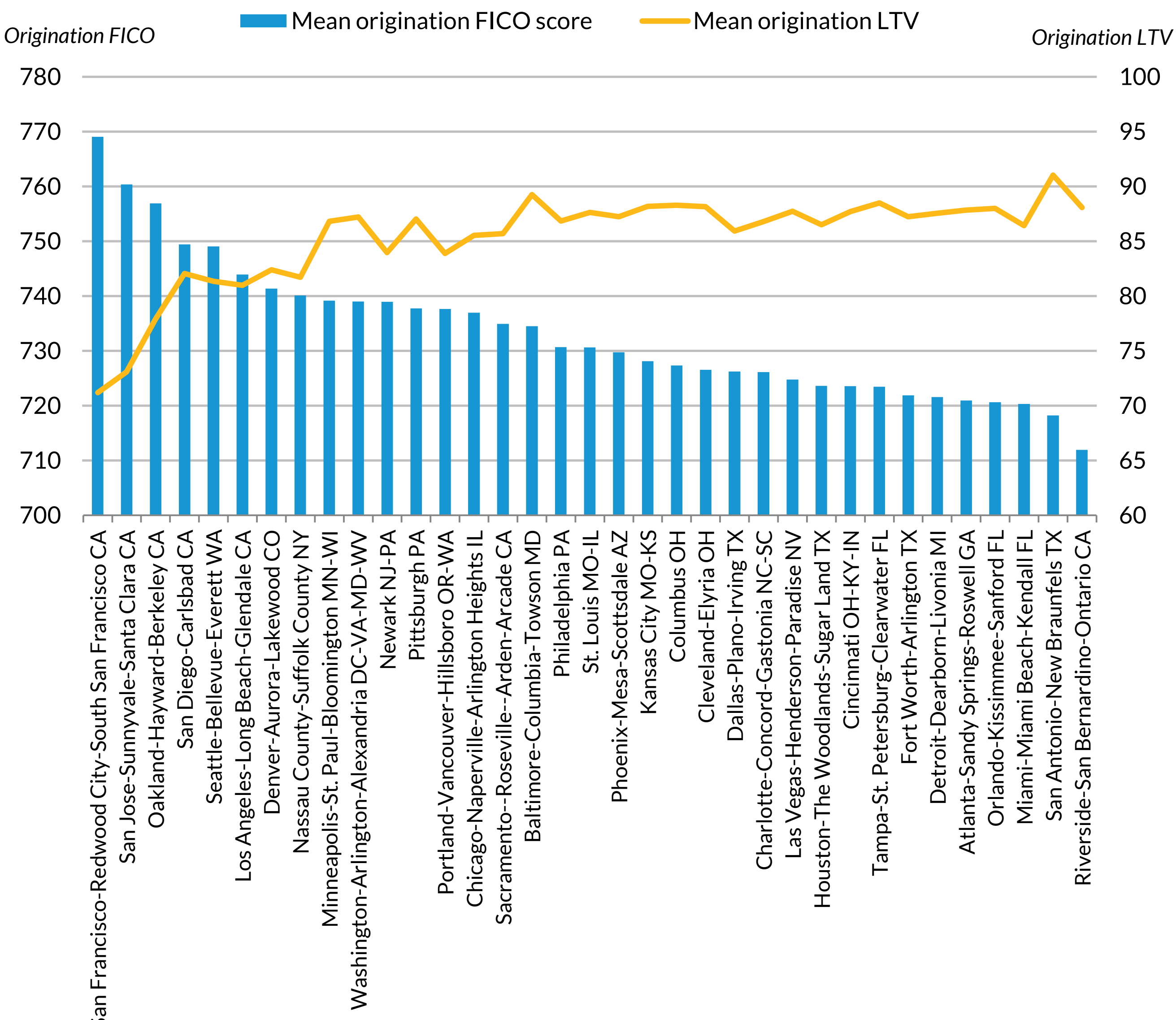
Sources: Black Knight, eMBS, HMDA, SIFMA, CoreLogic and Urban Institute.
Note: Includes owner-occupied purchase loans only. DTI data prior to April 2018 is from CoreLogic; after that date, it is from Black Knight. Data as of November 2018.

CREDIT BOX

CREDIT AVAILABILITY BY MSA FOR PURCHASE LOANS

Credit has been tight for all borrowers with less-than-stellar credit scores- especially in MSAs with high housing prices. For example, the mean origination FICO for borrowers in San Francisco-Redwood City-South San Francisco, CA is 769, while in Riverside-San Bernardino-Ontario, CA it is 712. Across all MSAs, lower average FICO scores tend to be correlated with high average LTVs, as these MSAs rely heavily on FHA/VA financing.

Origination FICO and LTV



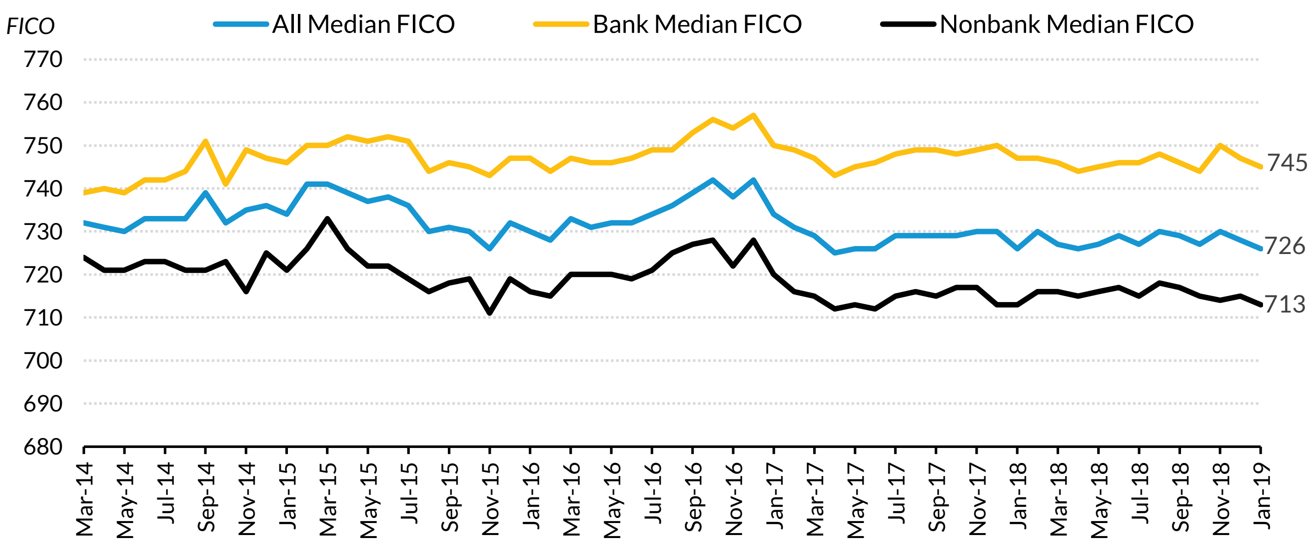
Sources: Black Knight, eMBS, HMDA, SIFMA and Urban Institute.
Note: Includes owner-occupied purchase loans only. Data as of November 2018.

CREDIT BOX

AGENCY NONBANK CREDIT BOX

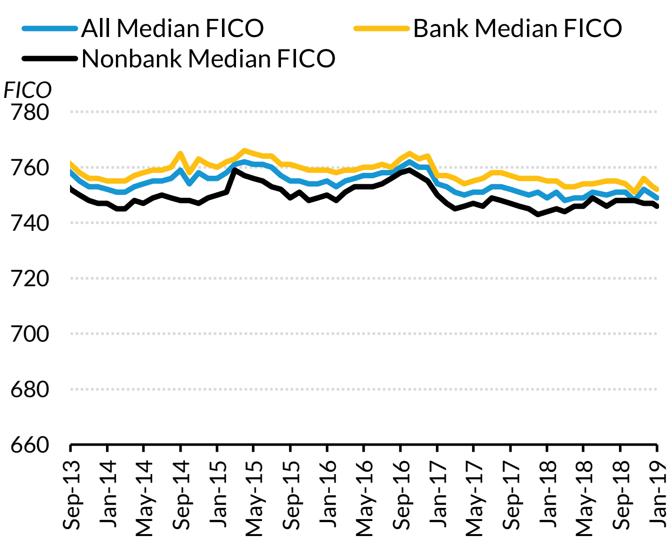
Nonbank originators have played a key role in opening up access to credit. Median GSE and Ginnie Mae FICOs for nonbank originations are lower than their bank counterparts, with a larger differential in the Ginnie Mae market. Within the GSE space, bank FICOs have declined slightly since 2014 and nonbank FICOs are roughly constant. In contrast, within the Ginnie Mae space, FICO scores for bank originations have increased since 2014 while nonbank FICOs have declined. This largely reflects the sharp cut-back in FHA lending by many banks.

Agency FICO: Bank vs. Nonbank



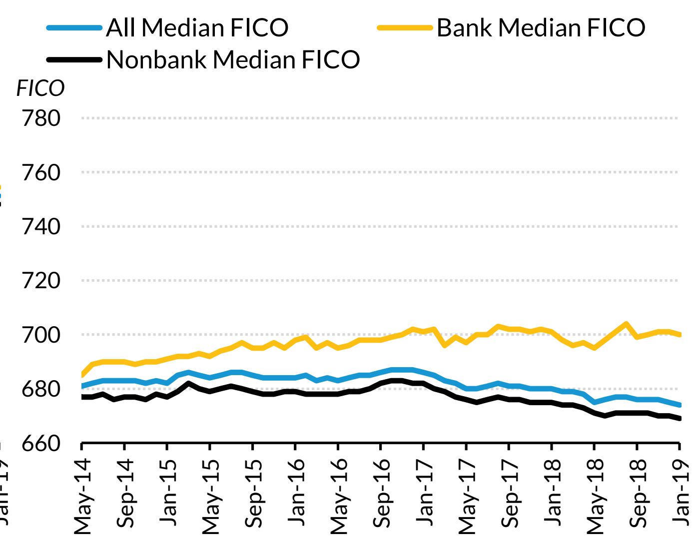
Sources: *eMBS and Urban Institute.*

GSE FICO: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.*

Ginnie Mae FICO: Bank vs. Nonbank



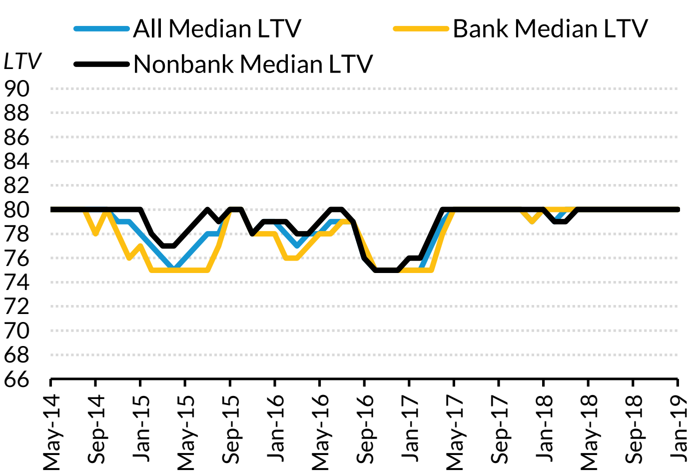
Sources: *eMBS and Urban Institute.*

CREDIT BOX

AGENCY NONBANK CREDIT BOX

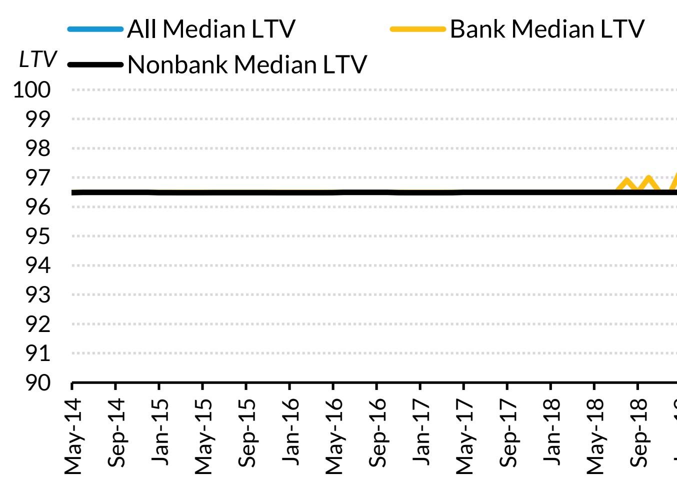
The median LTV for nonbank and bank originations are comparable, while the median DTIs for nonbank loans are higher, indicating that nonbanks are more accommodating in this dimension as well as in the FICO dimension. Since early 2017 there has been a sustained increase in DTIs. This is true for both Ginnie Mae and GSE, for banks and nonbanks. Rising DTIs are to be expected in a rising rate environment, as higher interest rates, which usually accompany higher home prices, drive up borrowers' monthly payments, and the reduction in refinance volumes makes lenders more apt to work a bit harder to get a loan approved for a marginal borrower.

GSE LTV: Bank vs. Nonbank



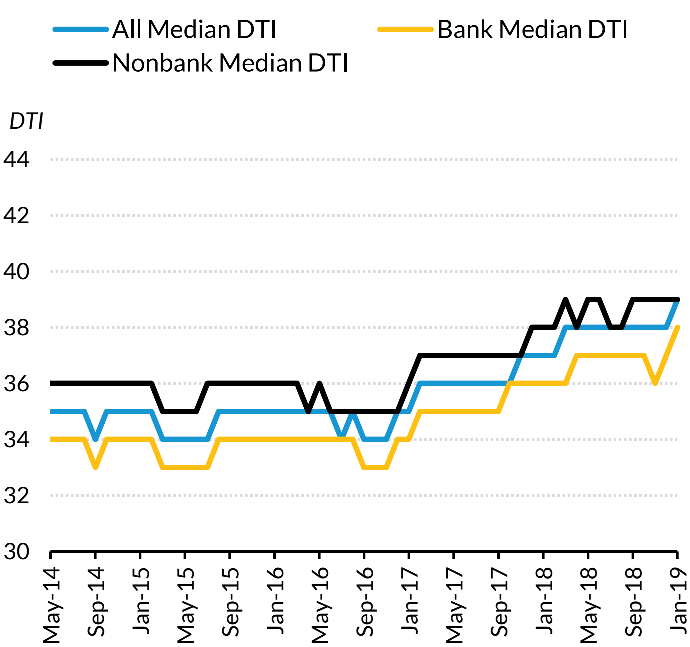
Sources: *eMBS and Urban Institute.*

Ginnie Mae LTV: Bank vs. Nonbank



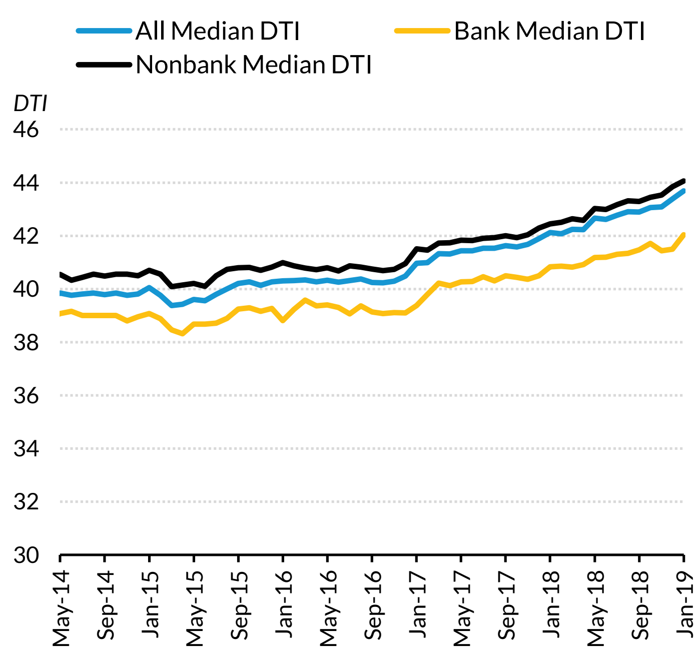
Sources: *eMBS and Urban Institute.*

GSE DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.*

Ginnie Mae DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.*

MORTGAGE ORIGINATION PROJECTIONS

Fannie Mae, Freddie Mac and the MBA all estimated origination volume in 2018 to end around 1.60-1.65 trillion, lower than the 1.8 trillion in 2017 and much lower than the 2.0 trillion in 2016. The differences owe primarily to a decline the refi share: from 47-49 percent in 2016, to 35-37 percent in 2017, to 28 -30 percent in 2018. 2019 origination volumes are expected to be close to 2018 volumes, despite a further drop in the refi share.

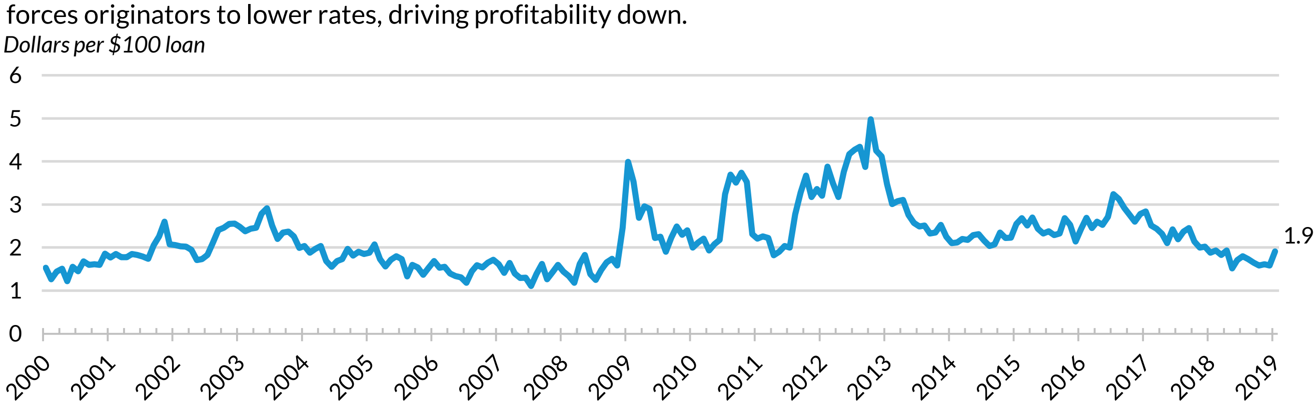
Total Originations and Refinance Shares

Period	Originations ($ billions)			Refi Share ()		
	Total, FNMA estimate	Total, FHLMC estimate	Total, MBA estimate	FNMA estimate	FHLMC Estimate	MBA estimate
2018 Q1	374	377	342	39	40	37
2018 Q2	447	452	452	25	29	26
2018 Q3	422	435	457	24	25	24
2018 Q4	366	382	392	27	26	27
2019 Q1	327	342	309	34	31	30
2019 Q2	445	459	448	24	26	22
2019 Q3	440	472	460	24	26	22
2019 Q4	400	408	396	26	25	24
FY 2015	1730	1750	1679	47	45	46
FY 2016	2052	2125	1891	49	47	49
FY 2017	1826	1807	1760	36	37	35
FY 2018	1608	1646	1643	29	30	28
FY 2019	1611	1681	1629	27	27	24
FY 2020	1657	1679	1683	25	24	24

Sources: Fannie Mae, Freddie Mac, Mortgage Bankers Association and Urban Institute.
Note: Shaded boxes indicate forecasted figures. All figures are estimates for total single-family market. Regarding interest rates, the yearly averages for 2015, 2016, 2017 and 2018 were 3.9, 3.8, 4.0 and 4.6. For 2019, the respective projections for Fannie, Freddie, and MBA are 4.4, 4.7, and 4.8.

Originator Profitability and Unmeasured Costs

In January 2019, Originator Profitability and Unmeasured Costs (OPUC) stood at $1.91 per $100 loan, which is at the lower end of the range for the past few years, but up a bit over the past few months. OPUC, formulated and calculated by the Federal Reserve Bank of New York, is a good relative measure of originator profitability. OPUC uses sales price of a mortgage in the secondary market (less par) and adds two sources of profitability; retained servicing (both base and excess servicing, net of g-fees), and points paid by the borrower. OPUC is generally high when interest rates are low, as originators are capacity constrained due to refinance demand and have no incentive to reduce rates. Conversely, when interest rates are higher and refi activity low, competition forces originators to lower rates, driving profitability down.



Sources: Federal Reserve Bank of New York, updated monthly and available at this link: http://www.ny.frb.org/research/epr/2013/1113fust.html and Urban Institute.
Note: OPUC is a is a monthly (4-week moving) average as discussed in Fuster et al. (2013).

STATE OF THE MARKET
HOUSING SUPPLY

Strong demand for housing in recent years, coupled with historically low new home construction has shrunk the supply of for-sale homes to 3.9 months. Pre-crisis this number averaged 4.6 months. Fannie Mae, Freddie Mac and the MBA forecast 2019 housing starts to be 1.26 to 1.29 million units. All three predict a rise in home sales from under 6.0 million units in 2018 to 6.0 to 6.2 million range in 2019, with Freddie estimating only a marginal increase.

Months of Supply

Source: National Association of Realtors and Urban Institute.

January 2019

Housing Starts and Homes Sales

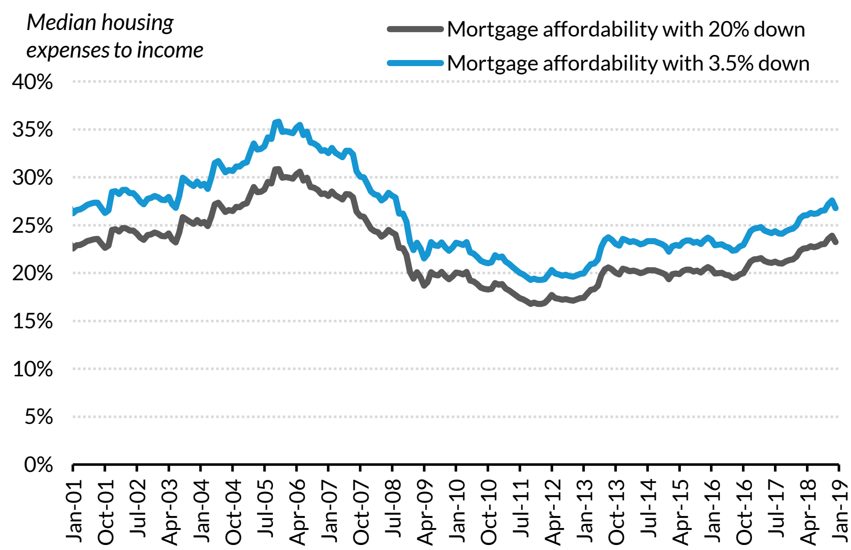
Year	Housing Starts, thousands			Home Sales. thousands				
	Total, FNMA estimate	Total, FHLMC estimate	Total, MBA estimate	Total, FNMA estimate	Total, FHLMC estimate	Total, MBA estimate	Existing, MBA estimate	New, MBA Estimate
FY 2014	1003	1000	1001	5377	5380	5360	4920	440
FY 2015	1112	1110	1108	5751	5750	5740	5237	503
FY 2016	1174	1170	1177	6011	6010	6001	5440	561
FY 2017	1203	1200	1208	6123	6120	6158	5542	616
FY 2018	1262	1260	1260	5987	5980	5990	5378	612
FY 2019	1265	1290	1285	5993	6090	6196	5561	635
FY 2020	1288	1360	1320	6116	6140	6381	5711	670

Sources: Mortgage Bankers Association, Fannie Mae, Freddie Mac and Urban Institute.
Note: Shaded boxes indicate forecasted figures. All figures are estimates for total single-family market; column labels indicate source of estimate.

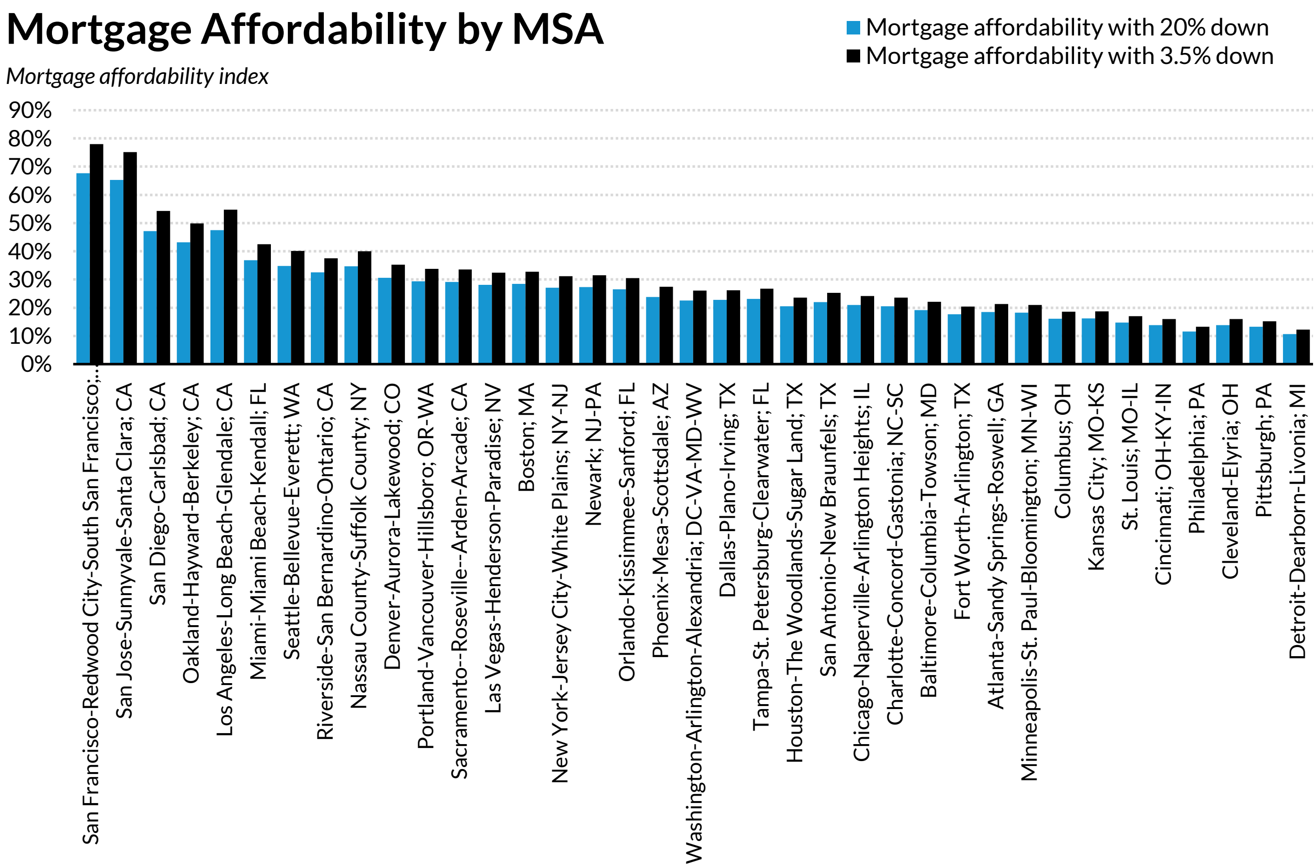
HOUSING AFFORDABILITY

National Mortgage Affordability Over Time

Home prices remain affordable by historic standards, despite price increases over the last 6.5 years and interest rate increases. As of January 2019, with a 20 percent down payment, the share of median income needed for the monthly mortgage payment stood at 23.1 percent; with 3.5 down, it is 26.6 percent. As of January, the median housing expenses to income ratio was in line with the 2001-2003 average. As shown in the bottom picture, mortgage affordability varies widely by MSA.



Mortgage Affordability by MSA

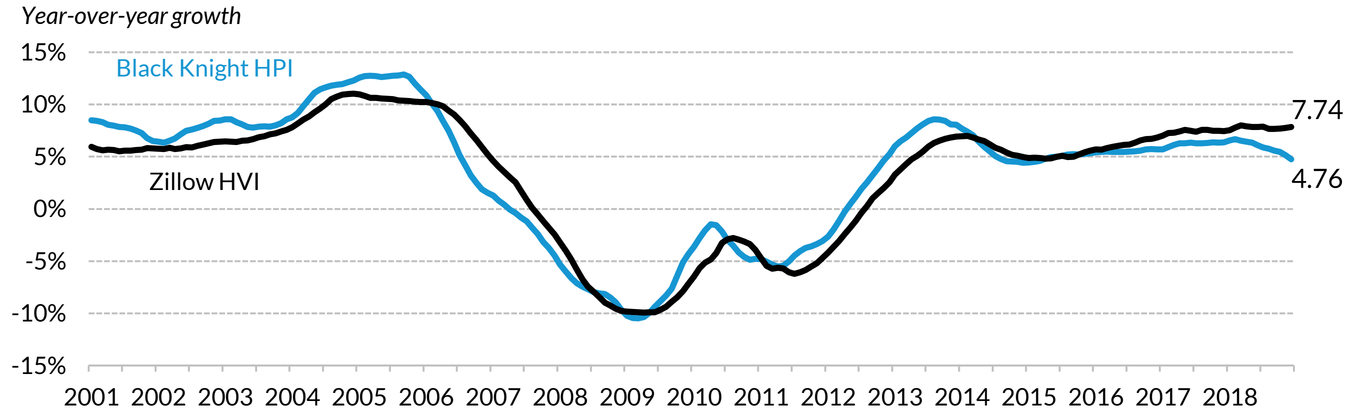


Sources: National Association of Realtors, US Census Bureau, Current Population Survey, American Community Survey, Moody's Analytics, Freddie Mac Primary Mortgage Market Survey, and the Urban Institute.
Note: Mortgage affordability is the share of median family income devoted to the monthly principal, interest, taxes, and insurance payment required to buy the median home at the Freddie Mac prevailing rate *2018* for a 30-year fixed-rate mortgage and property tax and insurance at 1.75 percent of the housing value. Data for the bottom chart as of Q3 2018.

STATE OF THE MARKET
HOME PRICE INDICES

National Year-Over-Year HPI Growth

Year-over-year home price appreciation slower considerably in December, 2018, as measured by Black Knight's repeat sales index, less so as measured by Zillow's hedonic index. We will be monitoring the impact of rising interest rates on home prices. Historically, rising interest rates (generally observed in tandem with a stronger economy and higher inflation) have been associated with higher home price increases, despite the impact on affordability.



Sources: Black Knight, Zillow, and Urban Institute. **Note:** Data as of December 2018.

Changes in Black Knight HPI for Top MSAs

After rising 48.3 percent from the trough, national house prices are now 10.3 percent higher than pre-crisis peak levels. At the MSA level, ten of the top 15 MSAs have exceeded their pre-crisis peak HPI: New York, NY; Los Angeles, CA; Atlanta, GA; Houston, TX; Dallas, TX; Minneapolis, MN; Seattle, WA; Denver, CO, San Diego, CA, and Anaheim, CA. Two MSAs particularly hard hit by the boom and bust—Phoenix, AZ and Riverside, CA—are 9.5 and 12.7 percent, respectively, below peak values.

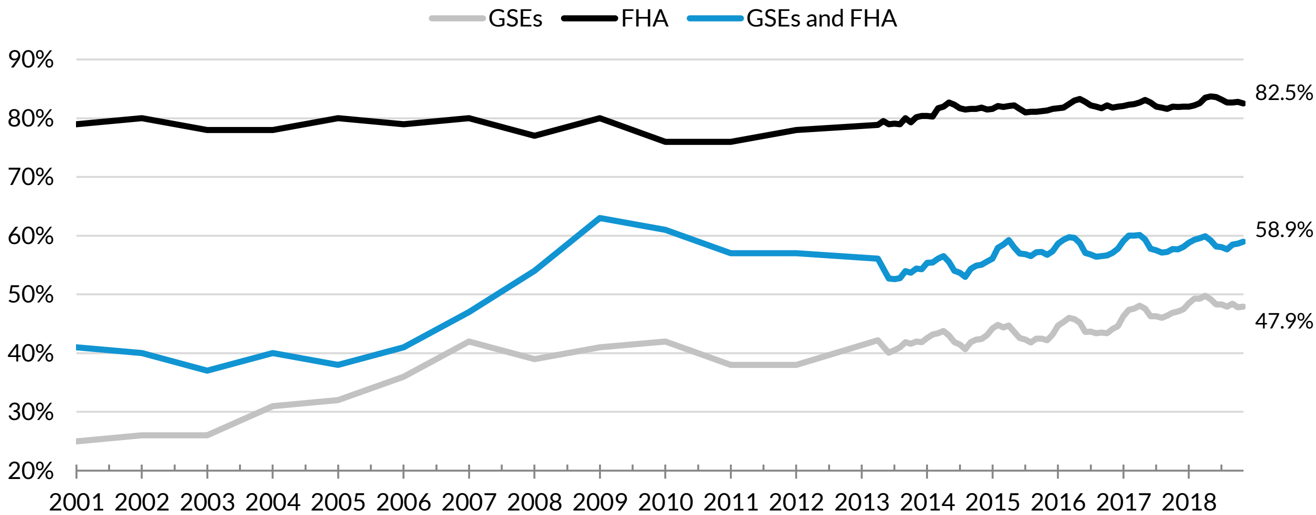
MSA	HPI changes ()			above peak
	2000 to peak	Peak to trough	Trough to current	
United States	75.9	-25.6	48.3	10.3
New York-Jersey City-White Plains, NY-NJ	128.0	-22.3	43.6	11.6
Los Angeles-Long Beach-Glendale, CA	180.6	-38.2	78.5	10.3
Chicago-Naperville-Arlington Heights, IL	67.1	-38.4	42.2	-12.4
Atlanta-Sandy Springs-Roswell, GA	32.6	-35.8	72.3	10.7
Washington-Arlington-Alexandria, DC-VA-MD-WV	149.3	-28.3	30.8	-6.2
Houston-The Woodlands-Sugar Land, TX	29.4	-6.7	44.0	34.4
Phoenix-Mesa-Scottsdale, AZ	113.4	-51.2	85.4	-9.5
Riverside-San Bernardino-Ontario, CA	177.1	-51.8	81.2	-12.7
Dallas-Plano-Irving, TX	26.5	-7.2	62.4	50.6
Minneapolis-St. Paul-Bloomington, MN-WI	69.2	-30.2	51.1	5.4
Seattle-Bellevue-Everett, WA	90.6	-32.9	93.3	29.6
Denver-Aurora-Lakewood, CO	34.1	-12.1	84.1	61.7
Baltimore-Columbia-Towson, MD	123.7	-23.9	18.1	-10.2
San Diego-Carlsbad, CA	148.5	-37.5	69.2	5.7
Anaheim-Santa Ana-Irvine, CA	163.4	-35.3	59.8	3.4

Sources: Black Knight HPI and Urban Institute. Data as of December 2018.
Note: This table includes the largest 15 Metropolitan areas by mortgage count.

FIRST-TIME HOMEBUYERS

First-Time Homebuyer Share

In November 2018, the first time homebuyer (FTHB) share of purchase loans increased very slightly for FHA and conventional mortgages. The FTHB share for FHA, which has always been more focused on first time homebuyers, stood at 82.5 percent in November 2018. The GSE FTHB share in November 2018 was 47.9 percent. The bottom table shows that based on mortgages originated in November 2018, the average FTHB was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, and higher LTV and higher DTI, thus paying a higher interest rate.



November 2018

Sources: eMBS, Federal Housing Administration (FHA) and Urban Institute.
Note: All series measure the first-time homebuyer share of purchase loans for principal residences.

Comparison of First-Time and Repeat Homebuyers, GSE and FHA Originations

	GSEs		FHA		GSEs and FHA	
Characteristics	First-time	Repeat	First-time	Repeat	First-time	Repeat
Loan Amount ($)	233,505	255,164	208,825	224,376	223,575	250,585
Credit Score	737.9	754.1	669.2	674.3	710.2	742.2
LTV ()	87.5	78.8	95.5	93.7	90.7	81.1
DTI ()	36.8	37.3	44.0	44.9	39.7	38.4
Loan Rate ()	5.09	4.99	5.18	5.11	5.13	5.01

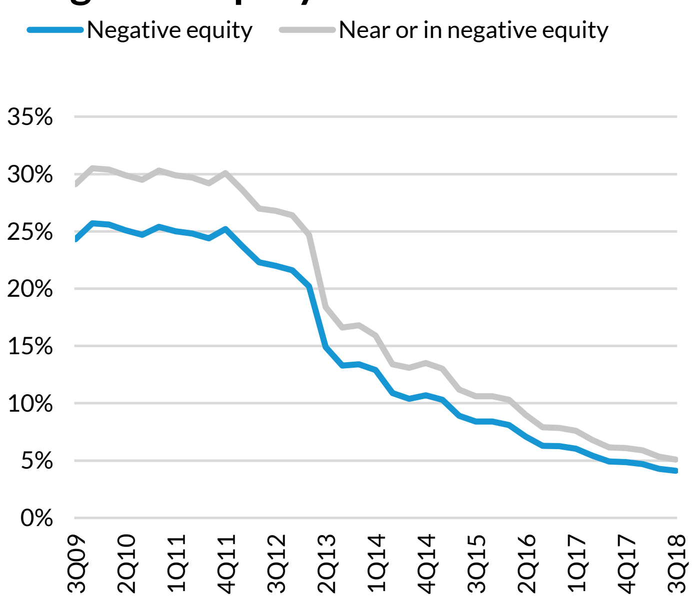
Sources: eMBS and Urban Institute.
Note: Based on owner-occupied purchase mortgages originated in November 2018.

STATE OF THE MARKET

DELINQUENCIES AND LOSS MITIGATION ACTIVITY

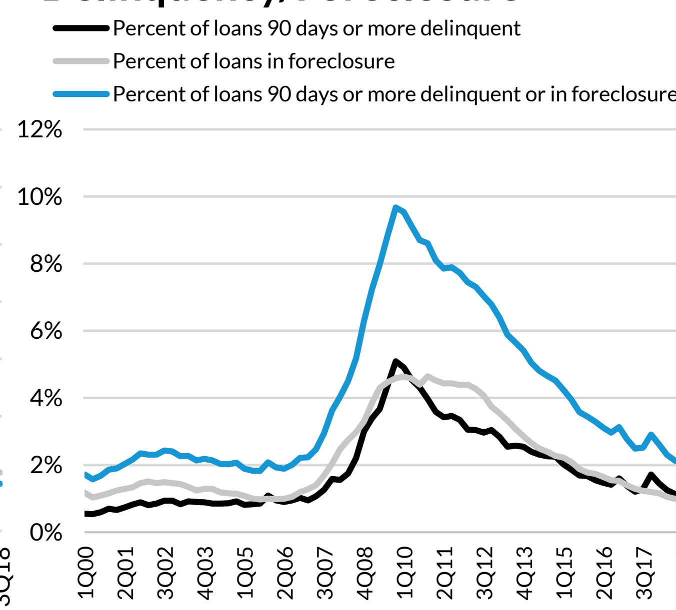
Loans in and near negative equity continued to decline in 2018; 4.1 percent now have negative equity, an additional 1.0 percent have less then 5 percent equity. Loans that are 90 days delinquent or in foreclosure have also been in a long decline, falling to 2.06 percent in the fourth quarter. New loan modifications and liquidations (bottom) have continued to decline. Since Q3, 2007, total loan modifications (HAMP and proprietary) are roughly equal to total liquidations. Hope Now reports show 8,491,929 borrowers received a modification from Q3 2007 to Q2 2018, compared with 8,673,435 liquidations in the same period.

Negative Equity Share



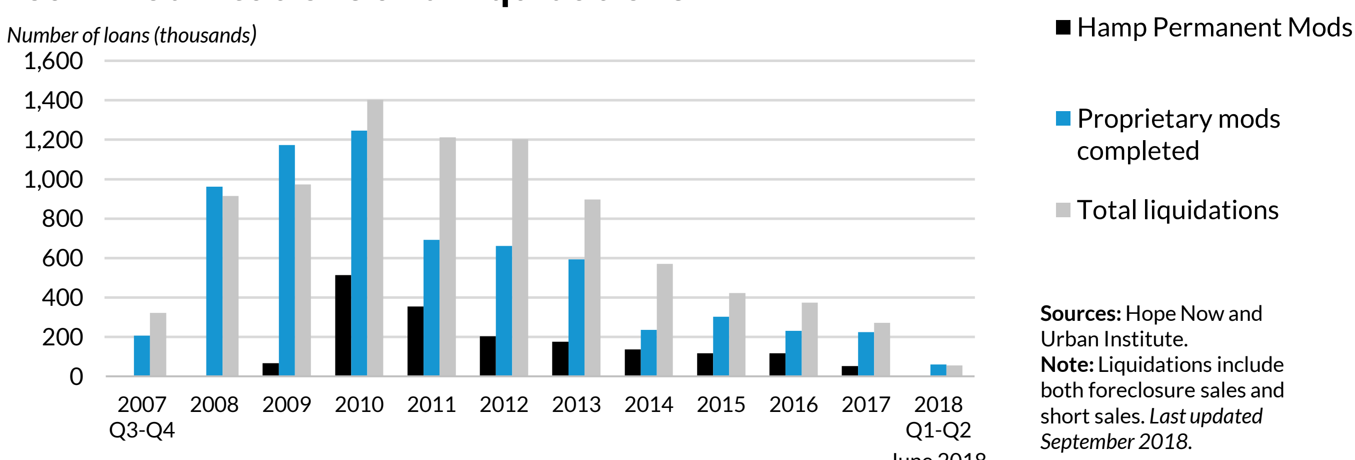
Sources: CoreLogic and Urban Institute.
Note: Loans with negative equity refer to loans above 100 percent LTV. Loans near negative equity refer to loans above 95 percent LTV. *Last updated December 2018.*

Loans in Serious Delinquency/Foreclosure



Sources: Mortgage Bankers Association and Urban Institute. *Last updated February 2019.*

Loan Modifications and Liquidations



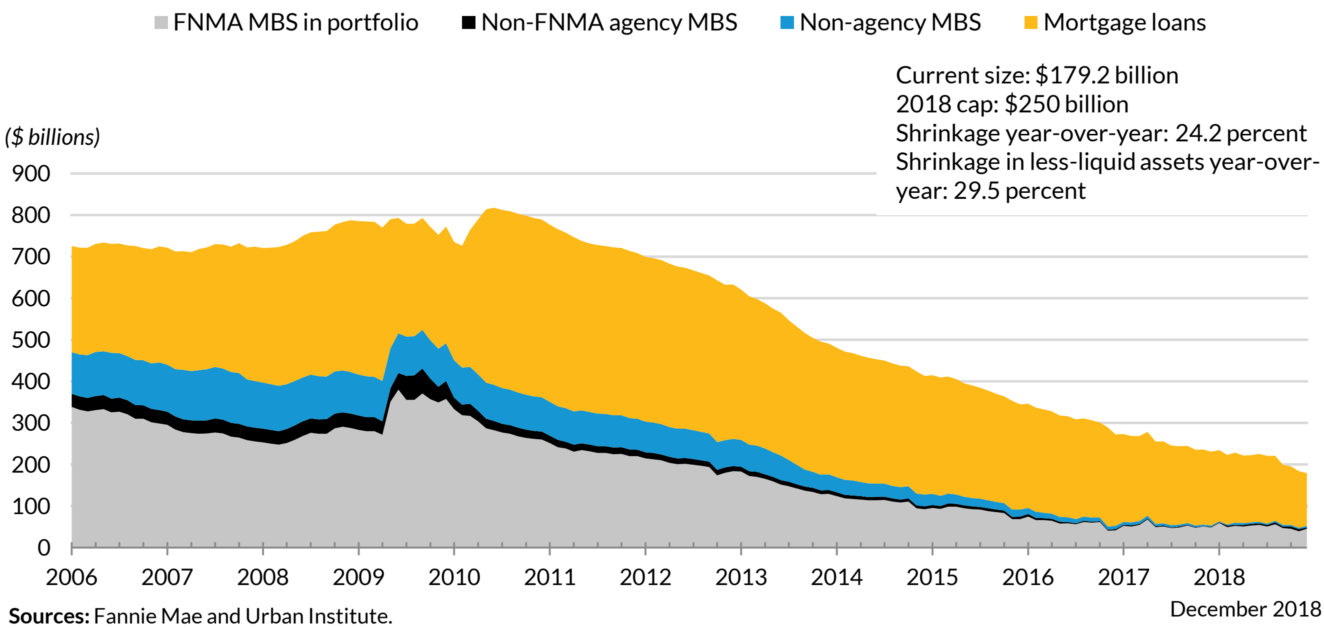
Sources: Hope Now and Urban Institute.
Note: Liquidations include both foreclosure sales and short sales. *Last updated September 2018.*

GSES UNDER CONSERVATORSHIP

GSE PORTFOLIO WIND-DOWN

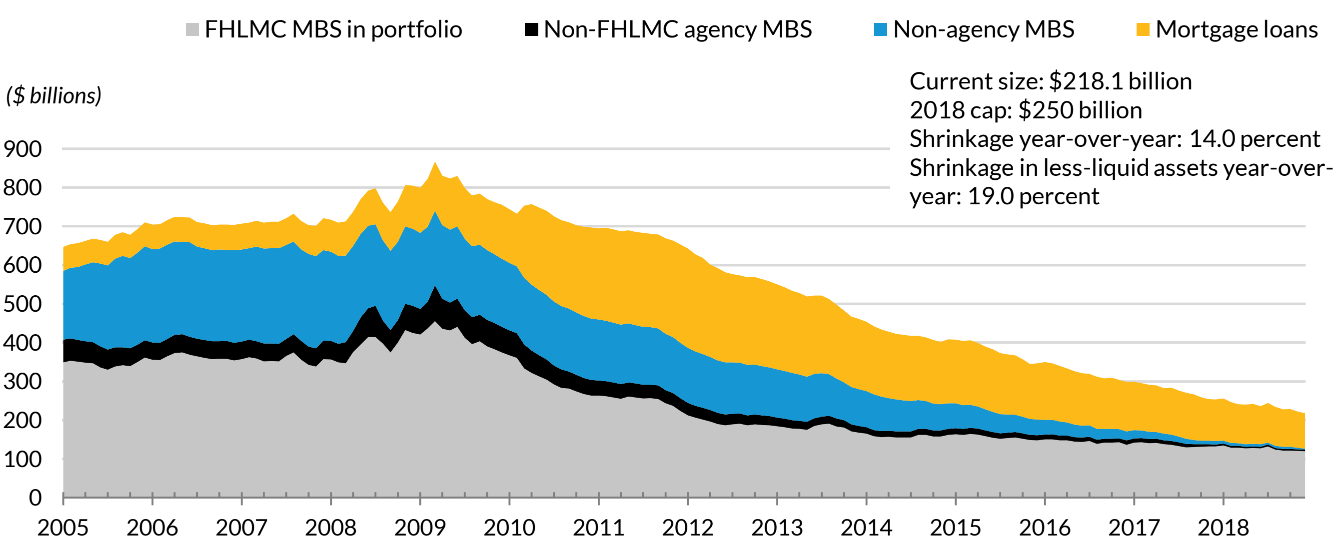
Both GSEs continue to contract their retained portfolios. Since December 2017, Fannie Mae has contracted by 24.2 percent and Freddie Mac by 14.0 percent. They are shrinking their less-liquid assets (mortgage loans and non-agency MBS) faster than they are shrinking their entire portfolio. The Fannie Mae and Freddie Mac portfolios are now both below the $250 billion maximum portfolio size; they were required to reach this terminal level by year end 2018. Fannie met the target in 2017, Freddie met the target in February 2018.

Fannie Mae Mortgage-Related Investment Portfolio Composition



Sources: Fannie Mae and Urban Institute.

Freddie Mac Mortgage-Related Investment Portfolio Composition



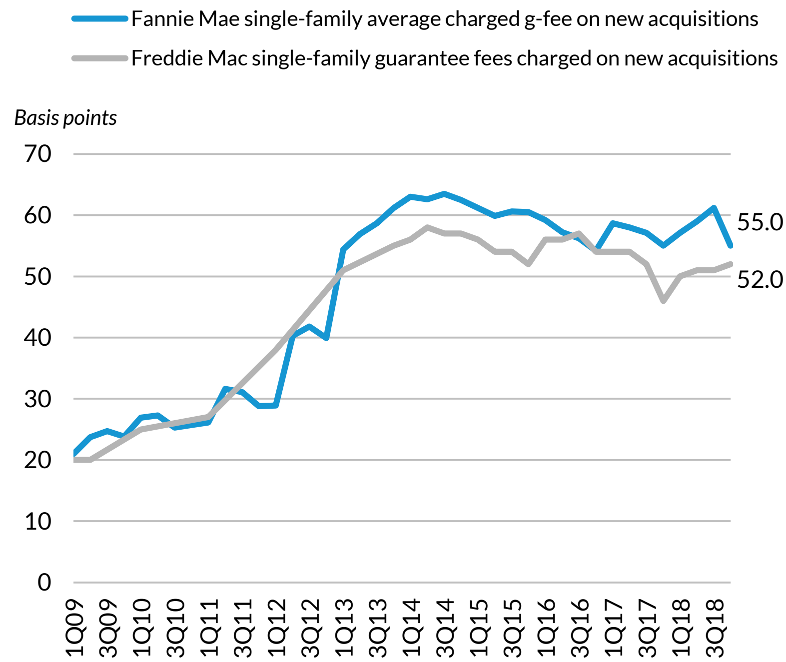
Sources: Freddie Mac and Urban Institute.

EFFECTIVE GUARANTEE FEES

Guarantee Fees Charged on New Acquisitions

Fannie Mae's 2018 10-K indicates that its average g-fees charged on new acquisitions fell from 61.2 to 55.0 bps in Q4 2018 while Freddie rose to 52.0 bps. This is markedly higher than g-fee levels in 2011 and 2012, and has contributed to the GSEs' earnings. The GSE's latest Loan-Level Pricing Adjustments (LLPAs) took effect in September 2015; the bottom table shows the Fannie Mae LLPAs, which are expressed as upfront charges.

Sources: Fannie Mae, Freddie Mae and Urban Institute.
Last updated February 2019.



Fannie Mae Upfront Loan-Level Price Adjustments (LLPAs)

	LTV							
Credit Score	≤60	60.01 – 70	70.01 – 75	75.01 – 80	80.01 – 85	85.01 – 90	90.01 – 95	95.01 – 97
> 740	0.00	0.25	0.25	0.50	0.25	0.25	0.25	0.75
720 – 739	0.00	0.25	0.50	0.75	0.50	0.50	0.50	1.00
700 – 719	0.00	0.50	1.00	1.25	1.00	1.00	1.00	1.50
680 – 699	0.00	0.50	1.25	1.75	1.50	1.25	1.25	1.50
660 – 679	0.00	1.00	2.25	2.75	2.75	2.25	2.25	2.25
640 – 659	0.50	1.25	2.75	3.00	3.25	3.75	2.75	2.75
620 – 639	0.50	1.50	3.00	3.00	3.25	3.25	3.25	3.50
< 620	0.50	1.50	3.00	3.00	3.25	3.25	3.25	3.75
Product Feature (Cumulative)								
High LTV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Investment Property	2.125	2.125	2.125	3.375	4.125	N/A	N/A	N/A

Sources: Fannie Mae and Urban Institute.
Note: For whole loans purchased on or after September 1, 2015, or loans delivered into MBS pools with issue dates on or after September 1, 2015.

GSES UNDER CONSERVATORSHIP

GSE RISK-SHARING TRANSACTIONS

Fannie Mae and Freddie Mac have been laying off back-end credit risk through CAS and STACR deals as well as through reinsurance transactions. They have also done front-end transactions with originators and reinsurers, and experimented with deep mortgage insurance coverage with private mortgage insurers. FHFA's 2019 scorecard requires the GSEs to lay off credit risk on 90 percent of newly acquired loans in categories targeted for transfer. Fannie Mae's CAS issuances since inception total $1.176 trillion, while Freddie's STACR totals $1.103 trillion.

Fannie Mae – Connecticut Avenue Securities (CAS)

Date	*Transaction*	*Reference Pool Size ($ m)*	*Amount Issued ($m)*	*of Reference Pool Covered*
2013	CAS 2013 deals	$26,756	$675	2.5
2014	CAS 2014 deals	$227, 234	$5,849	2.6
2015	CAS 2015 deals	$187,126	$5,463	2.9
2016	CAS 2016 deals	$213,944	$6,690	3.1
January 2017	CAS 2017 – C01	$43,758	$1,351	3.1
March 2017	CAS 2017 – C02	$39,988	$1,330	3.3
May 2017	CAS 2017 – C03	$41,246	$1,371	3.3
May 2017	CAS 2017 – C04	$30,154	$1,003	3.3
July 2017	CAS 2017 – C05	$43,751	$1,351	3.1
August 2017	CAS 2017 – C06	$31,900	$1,101	3.5
November 2017	CAS 2017– C07	$33,900	$1,200	3.5
February 2018	CAS 2018 – C01	$44,900	$1,494	3.3
March 2018	CAS 2018 - C02	$26,500	$1,007	3.8
May 2018	CAS 2018 - C03	$31,100	$1,050	3.4
June 2018	CAS 2018 - C04	$24,700	$940	3.8
July 2018	CAS 2018 - C05	$28,700	$983	3.4
October 2018	CAS 2018 - C06	$25,700	$918	3.6
October 2018	CAS 2018 - R07	$24,300	$922	3.8
January 2019	CAS 2019 - R01	$28,000	$960	3.4
Total		**$1,176,172**	**$36,360**	**3.1**

Freddie Mac – Structured Agency Credit Risk (STACR)

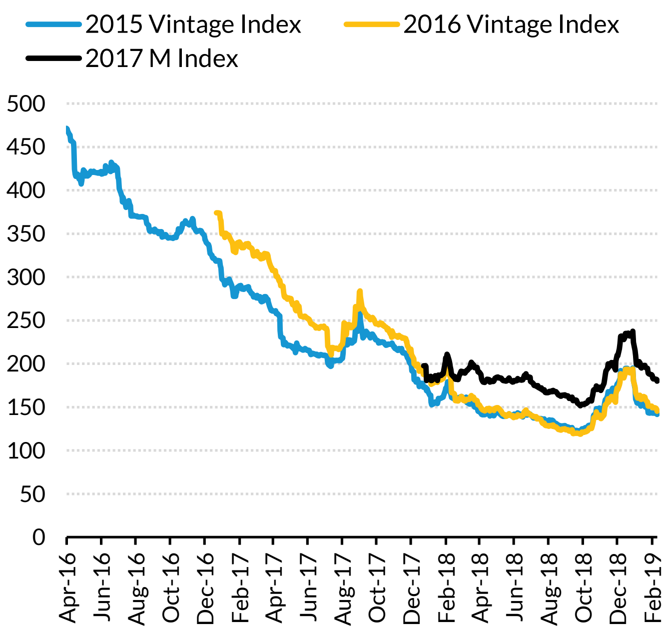
Date	*Transaction*	*Reference Pool Size ($ m)*	*Amount Issued ($m)*	*of Reference Pool Covered*
2013	STACR 2013 deals	$57,912	$1,130	2.0
2014	STACR 2014 deals	$147,120	$4,916	3.3
2015	STACR 2015 deals	$209,521	$6,658	3.2
2016	STACR 2016 deals	$199,130	$5,541	2.8
January 2017	STACR Series 2017 – DNA1	$33, 965	$802	2.4
February 2017	STACR Series 2017 – HQA1	$29,700	$753	2.5
April 2017	STACR Series 2017 – DNA2	$60,716	$1,320	2.2
June 2017	STACR Series 2017 – HQA2	$31,604	$788	2.5
September 2017	STACR Series 2017 – DNA3	$56,151	$1,200	2.1
October 2017	STACR Series 2017 – HQA3	$21,641	$600	2.8
December 2017	STACR Series 2017 – HRP1	$15,044	$200	1.3
January 2018	STACR Series 2018 – DNA1	$34,733	$900	2.6
March 2018	STACR Series 2018 – HQA1	$40,102	$985	2.5
June 2018	STACR Series 2018 – DNA2	$49,346	$1,050	2.1
September 2018	STACR Series 2018 – DNA3	$30,000	$820	2.7
October 2018	STACR Series 2018 – HQA2	$36,200	$1,000	2.8
November 2018	STACR Series 2018 – HRP2	$26,200	$1,300	5.0
January 2019	STACR Series 2019 – DNA1	$24,600	$960	2.9
Total		**$1,103,685**	**$30,677**	**2.8**

Sources: Fannie Mae, Freddie Mac and Urban Institute. **Note**: Classes A-H, M-1H, M-2H, and B-H are reference tranches only. These classes are not issued or sold. The risk is retained by Fannie Mae and Freddie Mac. "CE" = credit enhancement.

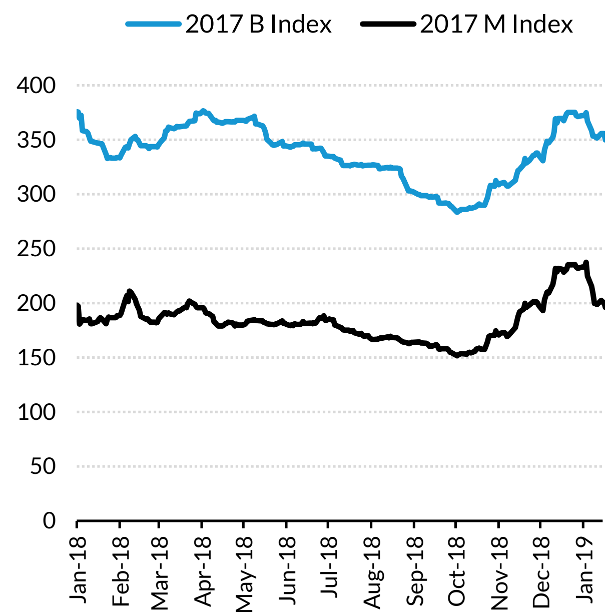
GSE RISK-SHARING INDICES

Spreads on older CRT securities have narrowed considerably through time, despite occasional bouts of volatility. In late 2018, there was considerable spread widening, followed by a sharp spread narrowing in 2019, a pattern also seen in the corporate bond market. The figures below show the spreads on 2015, 2016 and 2017 indices, as priced by dealers. Note that the 2015 and 2016 indices consist of the bottom mezzanine tranche in each deal, weighted by the original issuance amount; the equity tranches were not sold in these years. The 2017 indices contain both the bottom mezzanine tranche as well as the equity tranche (the B tranche), in all deals when the latter was sold.

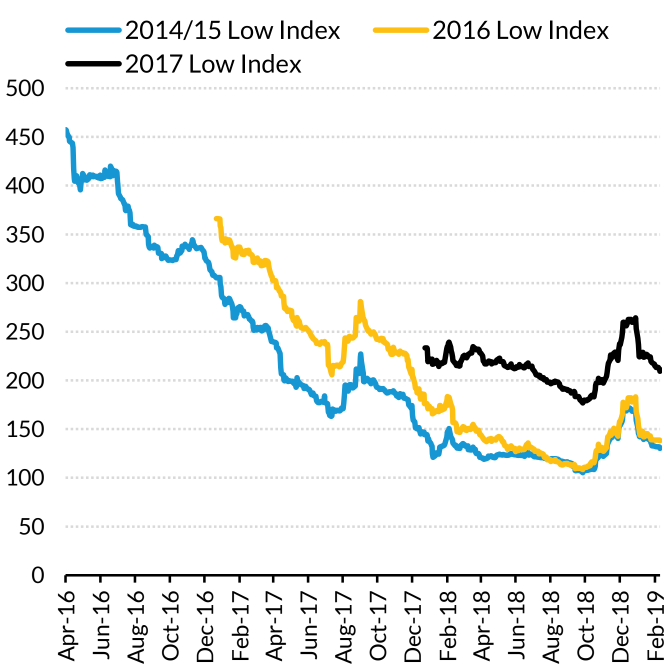
By Vintage



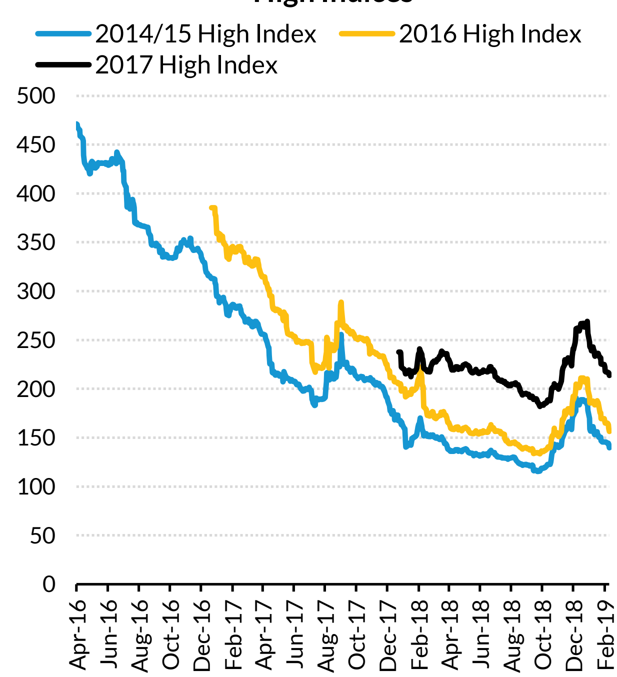
2017 Indices



Low Indices



High Indices

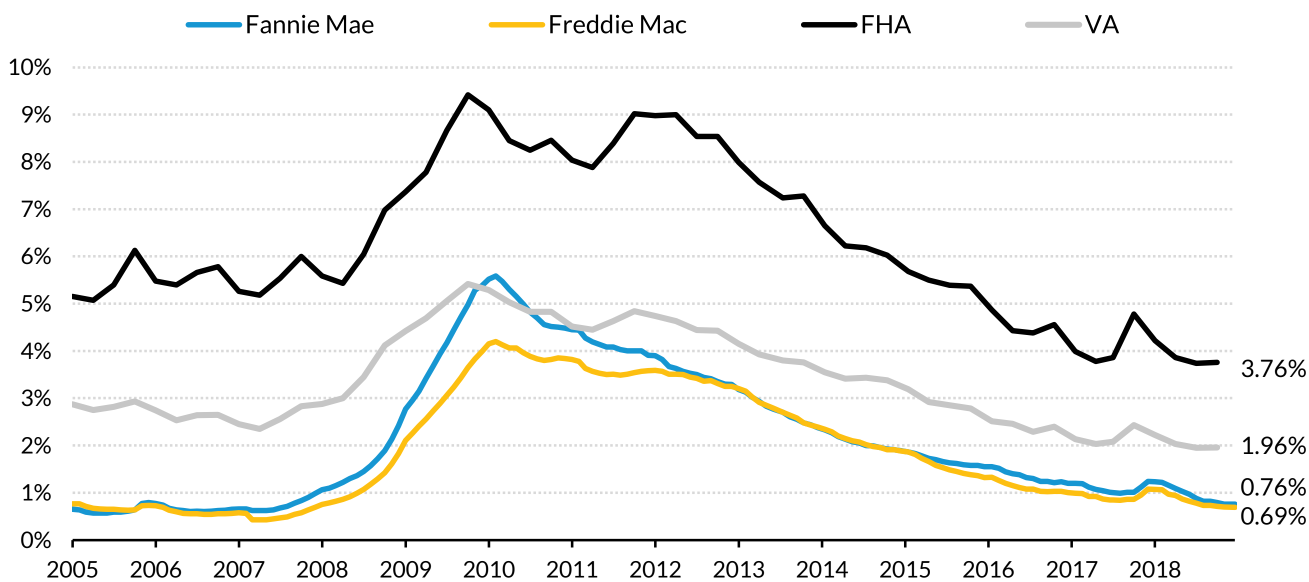


Sources: Vista Data Services and Urban Institute.
Note: Data as of February 15, 2018.

SERIOUS DELINQUENCY RATES

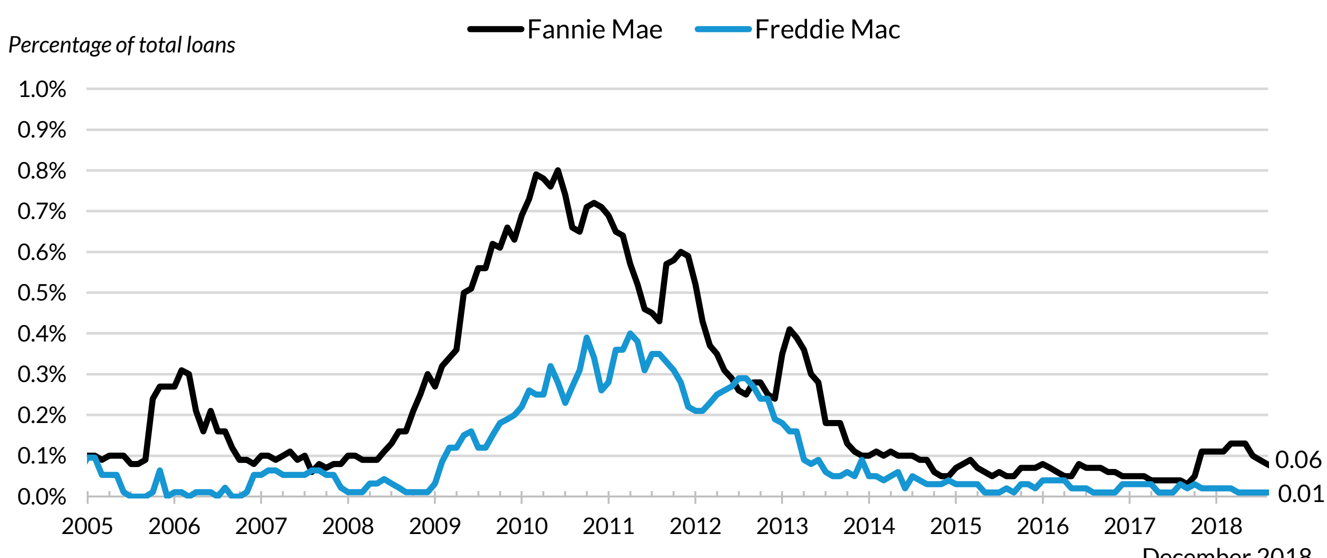
Serious delinquencies for single-family GSE, FHA, and VA loans continued their decline in 2018, after hurricane related uptick at the end of 2017. GSE delinquencies remain high relative to 2005-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are at levels lower than 2005-2007. GSE multifamily delinquencies have declined post-crisis and remain very low.

Serious Delinquency Rates–Single-Family Loans



Sources: Fannie Mae, Freddie Mac, MBA Delinquency Survey and Urban Institute. **Note:** Serious delinquency is defined as 90 days or more past due or in the foreclosure process. Not seasonally adjusted. FHA and VA delinquencies are reported on a quarterly basis, last updated February 2019. GSE delinquencies are reported monthly, last updated February 2019.

Serious Delinquency Rates–Multifamily GSE Loans



Sources: Fannie Mae, Freddie Mac and Urban Institute.
Note: Multifamily serious delinquency rate is the unpaid balance of loans 60 days or more past due, divided by the total unpaid balance.

AGENCY GROSS AND NET ISSUANCE

Agency gross issuance was $81.6 billion in the first month of 2019, or $978.7 billion on an annualized basis. This is down 21.7 percent from the same period in 2018. When measured on a monthly basis, agency gross issuance year-over-year has been declining for 22 consecutive months since March 2017, reflecting higher mortgage rates. Net issuance (which excludes repayments, prepayments, and refinances on outstanding mortgages) totaled $17.5 billion in January 2019, down 14.9 percent from the same month in 2018.

Agency Gross Issuance

Issuance Year	GSEs	Ginnie Mae	Total
2000	$360.6	$102.2	$462.8
2001	$885.1	$171.5	$1,056.6
2002	$1,238.9	$169.0	$1,407.9
2003	$1,874.9	$213.1	$2,088.0
2004	$872.6	$119.2	$991.9
2005	$894.0	$81.4	$975.3
2006	$853.0	$76.7	$929.7
2007	$1,066.2	$94.9	$1,161.1
2008	$911.4	$267.6	$1,179.0
2009	$1,280.0	$451.3	$1,731.3
2010	$1,003.5	$390.7	$1,394.3
2011	$879.3	$315.3	$1,194.7
2012	$1,288.8	$405.0	$1,693.8
2013	$1,176.6	$393.6	$1,570.1
2014	$650.9	$296.3	$947.2
2015	$845.7	$436.3	$1,282.0
2016	$991.6	$508.2	$1,499.8
2017	$877.3	$455.6	$1,332.9
2018	$795.0	$400.6	$1,195.3
2019 YTD	$52.6	$29.0	$81.6
2019 YTD % Change YOY	-23.6%	-18.2%	-21.7%
2019 Ann.	$630.8	$347.9	$978.7

Agency Net Issuance

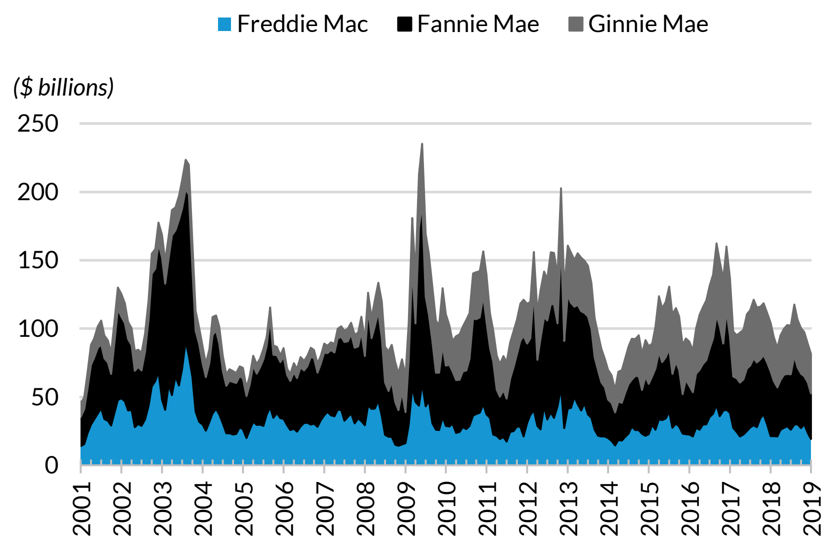
Issuance Year	GSEs	Ginnie Mae	Total
2000	$159.80	$29.30	$189.10
2001	$368.40	-$9.90	$358.50
2002	$357.20	-$51.20	$306.10
2003	$334.90	-$77.60	$257.30
2004	$82.50	-$40.10	$42.40
2005	$174.20	-$42.20	$132.00
2006	$313.60	$0.20	$313.80
2007	$514.90	$30.90	$545.70
2008	$314.80	$196.40	$511.30
2009	$250.60	$257.40	$508.00
2010	-$303.20	$198.30	-$105.00
2011	-$128.40	$149.60	$21.20
2012	-$42.40	$119.10	$76.80
2013	$69.10	$87.90	$157.00
2014	$30.50	$61.60	$92.10
2015	$75.10	$97.30	$172.50
2016	$135.50	$126.10	$261.60
2017	$168.50	$131.30	$299.70
2018	$147.70	$113.90	$261.60
2019 YTD	$8.00	$9.50	$17.50
2019 YTD % Change YOY	-37.60%	22.10%	-14.90%
2019 Ann.	$95.60	$114.10	$209.80

Sources: eMBS and Urban Institute.
Note: Dollar amounts are in billions. Data as of January 2019.

AGENCY GROSS ISSUANCE & FED PURCHASES

Monthly Gross Issuance

While FHA, VA and GSE lending have dominated the mortgage market since the crisis, there has been a change in the mix. The Ginnie Mae share of new issuances has risen from a precrisis level of 10-12% to 35.5 % in January 2018, reflecting origination increases at FHA and VA. Ginnie's share was also assisted by rising rates since late 2016. Higher rates have curtailed GSE refi volume much more than Ginnie's, boosting Ginnie Mae's share of issuances.

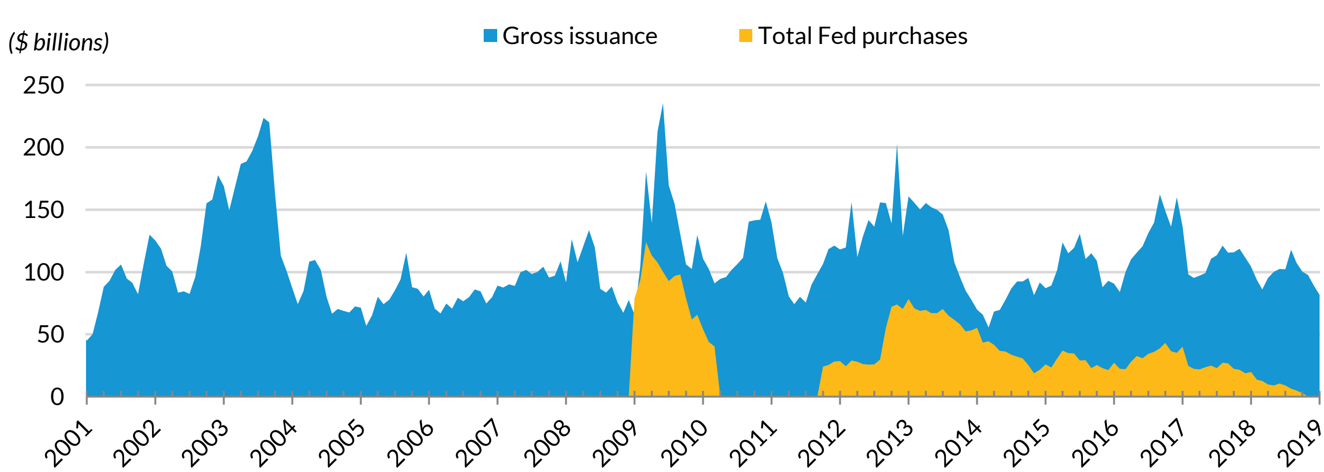


Sources: eMBS, Federal Reserve Bank of New York, and Urban Institute.

January 2018

Fed Absorption of Agency Gross Issuance

The Fed has begun to wind down its portfolio, and we are beginning to see the effects in slower absorption rates. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting funds from mortgages and agency debt into the mortgage market, absorbing 20-30 percent of agency gross issuance. With the wind down, which started in October 2017, the Fed has continued to reinvest, but by less than prepayment and repayments. The amount of the MBS taper (amount permitted to run off each month) hit the $20 billion cap under the current policy in October 2018. Since then the amount of Fed purchases has been tiny; in January 2019 Fed purchases totaled $291 million, corresponding to Fed absorption of gross issuance of 0.36 percent.



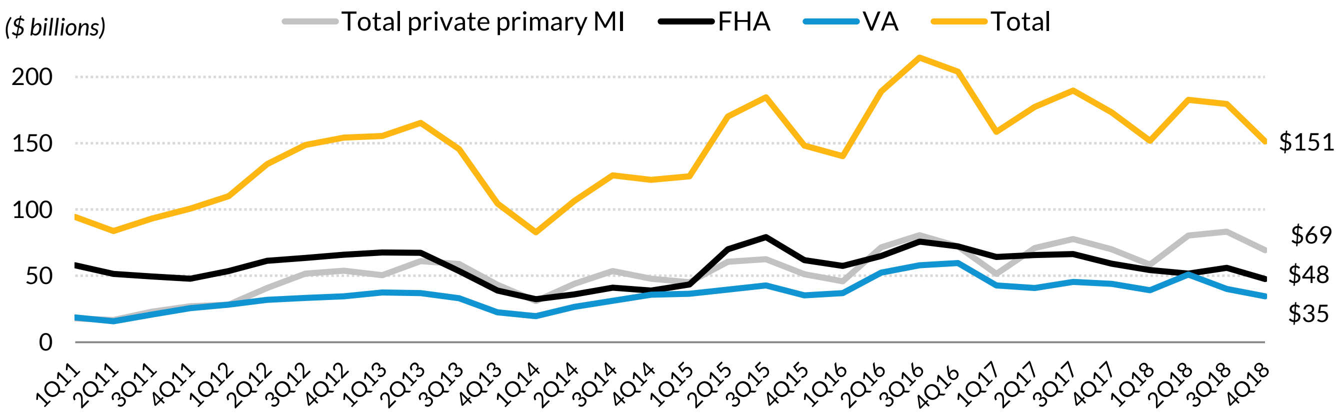
Sources: eMBS, Federal Reserve Bank of New York and Urban Institute.

January 2018

MORTGAGE INSURANCE ACTIVITY

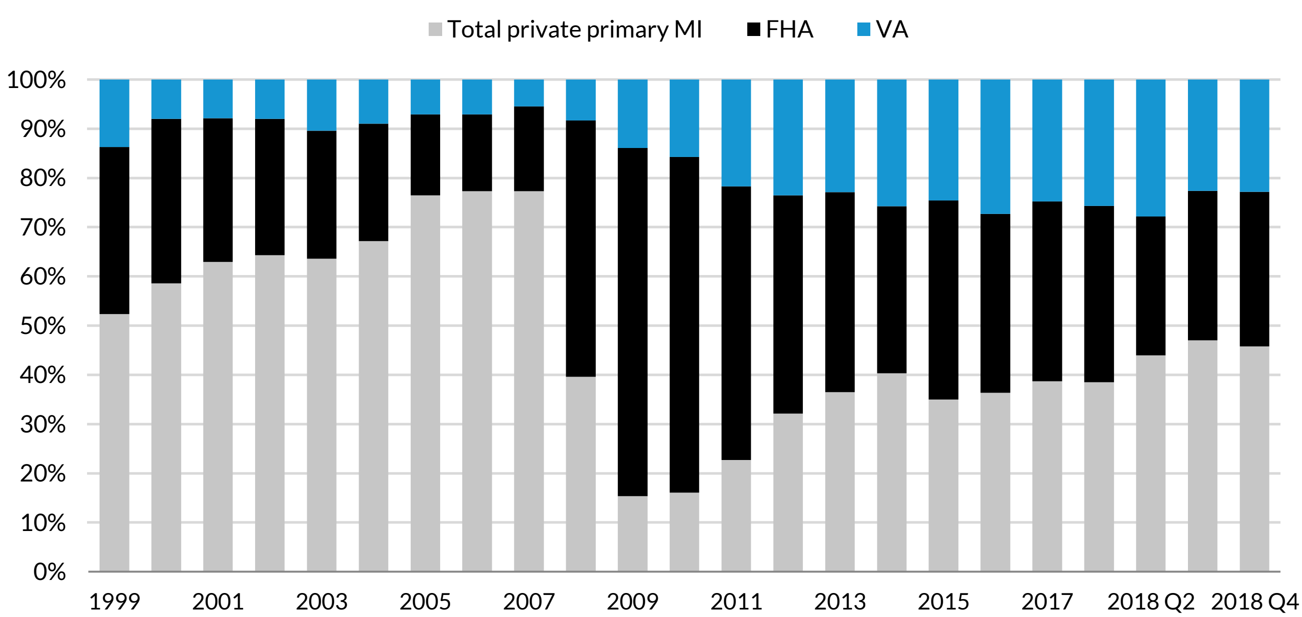
MI Activity

Mortgage insurance activity via the FHA, VA and private insurers declined from $173 billion in Q4 2017 to $151 billion in Q4 2018, or 12.6 percent. In the final quarter of 2018, private mortgage insurance written decreased by $13.99 billion, FHA decreased by $8.59 billion and VA decreased by $5.61 billion from the previous quarter, reflecting seasonality. In the fourth quarter of 2018, the VA share grew from 22.4 percent to 22.8, while the private mortgage insurers share fell from 46.4 to 45.8 percent and the FHA share remained constant compared to the previous quarter.



Sources: Inside Mortgage Finance and Urban Institute. *Last updated February 2019.*

MI Market Share



Sources: Inside Mortgage Finance and Urban Institute. *Last updated February 2019.*

MORTGAGE INSURANCE ACTIVITY

FHA premiums rose significantly in the years following the housing crash, with annual premiums rising from 50 to 135 basis points between 2008 to 2013 as FHA worked to shore up its finances. In January 2015, President Obama announced a 50 bps cut in annual insurance premiums, making FHA mortgages more attractive than GSE mortgages for the overwhelming majority of high LTV borrowers. The April 2016 reduction in PMI rates for borrowers with higher FICO scores and April 2018 reduction for lower FICO borrowers has partially offset that. As shown in the bottom table, a borrower putting 3.5 percent down will now find FHA more economical except for those with FICO scores of 740 or higher.

FHA MI Premiums for Typical Purchase Loan

Case number date	Upfront mortgage insurance premium (UFMIP) paid	Annual mortgage insurance premium (MIP)
1/1/2001 - 7/13/2008	150	50
7/14/2008 - 4/5/2010*	175	55
4/5/2010 - 10/3/2010	225	55
10/4/2010 - 4/17/2011	100	90
4/18/2011 - 4/8/2012	100	115
4/9/2012 - 6/10/2012	175	125
6/11/2012 - 3/31/2013[a]	175	125
4/1/2013 – 1/25/2015[b]	175	135
Beginning 1/26/2015[c]	175	85

Sources: Ginnie Mae and Urban Institute.
Note: A typical purchase loan has an LTV over 95 and a loan term longer than 15 years. Mortgage insurance premiums are listed in basis points.
* For a short period in 2008 the FHA used a risk based FICO/LTV matrix for MI.
[a] Applies to purchase loans less than or equal to $625,500. Those over that amount have an annual premium of 150 bps.
[b] Applies to purchase loans less than or equal to $625,500. Those over that amount have an annual premium of 155 bps.
[c] Applies to purchase loans less than or equal to $625,500. Those over that amount have an annual premium of 105 bps.

Initial Monthly Payment Comparison: FHA vs. PMI

Assumptions	
Property Value	$250,000
Loan Amount	$241,250
LTV	96.5
Base Rate	
Conforming	5.16
FHA	5.08

FICO	620 - 639	640 - 659	660 - 679	680 - 699	700 - 719	720 - 739	740 - 759	760 +
FHA MI Premiums								
FHA UFMIP	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
FHA MIP	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
PMI								
GSE LLPA*	3.50	2.75	2.25	1.50	1.50	1.00	0.75	0.75
PMI Annual MIP	2.25	2.05	1.90	1.40	1.15	0.95	0.75	0.55
Monthly Payment								
FHA	$1,501	$1,501	$1,501	$1,501	$1,501	$1,501	$1,501	$1,501
PMI	$1,877	$1,814	$1,768	$1,645	$1,595	$1,540	$1,492	$1,452
PMI Advantage	($376)	($313)	($268)	($145)	($94)	($39)	$9	$49

Sources: Genworth Mortgage Insurance, Ginnie Mae, and Urban Institute.
Note: Mortgage insurance premiums listed in percentage points. Grey shade indicates FHA monthly payment is more favorable, while light blue indicates PMI is more favorable. The PMI monthly payment calculation does not include special programs like Fannie Mae's HomeReady and Freddie Mac's Home Possible (HP), both offer more favorable rates for low- to moderate-income borrowers.
LLPA= Loan Level Price Adjustment, described in detail on page 25.

FANNIE MAE COMPOSITION

Since 2008, the composition of loans purchased by Fannie Mae has shifted towards borrowers with higher FICO scores. For example, 64.6 percent of loans originated from 2011 to Q4 2017 were for borrowers with FICO scores above 750, compared to 40.7 percent of borrowers in 2007 and 36.6 percent from 1999-2004.

Balance on 30-year, Fixed-rate, Full-doc, Amortizing Loans

Origination Year	Origination FICO	LTV				Total
		≤70	70 to 80	80 to 90	>90	
1999-2004	≤700	9.4%	15.0%	4.5%	4.5%	33.4%
	700 to 750	9.2%	14.2%	3.4%	3.2%	30.0%
	>750	15.6%	16.1%	2.7%	2.3%	36.6%
	Total	34.2%	45.3%	10.6%	9.9%	100.0%
2005	≤700	12.6%	15.5%	3.4%	2.3%	33.8%
	700 to 750	9.8%	13.3%	2.1%	1.4%	26.6%
	>750	17.4%	18.6%	2.1%	1.4%	39.6%
	Total	39.8%	47.4%	7.7%	5.1%	100.0%
2006	≤700	12.7%	16.1%	3.5%	2.2%	34.5%
	700 to 750	8.9%	13.5%	2.2%	1.2%	25.9%
	>750	15.8%	20.1%	2.4%	1.4%	39.6%
	Total	37.4%	49.7%	8.1%	4.8%	100.0%
2007	≤700	10.8%	15.1%	5.3%	3.1%	34.3%
	700 to 750	7.8%	12.5%	3.0%	1.7%	25.0%
	>750	15.3%	20.1%	3.3%	2.0%	40.7%
	Total	33.9%	47.7%	11.6%	6.8%	100.0%
2008	≤700	7.6%	7.2%	2.9%	2.0%	19.7%
	700 to 750	7.8%	11.9%	4.1%	2.6%	26.4%
	>750	19.1%	25.6%	5.8%	3.4%	53.9%
	Total	34.5%	44.7%	12.7%	8.1%	100.0%
2009-2010	≤700	3.6%	2.9%	0.3%	0.2%	6.9%
	700 to 750	8.2%	10.8%	1.7%	0.8%	21.5%
	>750	32.4%	33.5%	4.0%	1.7%	71.5%
	Total	44.2%	47.2%	5.9%	2.7%	100.0%
2011-4Q17	≤700	3.5%	5.0%	1.3%	2.1%	11.8%
	700 to 750	5.7%	9.9%	3.2%	4.8%	23.6%
	>750	20.4%	28.2%	7.3%	8.6%	64.6%
	Total	29.6%	43.2%	11.8%	15.5%	100.0%
Total		33.8%	44.9%	10.5%	10.8%	100.0%

Sources: Fannie Mae and Urban Institute.
Note: Fannie Mae loan level credit data includes loans originated from Q1 1999 to Q4 2017. The percentages are weighted by origination balance. The analysis included only mortgages with original terms of 241-420 months.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

FANNIE MAE DEFAULT RATE

While the composition of Fannie Mae loans originated in 2007 was similar to that of 2004 and earlier vintage years, 2007 loans experienced a much higher default rate due to the sharp drop in home values in the recession. Originations from 2009 and later have pristine credit characteristics and a more favorable home price environment, contributing to very low default rates.

Default Rate on 30-year, Fixed-rate, Full-doc, Amortizing Loans

Origination Year	Origination FICO	LTV ≤70	LTV 70 to 80	LTV 80 to 90	LTV >90	Total
1999-2004	≤700	3.8%	4.6%	6.1%	7.1%	4.9%
	700 to 750	1.2%	1.9%	2.9%	3.0%	1.9%
	>750	0.4%	0.8%	1.5%	1.7%	0.8%
	Total	1.6%	2.4%	3.9%	4.6%	2.5%
2005	≤700	13.9%	17.5%	20.1%	21.8%	16.7%
	700 to 750	6.4%	9.8%	12.8%	13.2%	9.0%
	>750	2.2%	4.5%	7.2%	8.2%	3.8%
	Total	7.0%	10.2%	14.5%	15.7%	9.5%
2006	≤700	18.3%	22.5%	25.9%	27.4%	21.6%
	700 to 750	8.6%	13.2%	16.1%	16.8%	12.1%
	>750	2.9%	5.8%	9.1%	9.5%	5.0%
	Total	9.5%	13.2%	18.3%	19.5%	12.6%
2007	≤700	19.7%	23.6%	31.0%	31.3%	24.2%
	700 to 750	8.4%	13.4%	19.3%	18.6%	12.9%
	>750	2.8%	5.8%	11.0%	10.8%	5.3%
	Total	9.5%	13.4%	22.2%	22.0%	13.7%
2008	≤700	14.5%	17.2%	23.2%	23.3%	17.7%
	700 to 750	5.0%	8.0%	12.9%	12.7%	8.3%
	>750	1.3%	2.8%	6.3%	6.9%	2.9%
	Total	5.0%	6.5%	12.2%	12.9%	7.2%
2009-2010	≤700	4.0%	5.2%	5.0%	6.4%	4.6%
	700 to 750	1.1%	2.0%	2.5%	3.0%	1.7%
	>750	0.2%	0.6%	1.1%	1.4%	0.5%
	Total	0.7%	1.2%	1.7%	2.3%	1.0%
2011-4Q17	≤700	1.1%	1.5%	1.7%	2.1%	1.5%
	700 to 750	0.3%	0.5%	0.6%	0.8%	0.5%
	>750	0.1%	0.1%	0.2%	0.3%	0.1%
	Total	0.2%	0.4%	0.5%	0.7%	0.4%
Total		1.9%	2.7%	4.0%	3.2%	2.6%

Sources: Fannie Mae and Urban Institute.
Note: Fannie Mae loan level credit data includes loans originated from Q1 1999 to Q4 2017, with performance information on these loans through Q3 2018. Default is defined as more than six months delinquent or disposed of via short sales, third-party sales, deeds-in-lieu of foreclosure, or real estate owned (REO acquisitions). The analysis included only mortgages with original terms of 241-420 months.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

FREDDIE MAC COMPOSITION

Since 2008, the composition of loans purchased by Freddie Mac has shifted towards borrowers with higher FICO scores. For example, 59.8 percent of loans originated from 2011 to Q4 2017 were for borrowers with FICO scores above 750, compared to 38.9 percent of borrowers in 2007 and 33.2 percent from 1999-2004.

Balance on 30-year, Fixed-rate, Full-doc, Amortizing Loans

Origination Year	Origination FICO	LTV				Total
		≤70	70 to 80	80 to 90	>90	
1999-2004	≤700	7.7%	16.6%	5.5%	5.6%	35.4%
	700 to 750	8.9%	15.9%	3.4%	3.2%	31.4%
	>750	13.6%	15.5%	2.3%	1.8%	33.2%
	Total	30.2%	48.0%	11.2%	10.6%	100.0%
2005	≤700	10.6%	17.0%	3.3%	2.9%	33.9%
	700 to 750	9.4%	15.4%	2.0%	1.7%	28.4%
	>750	15.8%	18.8%	1.7%	1.4%	37.7%
	Total	35.8%	51.2%	7.0%	5.9%	100.0%
2006	≤700	10.1%	17.3%	3.4%	3.2%	34.0%
	700 to 750	8.3%	16.1%	1.9%	1.5%	27.9%
	>750	14.4%	20.7%	1.7%	1.3%	38.1%
	Total	32.8%	54.1%	7.1%	6.0%	100.0%
2007	≤700	9.2%	15.5%	4.6%	4.8%	34.0%
	700 to 750	7.5%	14.3%	2.6%	2.6%	27.0%
	>750	14.4%	19.5%	2.5%	2.6%	38.9%
	Total	31.1%	49.4%	9.7%	9.9%	100.0%
2008	≤700	7.3%	8.7%	3.1%	2.1%	21.3%
	700 to 750	9.2%	13.1%	3.7%	2.4%	28.3%
	>750	21.6%	21.5%	4.7%	2.6%	50.4%
	Total	38.1%	43.3%	11.5%	7.2%	100.0%
2009-2010	≤700	3.9%	3.2%	0.3%	0.3%	7.7%
	700 to 750	9.3%	11.9%	1.7%	0.9%	23.8%
	>750	32.5%	31.0%	3.6%	1.4%	68.5%
	Total	45.7%	46.1%	5.6%	2.6%	100.0%
2011- 4Q17	≤700	4.0%	5.0%	1.4%	1.9%	12.3%
	700 to 750	7.0%	12.3%	3.6%	4.9%	27.8%
	>750	18.7%	27.0%	6.6%	7.5%	59.8%
	Total	29.7%	44.3%	11.7%	14.3%	100.0%
Total		32.9%	46.7%	10.2%	10.2%	100.0%

Sources: Freddie Mac and Urban Institute.
Note: Freddie Mac loan level credit data includes loans originated from Q1 1999 to Q4 2017. The percentages are weighted by origination balance. The analysis included only mortgages with original terms of 241-420 months.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

FREDDIE MAC DEFAULT RATE

While the composition of Freddie Mac loans originated in 2007 was similar to that of 2004 and earlier vintage years, 2007 loans experienced a much higher default rate due to the sharp drop in home values in the recession. 2009 and later originations have pristine credit characteristics and a more favorable home price environment, contributing to very low default rates.

Default Rate on 30-year, Fixed-rate, Full-doc, Amortizing Loans

Origination Year	Origination FICO	LTV				Total
		≤70	70 to 80	80 to 90	>90	
1999-2004	≤700	3.1%	4.3%	6.6%	7.0%	4.8%
	700 to 750	1.1%	1.7%	2.8%	2.9%	1.8%
	>750	0.4%	0.8%	1.5%	1.8%	0.7%
	Total	1.3%	2.3%	4.4%	4.9%	2.5%
2005	≤700	12.3%	16.7%	19.8%	21.2%	16.0%
	700 to 750	5.9%	9.6%	12.8%	13.1%	8.8%
	>750	2.0%	4.6%	7.3%	8.4%	3.8%
	Total	6.1%	10.1%	14.8%	16.0%	9.3%
2006	≤700	16.2%	21.3%	24.9%	27.2%	20.7%
	700 to 750	8.1%	12.8%	15.7%	15.7%	11.8%
	>750	2.7%	6.0%	9.1%	9.8%	5.1%
	Total	8.2%	13.0%	18.5%	20.5%	12.3%
2007	≤700	17.4%	23.0%	29.1%	31.5%	23.5%
	700 to 750	8.0%	13.7%	18.4%	18.7%	13.0%
	>750	2.7%	6.4%	10.4%	11.6%	5.6%
	Total	8.3%	13.7%	21.4%	23.0%	13.7%
2008	≤700	13.5%	17.5%	24.0%	23.0%	17.6%
	700 to 750	4.8%	8.6%	13.3%	11.9%	8.3%
	>750	1.4%	3.4%	6.9%	6.5%	3.0%
	Total	4.5%	7.8%	13.6%	13.2%	7.6%
2009-2010	≤700	3.4%	5.0%	5.1%	5.3%	4.2%
	700 to 750	0.9%	1.9%	2.2%	2.7%	1.6%
	>750	0.2%	0.6%	1.1%	1.3%	0.5%
	Total	0.6%	1.3%	1.7%	2.2%	1.0%
2011-4Q17	≤700	0.7%	0.8%	1.0%	1.3%	0.9%
	700 to 750	0.2%	0.3%	0.4%	0.5%	0.3%
	>750	0.1%	0.1%	0.1%	0.2%	0.1%
	Total	0.2%	0.2%	0.3%	0.5%	0.3%
Total		2.0%	3.4%	4.7%	4.5%	3.2%

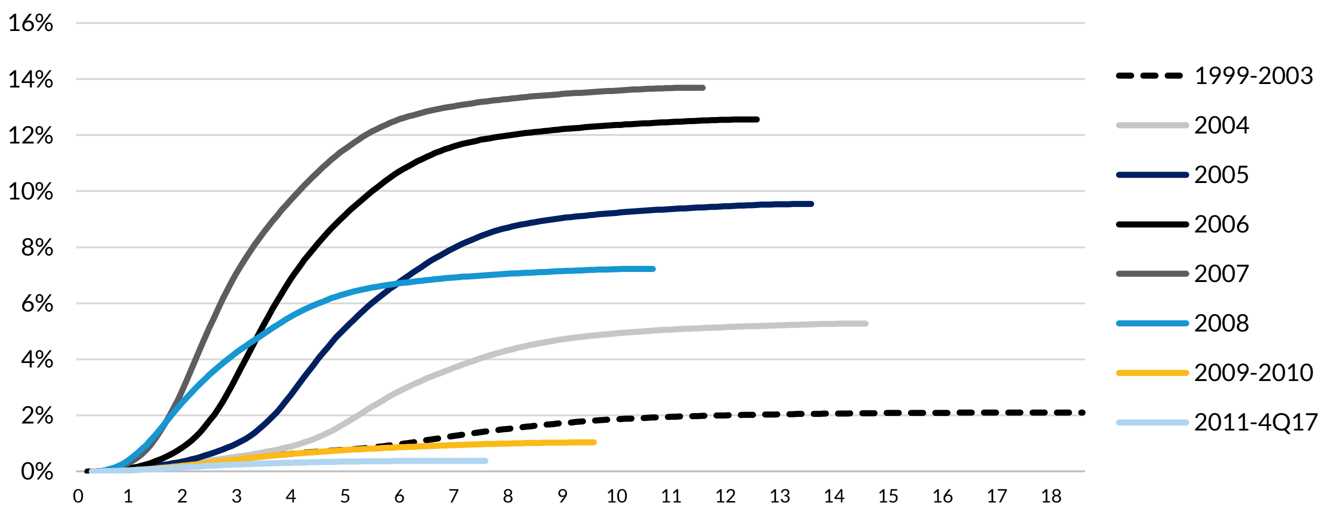
Sources: Freddie Mae and Urban Institute.
Note: Freddie Mac loan level credit data includes loans originated from Q1 1999 to Q4 2017, with performance information on these bans through Q2 2018. Default is defined as six months delinquent or disposed of via short sales, third-party sales, deeds-in-lieu of foreclosure, or real estate owned (REO acquisitions). The analysis included only mortgages with original terms of 241-420 months.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

DEFAULT RATE BY VINTAGE

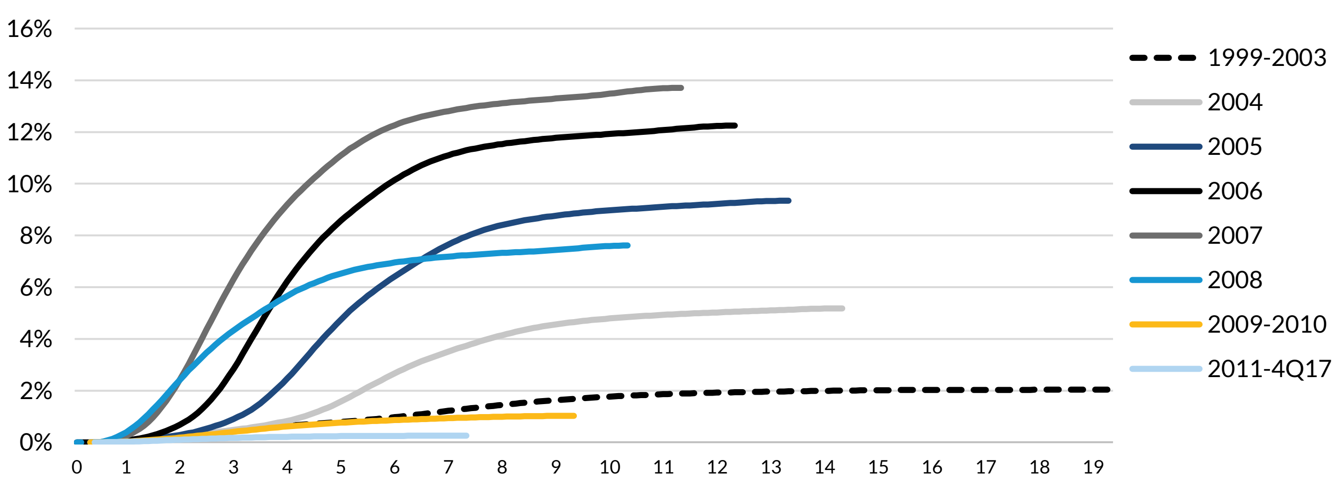
With pristine books of business and a strong housing market, default rates for the GSEs are much lower than they were historically. For Fannie Mae and Freddie Mac's 1999-2003 vintages, cumulative defaults total around 2 percent, while cumulative defaults for the 2007 vintage are around 14 percent. For both Fannie Mae and Freddie Mac, cumulative defaults for post-2009 vintages are on pace to fall below pre-2003 levels. For Fannie loans 88 months after origination, the cumulative default rate from 2009-10 and 2011- Q4 2017 are about 1.25 and .48 percent, respectively, compared to the cumulative default rate from 1999-2003 of 1.42 percent. For Freddie loans 88 months after origination, the cumulative default rates total 1.15 percent from 2009-10 and 0.31 percent from 2011-Q4 2017, compared to the rate from 1999-2003 of 1.30 percent.

Fannie Mae Cumulative Default Rate by Vintage Year



Sources: Fannie Mae and Urban Institute.
Note: The analysis included only mortgages with original terms of 241-420 months. A default is defined as a delinquency of 180 days or more, a deed-in-lieu, short sale, foreclosure sale or REO sale.

Freddie Mac Cumulative Default Rate by Vintage Year



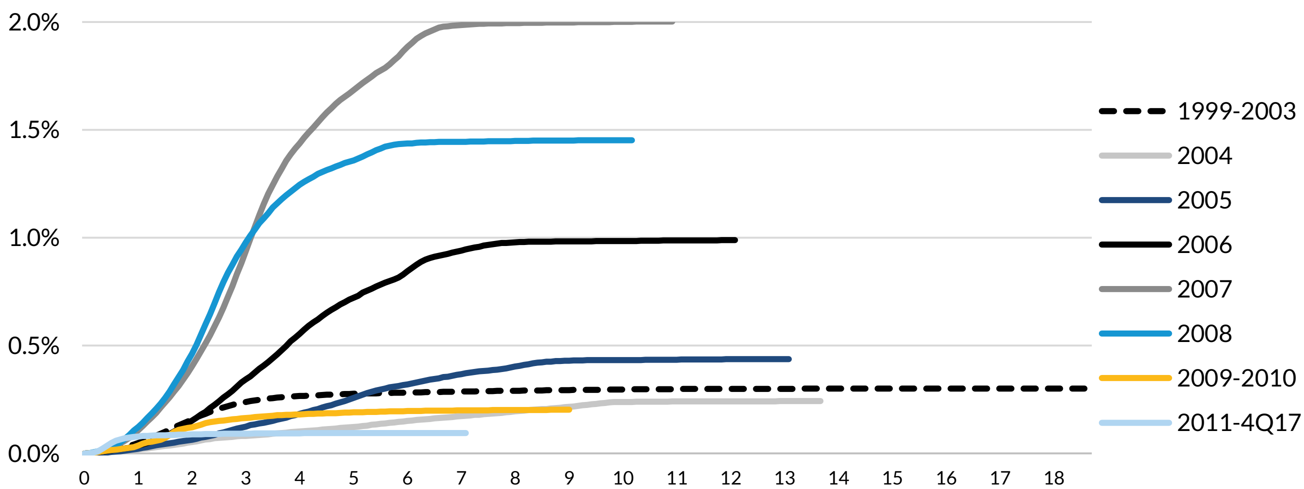
Sources: Freddie Mac and Urban Institute.
Note: The analysis included only mortgages with original terms of 241-420 months. A default is defined as a delinquency of 180 days or more, a deed-in-lieu, short sale, foreclosure sale or REO sale.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

REPURCHASE RATE BY VINTAGE

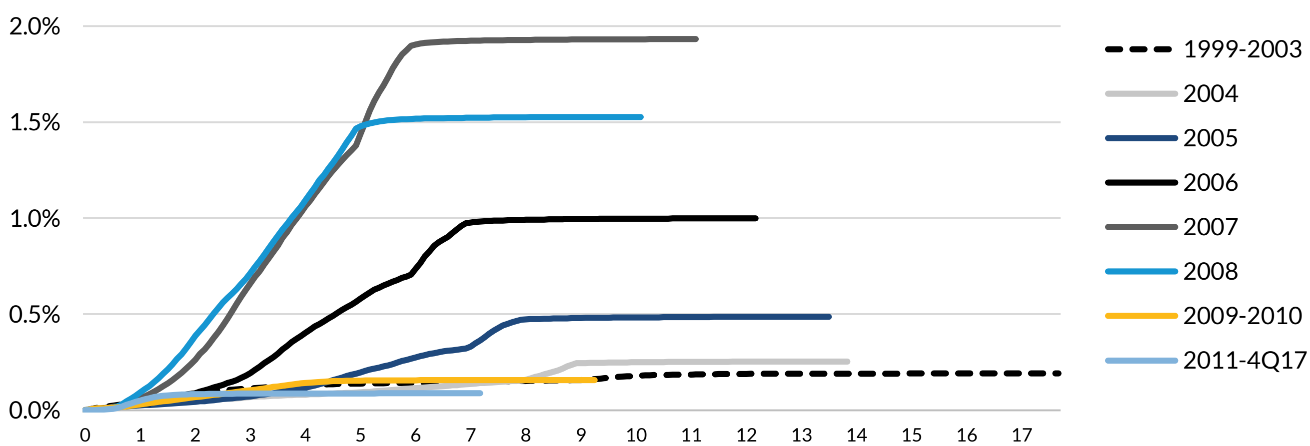
These figures show the cumulative percentage of fixed-rate, full documentation, amortizing 30-year loans of a given vintage that Fannie and Freddie have put back to lenders due to reps and warrants violations. Bubble era vintages were significantly more likely to be put back than either pre- or post-bubble vintages. Note that put-backs are generally quite small, with the exception of the 2006-2008 vintages. These numbers exclude loans put back through global settlements, which are not done at the loan level. Moreover, lenders' attitudes are formed by the total share of put-backs on their books. The database used in this analysis, while very characteristic of new production, excludes many loans that are likely to be put back, including limited documentation loans, non-traditional products (such as interest-only loans), and loans with pool insurance policies.

Fannie Mae Repurchase Rate by Vintage Year



Sources: Fannie Mae and Urban Institute.
Note: The analysis included only mortgages with original terms of 241-420 months.

Freddie Mac Repurchase Rate by Vintage Year



Sources: Freddie Mac and Urban Institute.
Note: The analysis included only mortgages with original terms of 241-420 months.

LOSS SEVERITY

Both Fannie Mae and Freddie Mac's credit data include the status of loans after they experience a credit event (default). A credit event is defined as a delinquency of 180 days or more, a deed-in-lieu, short sale, foreclosure sale or REO sale. We look at each loan that has experienced a credit event and categorize it based on present status—for Fannie Mae loans (top table) 14.0 percent are current, 16.5 percent are prepaid, 9.6 percent are still in the pipeline (not current, not prepaid, not liquidated) and 58.0 percent have already liquidated (deed-in-lieu, short sale, foreclosure sale, REO sale). Freddie Mac's results (bottom table) are very similar. The right side of both tables shows the severity of all loans that have liquidated, broken down by LTV buckets: total Fannie and Freddie severities are around 41-43 percent.

Fannie Mae - Liquidation Rates and Severities for D180+ loans

Origination Year	Paths for D180+ Loans (% of total count)				Severity for Already Liquidated Loans			
	Paths With No Eventual Loss		Paths With Eventual Loss					
	Current	Prepay	Still in the Pipeline	% Already Liquidated Loans	<=60	60-80	>80	Total
1999-2004	12.05%	22.19%	7.08%	58.02%	24.3%	39.6%	24.3%	32.6%
2005	13.66%	12.61%	7.34%	64.22%	33.6%	48.4%	35.3%	44.5%
2006	13.67%	10.91%	6.88%	65.59%	41.7%	54.1%	38.0%	49.8%
2007	14.86%	11.86%	7.66%	62.04%	41.1%	53.5%	35.9%	47.0%
2008	15.89%	14.85%	8.49%	57.76%	34.9%	48.8%	28.3%	39.7%
2009-2010	16.85%	19.83%	14.64%	48.15%	23.6%	35.1%	17.5%	30.4%
2011-4Q17	20.32%	15.17%	43.06%	21.40%	14.4%	23.2%	6.1%	14.0%
Total	13.99%	16.53%	9.57%	58.06%	34.3%	47.6%	29.5%	41.0%

Freddie Mac - Liquidation Rates and Severities for D180+ loans

Origination Year	Paths for D180+ Loans (% of total count)				Severity for Already Liquidated Loans			
	Paths With No Eventual Loss		Paths With Eventual Loss					
	Current	Prepay	Still In The Pipeline	% Already Liquidated Loans	<=60	60-80	>80	Total
1999-2004	10.34%	19.47%	6.97%	63.21%	26.8%	40.6%	28.6%	34.7%
2005	11.94%	10.95%	6.92%	70.19%	34.5%	47.7%	36.7%	44.4%
2006	11.47%	9.09%	6.39%	73.05%	40.6%	52.0%	38.4%	48.4%
2007	11.86%	9.09%	7.14%	71.91%	43.7%	51.8%	37.6%	46.7%
2008	13.44%	11.98%	8.33%	66.26%	38.2%	48.8%	33.4%	42.7%
2009-2010	14.35%	17.87%	15.23%	52.56%	28.4%	38.5%	19.0%	34.1%
2011-4Q17	15.32%	15.11%	48.09%	21.48%	18.7%	28.0%	8.5%	18.2%
Total	11.63%	13.60%	8.32%	66.44%	36.7%	48.0%	33.5%	42.9%

Sources: Fannie Mae, Freddie Mac, and Urban Institute.
Note: Fannie Mae loan level credit data includes loans originated from Q1 1999 to Q4 2017, with performance information on these loans through Q3 2018. Freddie Mac loan level credit data includes loans originated from Q1 1999 to Q4 2017, with performance information on these loans through Q2 2018. The analysis included only mortgages with original terms of 241-420 months.

SPECIAL FEATURE: LOAN LEVEL GSE CREDIT DATA

LOSS SEVERITY BY CHANNEL

The table below shows the severity of Fannie and Freddie loans that have liquidated, broken down by liquidation channel and vintage year. Foreclosure alternatives, including short sales, note sales, and third party sales have higher defaulted unpaid principal balance (UPB) and much lower loss severities than REO sales. For example, for 2011-Q4 2017 originations, Fannie Mae foreclosure alternatives had a mean defaulted UPB of $167,366 and a loss severity of 11.8 percent, versus a mean defaulted UPB of $148,528 and a loss severity of 15.4 percent for REO sales.

Fannie Mae - Loss Severity for Already Liquidated Loans

Origination Year	Number of Loans			Mean defaulted UPB ($)			Severity		
	All	REO	Foreclosure Alternatives	All	REO	Foreclosure Alternatives	All	REO	Foreclosure Alternatives
1999-2004	192,514	146,189	46,325	111,662.7	105,936.5	129,728.0	32.58%	37.05%	21.06%
2005	73,846	49,065	24,781	168,347.7	157,154.2	190,507.1	44.46%	48.68%	37.58%
2006	75,316	50,139	25,177	182,616.3	170,006.4	207,722.9	49.83%	54.48%	42.25%
2007	91,672	60,850	30,822	192,057.2	178,938.1	217,950.1	47.03%	51.70%	39.48%
2008	53,959	35,796	18,163	189,644.3	175,427.9	217,644.1	39.72%	44.44%	32.24%
2009-2010	19,391	12,405	6,986	173,351.7	162,029.7	193,448.9	30.42%	34.84%	23.85%
2011-4Q17	10,053	6,473	3,580	155,239.1	148,528.3	167,366.2	14.00%	15.41%	11.76%
Total	516,751	360,917	155,834	155,677.5	143,696.3	183,417.2	40.99%	45.13%	33.48%

Freddie Mac - Loss Severity for Already Liquidated Loans

Origination Year	Number of Loans			Mean defaulted UPB ($)			Severity		
	All	REO	Foreclosure Alternatives	All	REO	Foreclosure Alternatives	All	REO	Foreclosure Alternatives
1999-2004	168,167	114,244	53,923	112,219.3	106,283.9	124,794.3	34.74%	40.29%	24.73%
2005	91,068	48,035	43,033	170,835.4	156,060.2	187,328.0	44.43%	51.93%	37.46%
2006	96,503	49,991	46,512	183,899.0	165,791.2	203,361.3	48.38%	57.14%	40.70%
2007	103,319	53,694	49,625	186,157.3	167,705.7	206,121.9	46.67%	56.38%	38.12%
2008	51,878	25,760	26,118	196,201.6	177,745.5	214,404.9	42.66%	53.36%	33.91%
2009-2010	15,344	7,677	7,667	178,683.1	167,852.5	189,527.8	34.10%	41.92%	27.16%
2011-4Q17	4,133	1,777	2,356	162,492.5	151,703.8	170,629.7	18.23%	23.79%	14.51%
Total	530,412	301,178	229,234	160,255.5	142,999.9	182,926.8	42.86%	50.26%	35.26%

Sources: Fannie Mae, Freddie Mac and Urban Institute.
Note: Fannie Mae loan level credit data includes loans originated from Q1 1999 to Q4 2017, with performance information on these loans through Q3 2018. Freddie Mac loan level credit data includes loans originated from Q1 1999 to Q4 2017, with performance information on these loans through Q2 2018. The analysis included only mortgages with original terms of 241-420 months.

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Acknowledgments

The Housing Finance Policy Center (HFPC) was launched with generous support at the leadership level from the Citi Foundation and John D. and Catherine T. MacArthur Foundation. Additional support was provided by The Ford Foundation and The Open Society Foundations.

Ongoing support for HFPC is also provided by the Housing Finance Innovation Forum, a group of organizations and individuals that support high-quality independent research that informs evidence-based policy development. Funds raised through the Forum provide flexible resources, allowing HFPC to anticipate and respond to emerging policy issues with timely analysis. This funding supports HFPC's research, outreach and engagement, and general operating activities.

The chartbook is funded by these combined sources. We are grateful to them and to all our funders, who make it possible for Urban to advance its mission.

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