Global Markets Analysis Report

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Our Guaranty Matters

PREPARED FOR GINNIE MAE
BY STATE STREET GLOBAL ADVISORS
URBAN INSTITUTE, HOUSING FINANCE POLICY CENTER

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HIGHLIGHTS

The potential impact of lower rates on refinances

An excellent proxy for single-family mortgage note rates is Freddie Mac's Primary Mortgage Market Survey (PMMS), The PMMS rate was 4.17 percent in mid-April, down significantly from nearly 5 percent in November 2018. For most of 2018, the PMMS rate was well above 4 percent, signaling that many loans originated during 2018 and YTD 2019 may be "in-the-money" for refinancing to a lower note rate. This potential refinancing wave will determine MBS prepayment speeds in the coming months. We estimate the magnitude of potential refinance volumes at various refinance thresholds (i.e. the difference between note rate the PMMS) using the PMMS rate as of April 18, 2019 (4.17 for 30-year fixed, 3.62 for 15-year fixed) as our proxy for current rates.

Since January 2018, Ginnie Mae has issued a total of $403 billion in MBS across coupons ranging from 3.0% to 5.0% – $355 billion in 2018 and $48 billion in the first two months of 2019. Per our analysis, 76 percent of 2018 issuances and 96 percent of 2019 issuances to date are backed by mortgages with note rates above the current PMMS rate. Due to closing costs and the hassle factor, it is not economical for all of these loans to refinance; borrowers generally find it worthwhile to refinance if the new mortgage rate is at least 75 basis points (bps) lower than the old rate. In some cases, borrowers may refinance at 50 bps or lower, and some borrowers may require a 1 percent threshold. We use 75 bps in this example. Importantly, many of these mortgages are not currently eligible for refinancing due to Ginnie Mae seasoning requirements. Thus, prepayment speeds of new TBA eligible MBS, will have muted prepayment speeds even though the old rate is "in-the-money" for refinancing.

The table below shows Ginnie Mae's 2018 issuances above and below the 75 bps refinance threshold. All of Ginnie Mae's 2018 and YTD 2019 issued 5% coupons would fall above the threshold, totaling $43.2 billion. In the 4.5 coupon, a total of $91.6 billion ($73.7 billion from 2018 and $17.9 billion from 2019) fall above 75 bps. Thus, a total of $134.8 billion in 2018 and 2019 YTD issuances are "in-the-money" using the 75 bps threshold. Coupons over 4.0 percent are mostly under the 75 bps threshold.

Ginnie Mae 2018-2019 YTD MBS Issuances ($ billions)

		Refinance Incentive (%)			
	Gross issuance	≤ 0	0–.50	.50–.75	> .75
Coupon					
3.0%	12.3	97.8%	2.2%		
3.5%	80.8	92.3%	6.0%	1.8%	
4.0%	150.5		92.4%	7.1%	0.6%
4.5%	115.8			48.4%	51.6%
5.0%	43.2				100.0%
All	**402.7**	**21.5%**	**35.8%**	**16.9%**	**25.8%**

VA 2018-2019 YTD MBS Issuances ($ billions)

		Refinance Incentive (%)			
	Gross issuance	≤ 0	0–.50	.50–.75	> .75
Coupon					
3.0%	8.3	97.9%	2.1%		
3.5%	39.1	92.3%	6.1%	1.6%	
4.0%	64.5		93.6%	5.8%	0.6%
4.5%	36.1			52.2%	47.8%
5.0%	9.9				100.0%
All	**158.0**	**28.0%**	**39.9%**	**14.7%**	**17.4%**

Source: eMBS and Urban Institute calculations.
Note: 2019 YTD issuance includes January and February.

The $104 billion in-the-money loan balance represents 26 percent of the total $403 billion in 2018 and 2019 issuances across various coupons. We further highlight the sub-population of VA loans that correspond to the 2018-2019 YTD MBS issuance. Here we see the $28 billion in-the-money loan balance represents 17% of the total $158 billion of VA loans issued across the coupon array.

One can expect that the actual refinance activity will be lower because before the refinanced loan can be pooled as TBA eligible MBS Ginnie Mae requires that: (1) the note date on the refinance be at least 210 days after the first payment of the original mortgage, and (2) the borrower has made at least six payments. If we take this restriction into account, only $49.2 billion, or 13.9% of Ginnie Mae's 2018 issuance would be both eligible to refinance and in-the-money. If we look more granularly at the 2018 issued 4.5% coupon, $30.1 billion or 31.8 percent of the $94.7 billion in issuance would be eligible to refinance and in-the-money. Lastly, it's important to note that this estimate is point in time and will changes with rates and with the refinance incentive assumed.

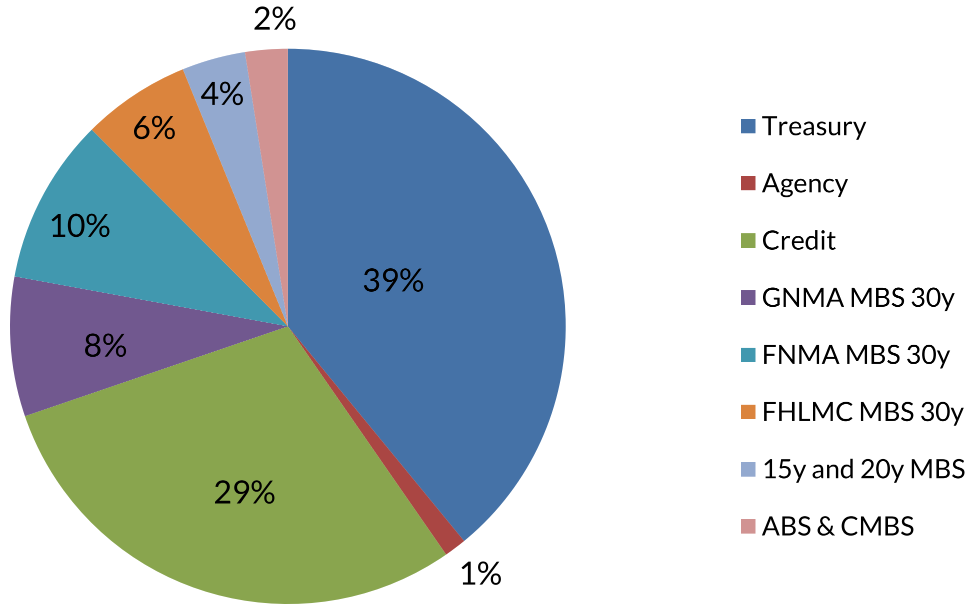
***Highlights this month*:**

- The refinance share for Ginnie Mae originations rose to 25.7 percent in February 2019, as a result of lower mortgage rates (page 20).
- The median FICO score for Ginnie Mae bank originations was 695 in February 2019, the lowest level since May 2018 (page 36).
- Agency MBS trading volume averaged $250 billion in the first three months of 2019, higher than the average of the past several years (page 47).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

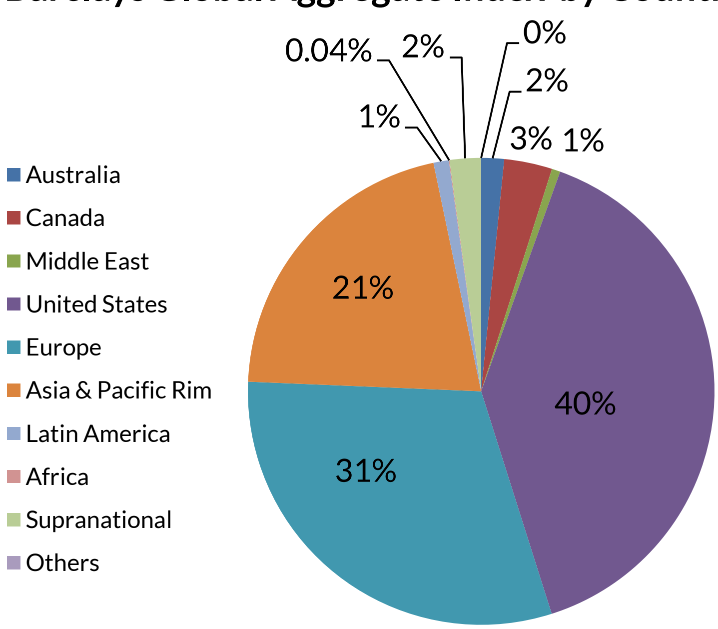
US MBS comprise 28 percent of the Barclays US Aggregate Index- less than either the US Treasury share (39 percent) or the US Credit share (29 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (10 percent), while Ginnie Mae 30-year MBS and Freddie Mac 30-year MBS comprise 8 percent and 6 percent of the market, respectively. Mortgages with terms of 15 and 20 years comprise the remaining balance (4 percent) of the US MBS share. US securities are the single largest contributor to the Barclays Global Aggregate, accounting for 40 percent of the global total. US MBS comprises 12 percent of the global aggregate.

Barclays US Aggregate Index



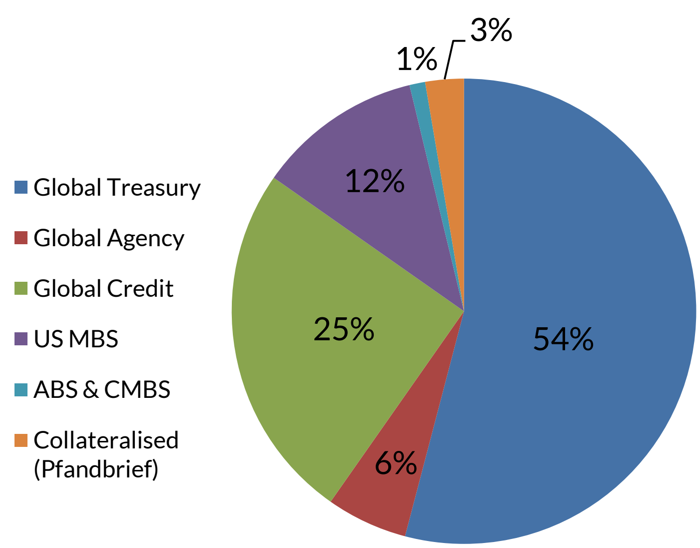
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of March 2019.*

Barclays Global Aggregate Index by Country



Sources: *Bloomberg and State Street Global Advisors.*
Note: *Data as of March 2019.*

Barclays Global Aggregate Index by Sector

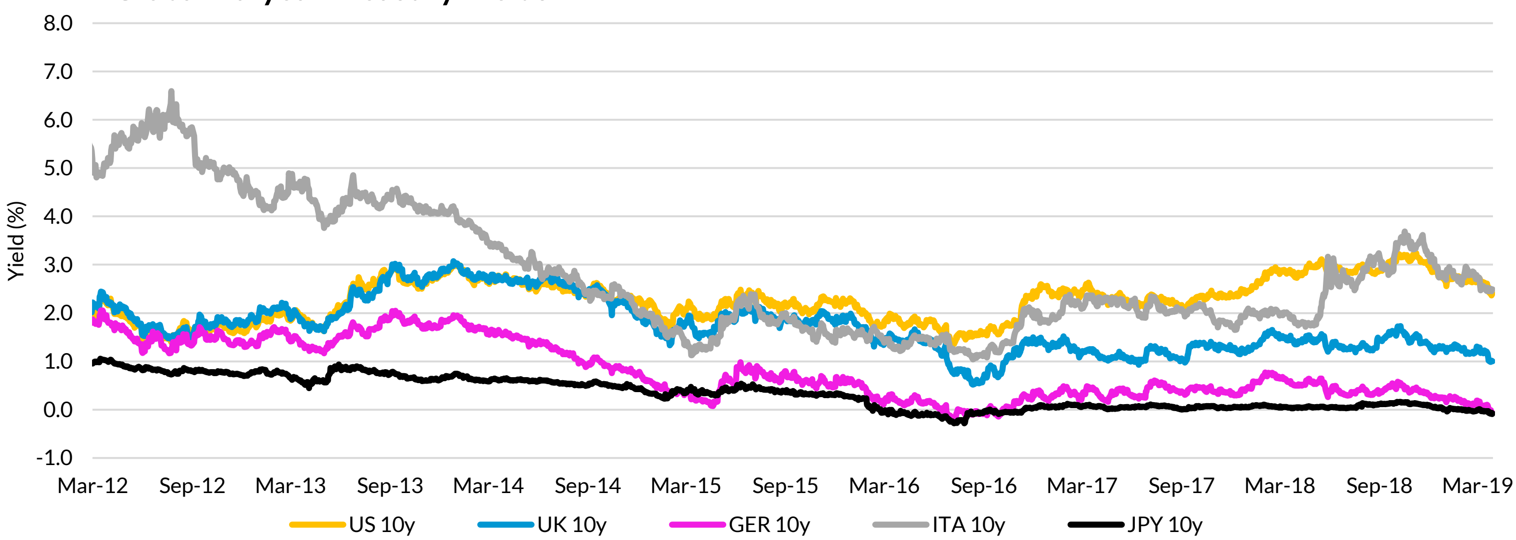


Sources: *Bloomberg and State Street Global Advisors*
Note: *Data as of March 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

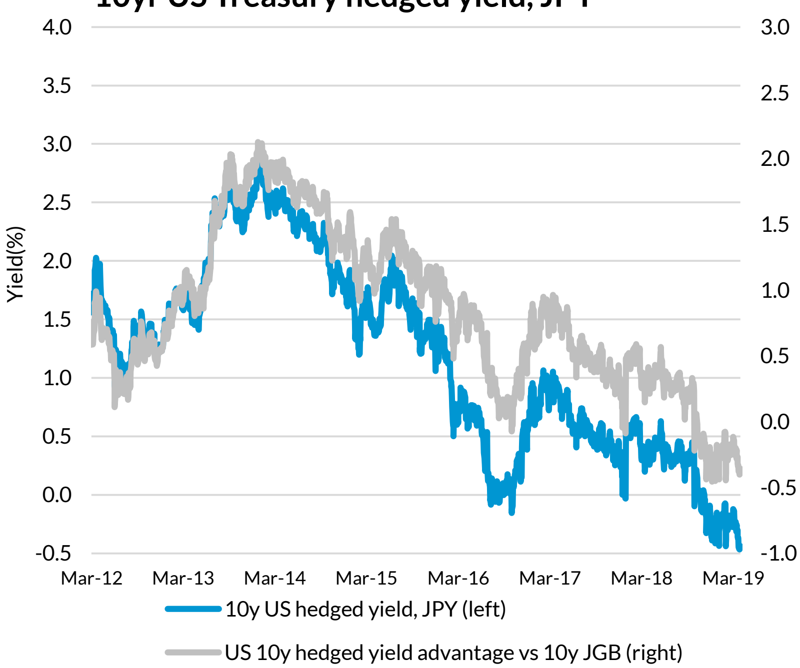
US 10-year Treasury yields have generally been the highest in the developed world over the past few years, but since August 2018, have been neck-in-neck with Italy. In March 2019, yield on the US 10-year note declined 31 bps to 2.41 percent, just below the 2.49 percent for the Italian 10-year note. In the UK, Germany, and Japan, 10-year government bond yields declined to 1.00, -0.07, and -0.08 percent, respectively, with the German 10-year yield entering negative territory for the first time since 2016. The hedged yield differential between the 10-year Treasury and foreign 10-year bonds, specifically JGBs and Bunds, now stand at -36 bps and -61 bps, respectively, a decline of 21 and 5 bps, respectively.

Global 10-year Treasury Yields



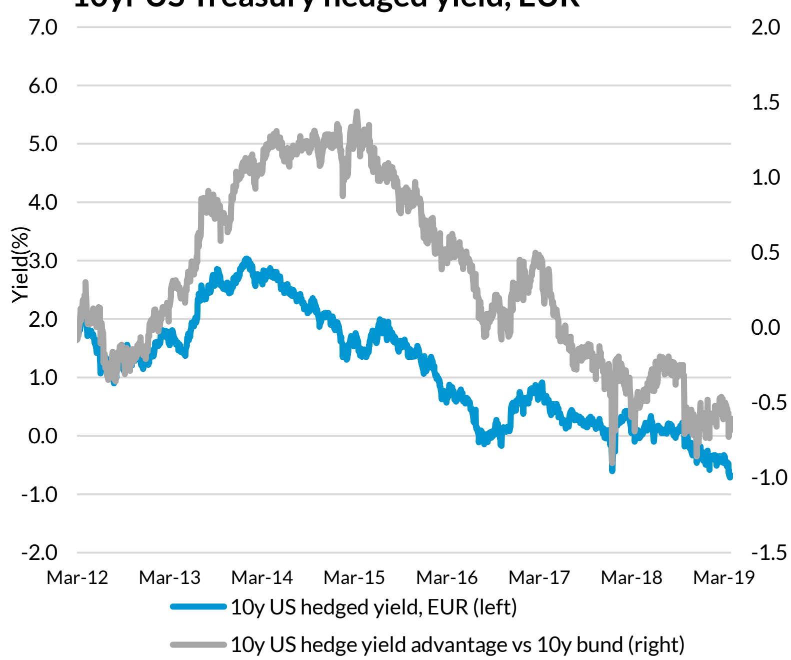
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of March 2019.*

10yr US Treasury hedged yield, JPY



Sources: *Bloomberg and State Street Global Advisors.*
Note: *Data as of March 2019.*

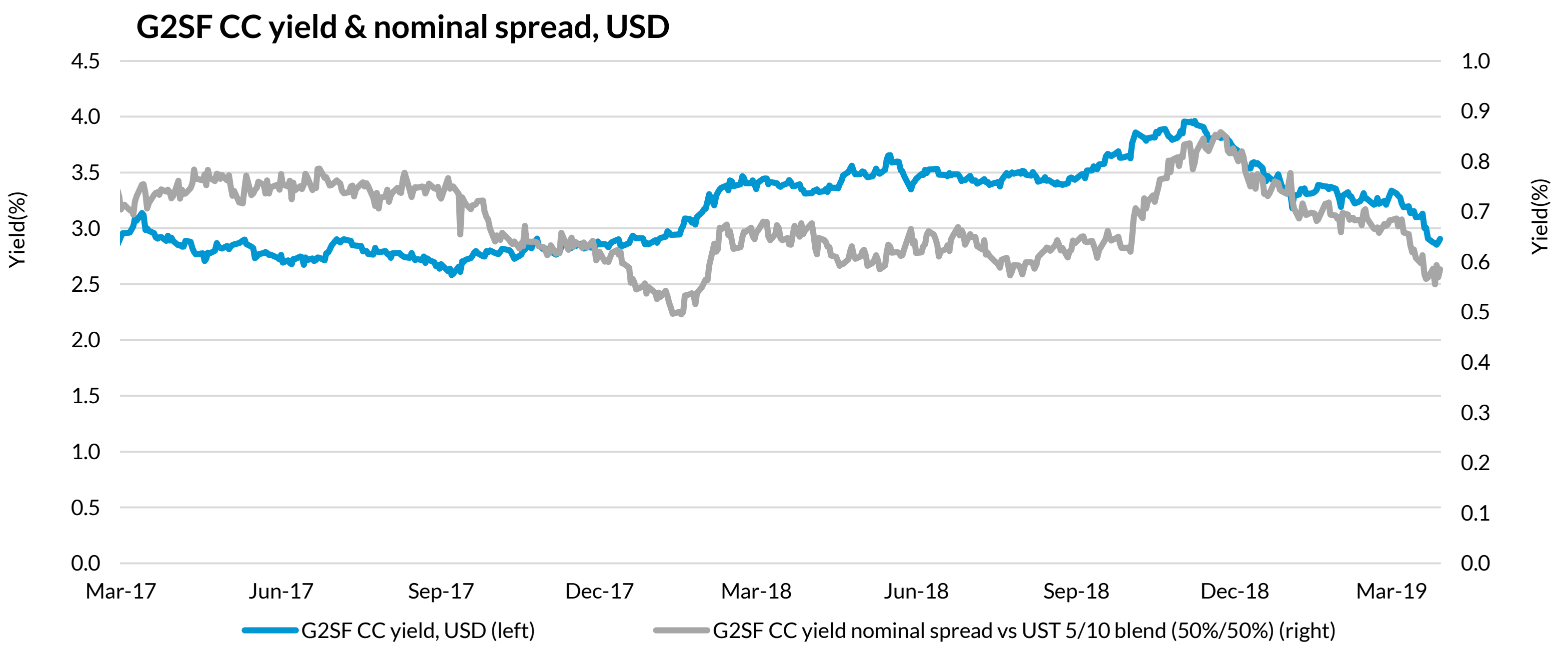
10yr US Treasury hedged yield, EUR



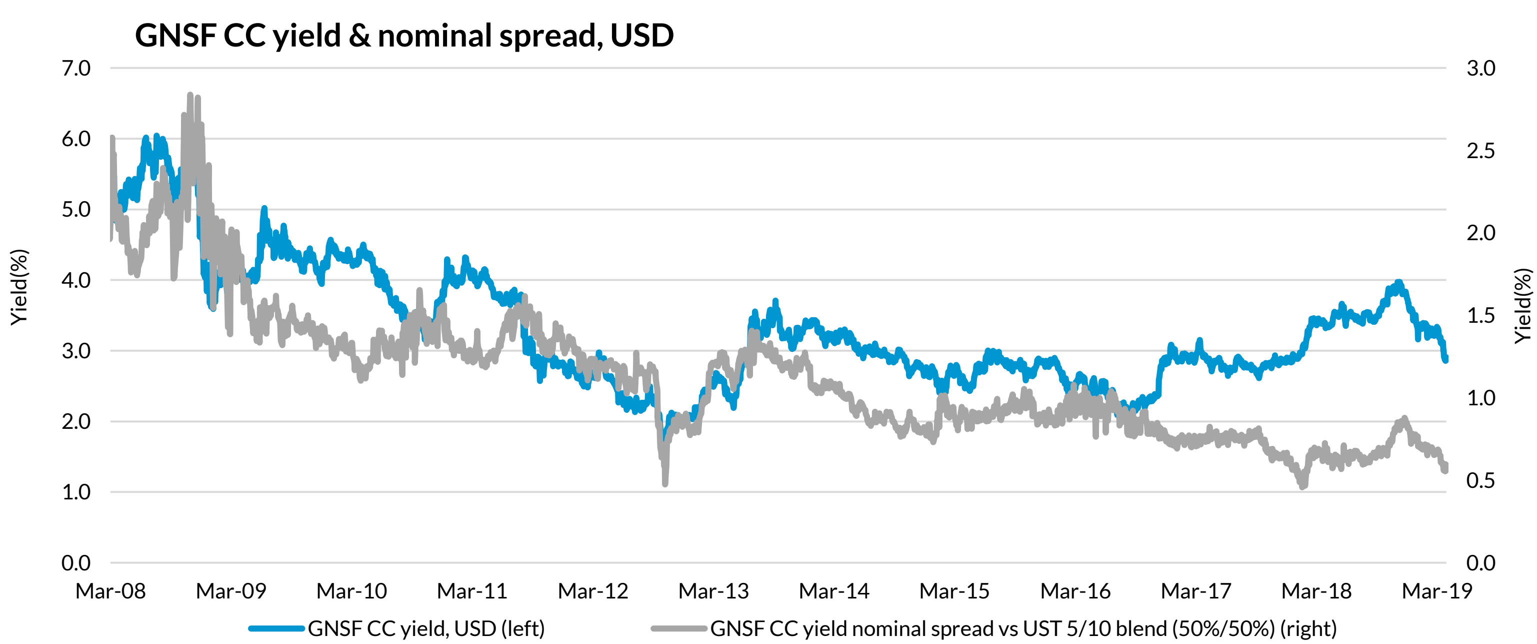
Sources: *Bloomberg and State Street Global Advisors*
Note: *Data as of March 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The nominal yield on both the current coupon GNMA II and GNMA I securities fell in March 2019. Current coupon Ginnie Mae securities outyield their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 59 bps each on G2SF and GNSF, a tightening since last month. However, spreads on the Ginnie 4.0 and 4.5% coupons widened considerably, reflecting the market rally.



***Sources:** Bloomberg and State Street Global Advisors. **Note**: Data as of March 2019.*

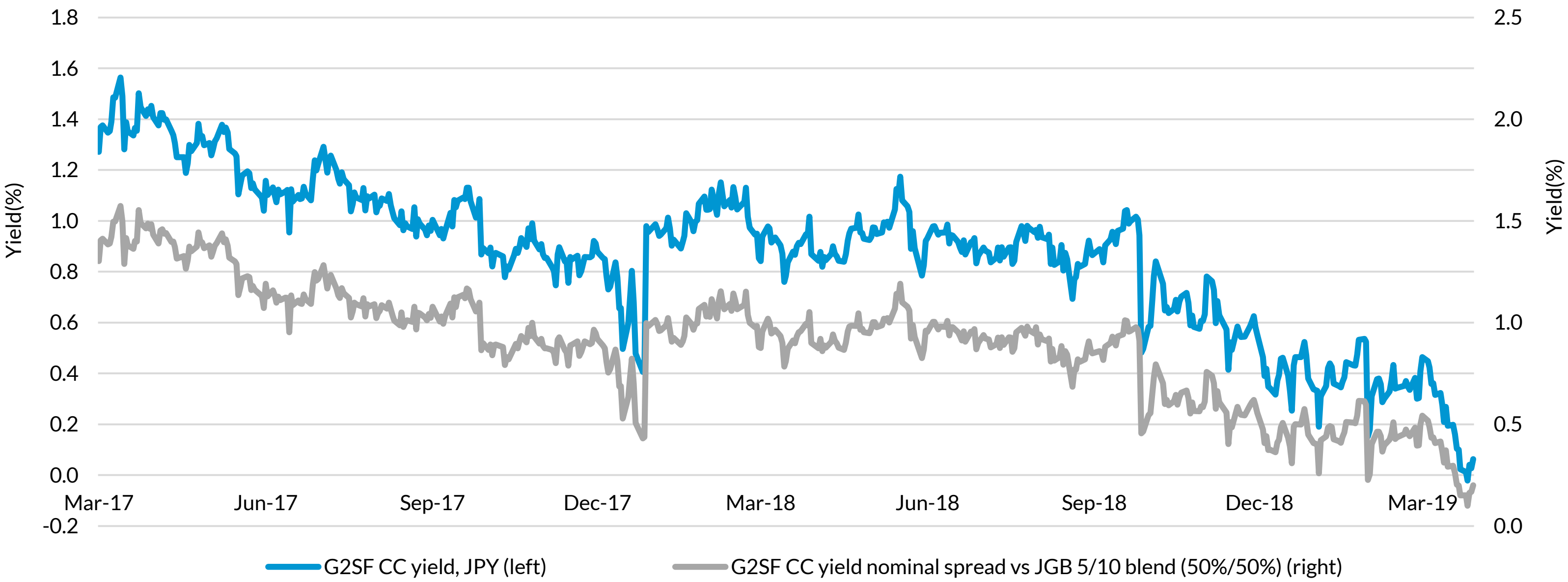


***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of March 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

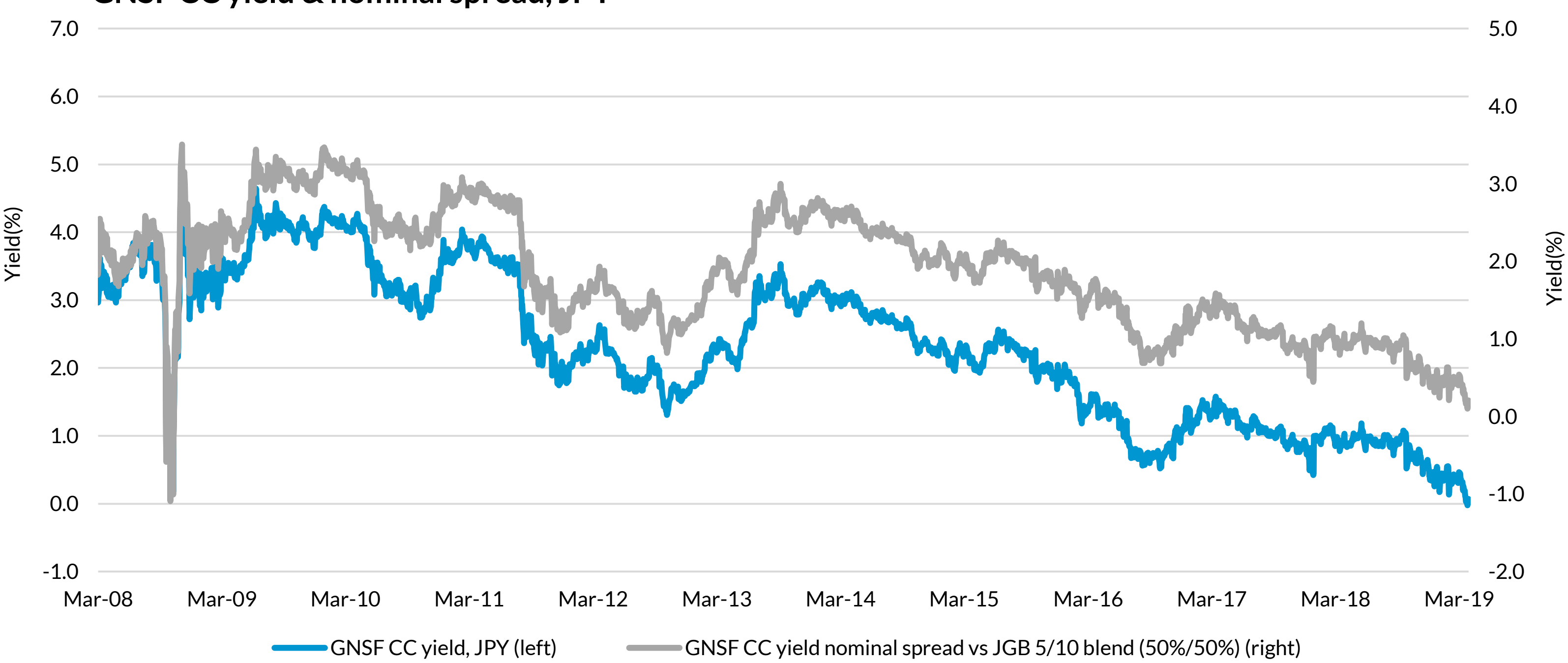
If Ginnie Mae securities are hedged into foreign currencies, they look attractive on a yield basis versus many sovereign alternatives. The figures below show that current coupon G2SF and GNSF hedged into Japanese yen outyield the JGB 5/10 blend by 20 and 21 bps respectively at the end of March, a significant tightening from the end of February.

G2SF CC yield & nominal spread, JPY



Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of March 2019.*

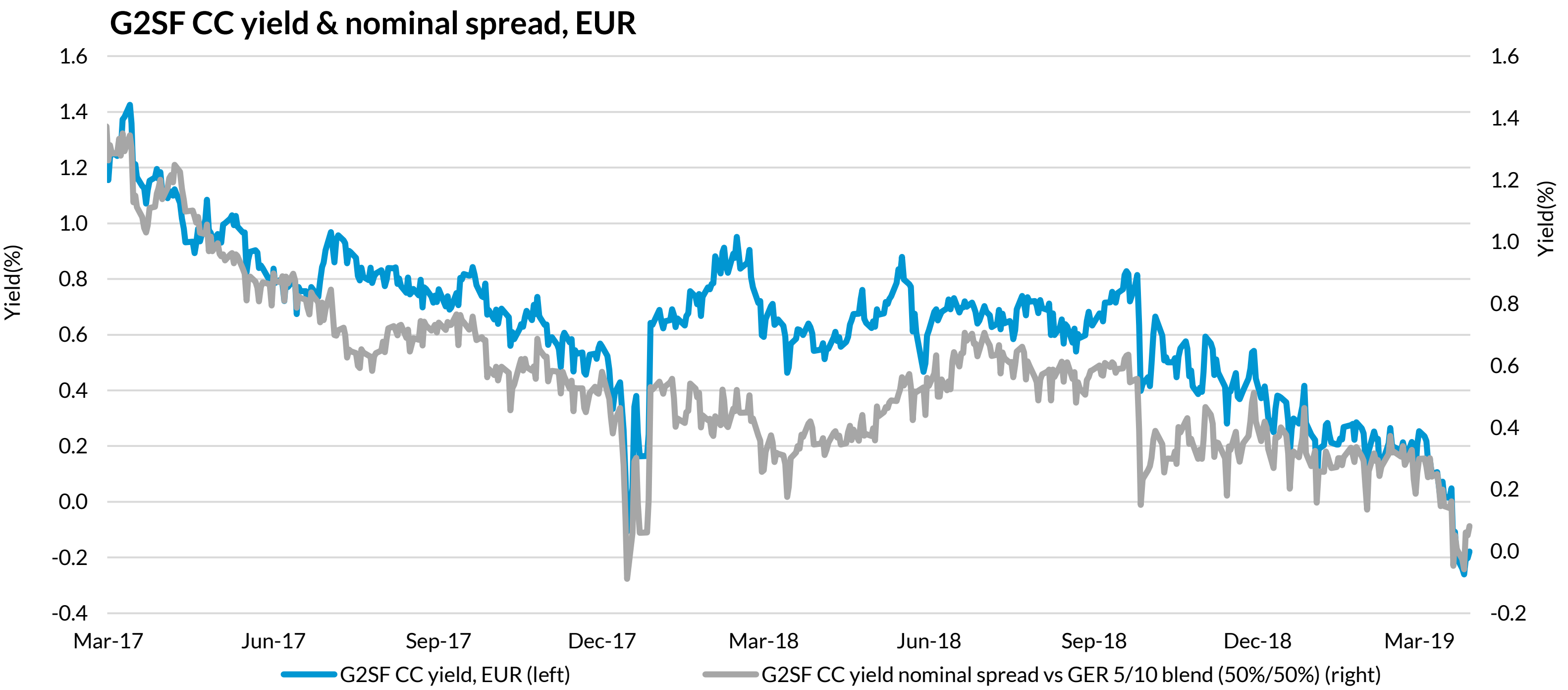
GNSF CC yield & nominal spread, JPY



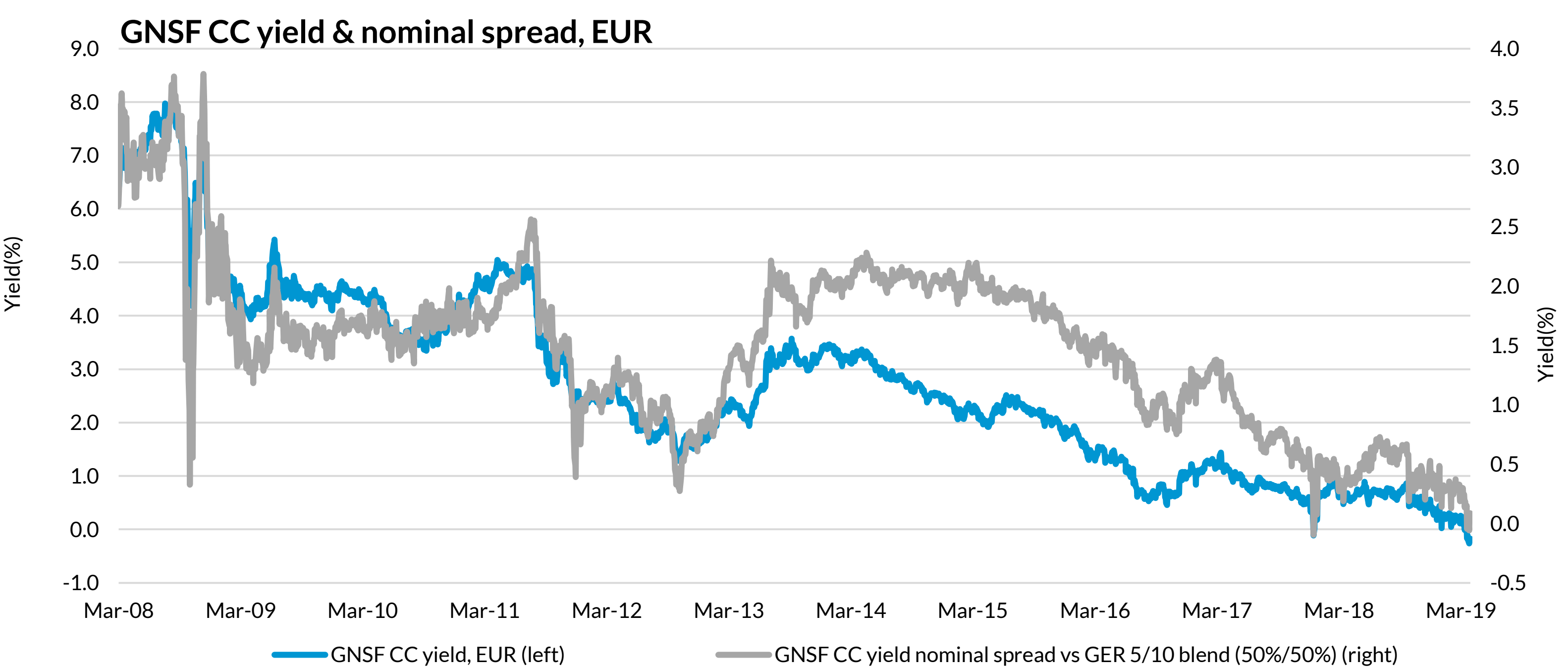
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of March 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

If Ginnie Mae securities are hedged into foreign currencies, they look attractive on a yield basis versus sovereign alternatives. The figures below show that, current coupon G2SF and GNSF hedged into euros outyield the average of the German 5/10 blend by 8 and 9 bps respectively at the end of March, significantly less than the 23-25 bps at the end of February 2019.



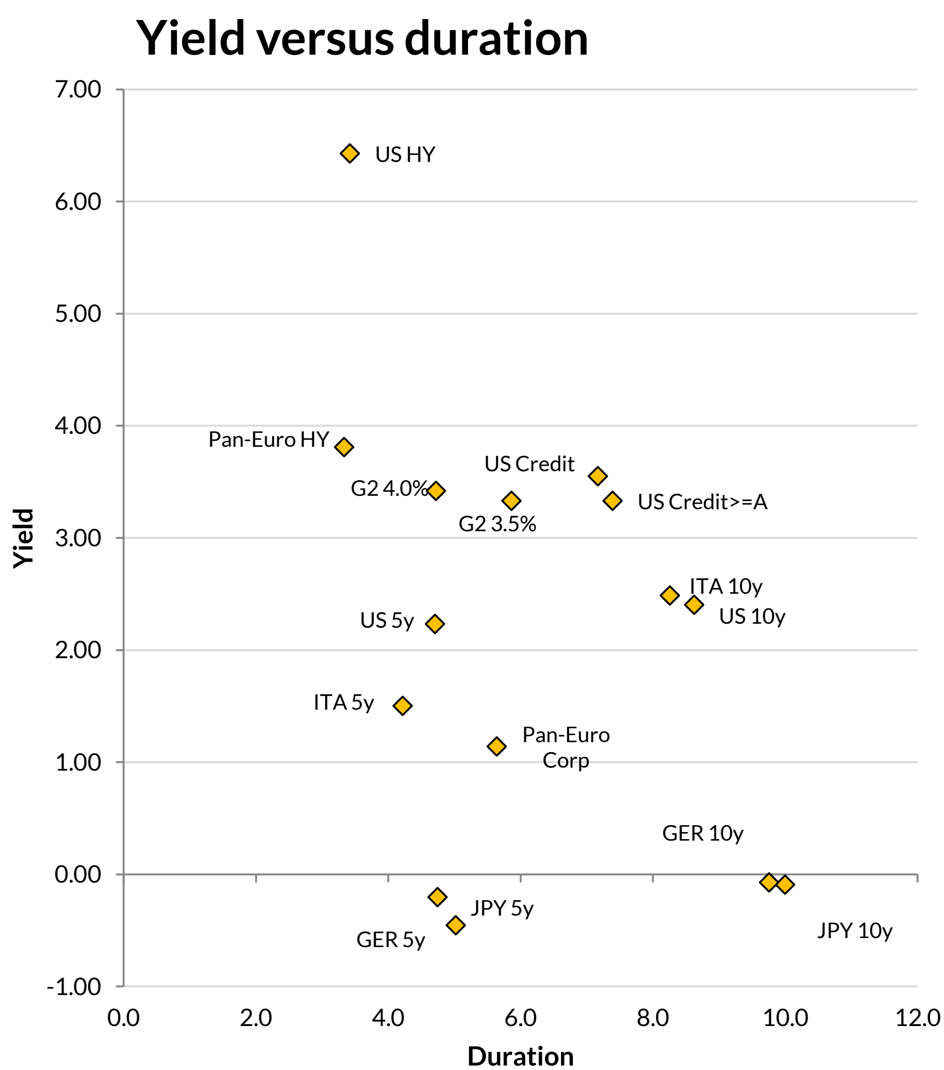
***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of March 2019.*



***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of March 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

US MBS yields are about the same or higher than most securities with the same or longer durations. The only security class with significantly more yield is the US high yield index, where duration, a measure of sensitivity to interest rate changes, does not fully capture the volatility of the high yield asset class. Investors are unable to match the yield on Ginnie Mae securities, while preserving the full government guarantee, even if they extend their duration significantly.



Security	Duration	Yield
US 5y	4.7	2.23
US 10y	8.6	2.41
GNMA II 4.0%	4.7	3.42
GNMA II 3.5%	5.9	3.33
JPY 5y	4.7	-0.20
JPY 10y	10.0	-0.09
GER 5y	5.0	-0.45
GER 10y	9.8	-0.07
ITA 5y	4.2	1.50
ITA 10y	8.3	2.49
US credit	7.2	3.55
US credit >= A	7.4	3.33
US HY	3.4	6.43
Pan-Euro Corp	5.6	1.14
Pan-Euro HY	3.3	3.81

Sources: *Bloomberg and State Street Global Advisors.* ***Note****: Yields are in base currency of security and unhedged. Data as of March 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The average return on the Ginnie Mae index over the past decade has been slightly higher than the US Treasury index, but lower than many alternatives, including the US Investment-Grade Corporate and US and European High Yield indices. However, the standard deviation of the Ginnie Mae index is the lowest of any sector, as it has the least price volatility over a 3, 5 and 10 year horizon. The result: The Sharpe Ratio, or excess return per unit of risk over the 10-year horizon is only marginally lower than most of the corporate indices, although a good bit higher than the US Treasury Index.

	Average Return (Per Month)					
Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.37	0.35	0.41	0.24	0.49	0.20
3 year	0.13	0.09	0.30	0.18	0.70	0.40
5 year	0.20	0.18	0.31	0.28	0.39	0.35
10 year	0.26	0.20	0.55	0.51	0.91	1.09

	Average Excess Return (Per Month)					
Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.19	0.17	0.23	0.30	0.31	0.25
3 year	0.03	-0.01	0.20	0.24	0.59	0.46
5 year	0.14	0.12	0.25	0.33	0.33	0.40
10 year	0.23	0.17	0.51	0.53	0.88	1.10

	Standard Deviation					
Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.78	1.00	1.23	0.74	1.70	1.39
3 year	0.64	0.96	1.11	0.81	1.33	1.13
5 year	0.59	0.95	1.12	0.98	1.56	1.30
10 year	0.68	1.01	1.30	1.24	2.15	2.75

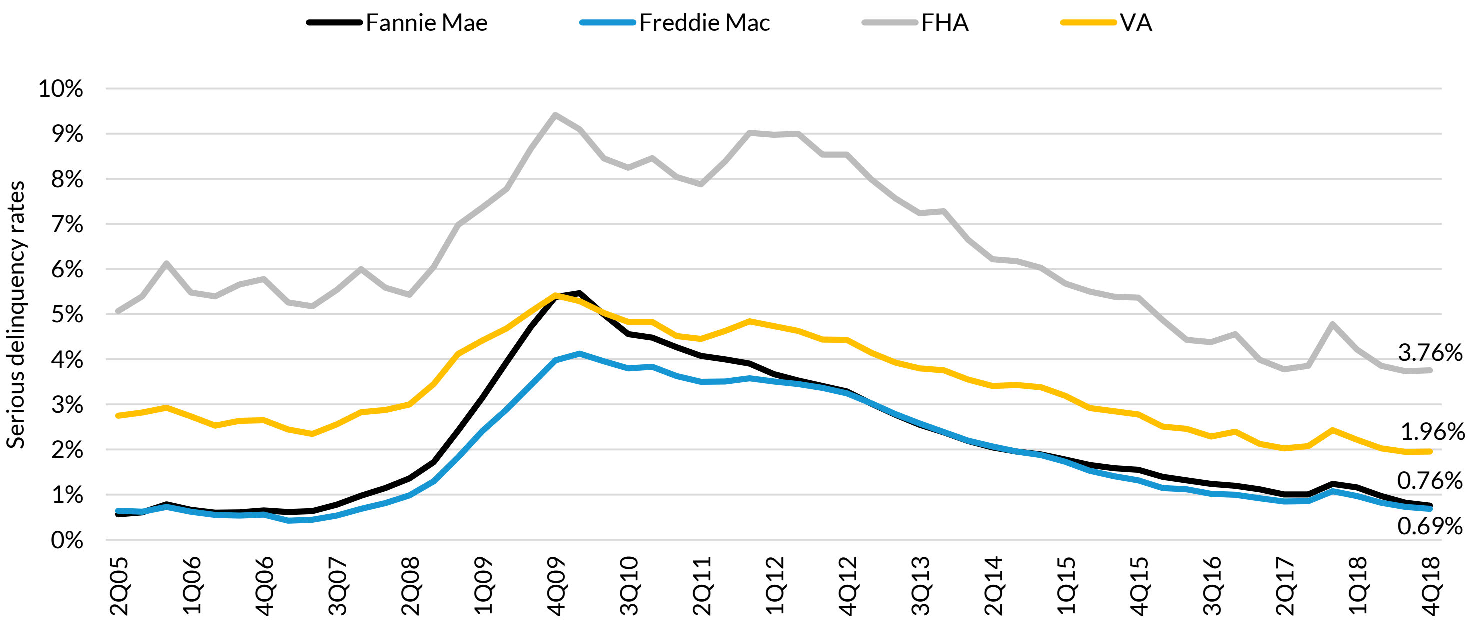
	Sharpe Ratio					
Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield	Pan Euro High Yield*
1 year	0.24	0.17	0.19	0.40	0.19	0.18
3 year	0.05	-0.01	0.18	0.30	0.45	0.40
5 year	0.23	0.13	0.22	0.33	0.21	0.31
10 year	0.33	0.17	0.39	0.43	0.41	0.40

**Assumes 2% capitalization max per issuer on high yield indices*
Sources: *Barclays Indices, Bloomberg and State Street Global Advisors* ***Note:*** *Data as of March 2019.*

State of the US Housing Market

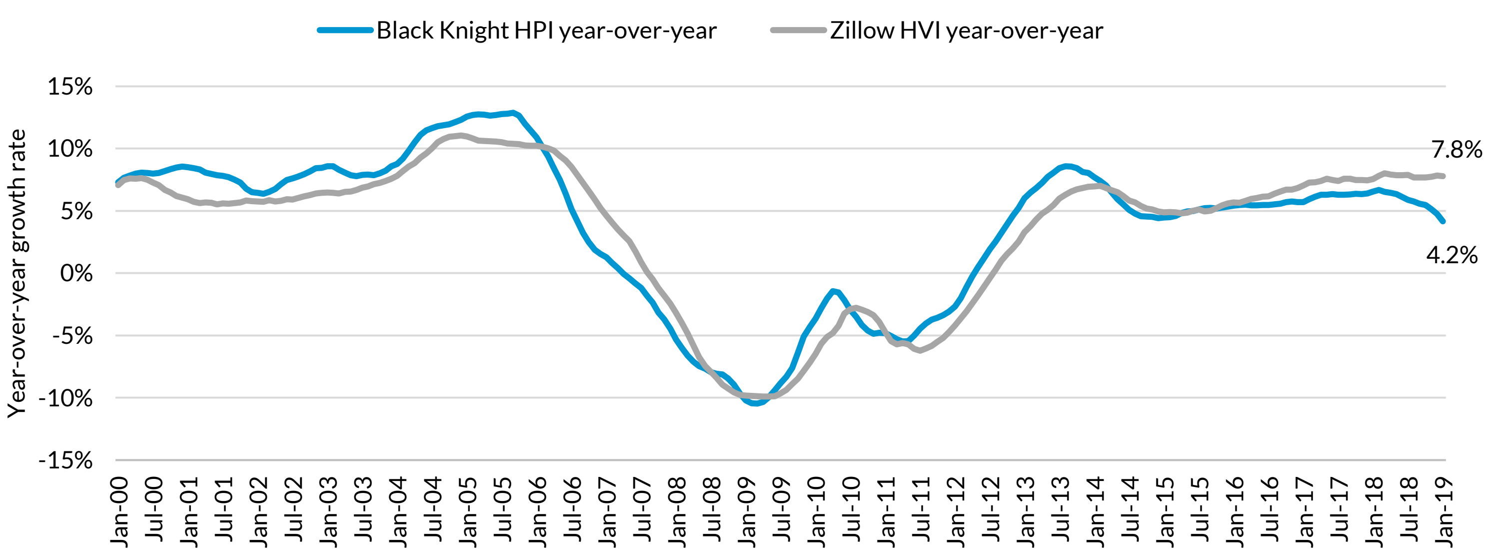
Serious delinquencies rates for single-family GSE loans, FHA loans, and VA loans remained stable in Q4 2018. GSE delinquencies remain high relative to 2006-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are at levels lower than 2006-2007. After touching 6.5 percent in early 2018, year-over-year house price appreciation has slowed in recent months to 4.2 percent in January 2019, per Black Knight repeat sales index. Zillow's hedonic index does not exhibit the same trend.

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. Data as of Q4 2018.*

National Year-Over-Year HPI Growth



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

State of the US Housing Market

Nationally, nominal home prices have increased by 47.9 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 10.0 percent. The picture is very different for different states, with many states well in excess of the prior peak, while a number of states remain more than 11 percent below peak levels: Connecticut (15.6% below), Nevada (12.1% below), Illinois (11.8% below), Maryland (11.8% below) and Florida (11.5% below).

	HPI Changes				
State	2000 to Peak	Peak to Trough	Trough to Current	YOY	Current HPI % Above Peak
National	75.8%	-25.6%	47.9%	4.2%	10.0%
Alabama	44.0%	-15.3%	24.9%	5.9%	5.8%
Alaska	69.5%	-3.1%	17.7%	1.1%	14.0%
Arizona	110.2%	-48.0%	73.1%	6.4%	-9.9%
Arkansas	41.7%	-10.6%	22.4%	4.2%	9.4%
California	155.5%	-43.4%	83.5%	2.2%	3.8%
Colorado	40.1%	-12.7%	71.6%	4.9%	49.8%
Connecticut	92.5%	-24.7%	12.1%	2.1%	-15.6%
Delaware	94.6%	-23.6%	25.3%	2.4%	-4.3%
District of Columbia	174.8%	-13.4%	48.8%	2.0%	28.9%
Florida	129.3%	-47.0%	66.9%	5.7%	-11.5%
Georgia	38.3%	-32.1%	58.9%	6.1%	7.8%
Hawaii	162.1%	-22.0%	43.8%	-0.1%	12.2%
Idaho	71.5%	-28.4%	69.4%	11.2%	21.2%
Illinois	61.6%	-34.6%	35.0%	2.4%	-11.8%
Indiana	21.4%	-7.5%	30.2%	6.6%	20.4%
Iowa	28.3%	-4.9%	22.7%	3.8%	16.6%
Kansas	34.6%	-9.3%	38.1%	6.2%	25.4%
Kentucky	29.7%	-7.6%	28.8%	3.7%	19.1%
Louisiana	48.7%	-5.1%	21.1%	2.0%	14.9%
Maine	82.6%	-12.5%	33.5%	7.5%	16.8%
Maryland	129.5%	-28.4%	23.2%	2.1%	-11.8%
Massachusetts	92.8%	-22.6%	47.6%	3.7%	14.2%
Michigan	24.2%	-39.7%	67.7%	5.5%	1.2%
Minnesota	66.4%	-27.6%	47.1%	4.3%	6.5%
Mississippi	41.1%	-13.6%	24.1%	5.1%	7.2%
Missouri	42.7%	-14.6%	25.9%	4.8%	7.5%
Montana	82.1%	-10.6%	50.2%	7.0%	34.2%
Nebraska	26.4%	-6.6%	35.1%	4.4%	26.2%
Nevada	127.0%	-59.4%	116.4%	9.8%	-12.1%
New Hampshire	90.8%	-23.4%	32.8%	4.0%	1.7%
New Jersey	118.1%	-27.8%	24.2%	3.2%	-10.3%
New Mexico	66.7%	-16.1%	17.7%	3.3%	-1.3%
New York	99.0%	-15.2%	36.2%	3.9%	15.5%
North Carolina	40.4%	-15.5%	30.4%	4.6%	10.2%
North Dakota	54.1%	-4.0%	51.1%	0.8%	45.1%
Ohio	21.2%	-18.3%	29.3%	4.9%	5.6%
Oklahoma	37.4%	-2.4%	15.5%	2.9%	12.8%
Oregon	82.3%	-27.9%	70.0%	4.0%	22.7%
Pennsylvania	70.4%	-11.6%	20.4%	4.3%	6.4%
Rhode Island	131.2%	-34.3%	44.7%	4.8%	-5.0%
South Carolina	45.1%	-19.3%	29.7%	3.9%	4.7%
South Dakota	45.2%	-4.2%	45.0%	8.9%	38.9%
Tennessee	35.3%	-11.9%	37.2%	5.2%	20.9%
Texas	33.2%	-5.8%	46.2%	3.5%	37.8%
Utah	54.4%	-21.8%	63.7%	7.5%	28.0%
Vermont	83.7%	-7.5%	26.5%	5.6%	17.0%
Virginia	99.5%	-22.7%	21.9%	2.2%	-5.8%
Washington	85.5%	-28.6%	75.1%	4.2%	25.1%
West Virginia	43.1%	-6.0%	20.2%	7.1%	13.0%
Wisconsin	44.8%	-16.3%	29.0%	5.5%	8.0%
Wyoming	77.7%	-6.9%	24.6%	2.3%	16.0%

Sources: *Black Knight and Urban Institute.* ***Note:*** *HPI data as of January 2018. Negative sign indicates that state is above earlier peak. Peak refers to the month when HPI reached the highest level for each state/US during the housing boom period, ranging from 09/2005 to 09/2008. Trough represents the month when HPI fell to the lowest level for each state/US after the housing bust, ranging from 01/2009 to 03/2012. Current is 01/2019, the latest HPI data period.*

State of the US Housing Market

Ginnie Mae MBS constitute 30.5 percent of outstanding agency issuance by loan balance and 33.3 percent of new issuance over the past year. However, the Ginnie Mae share varies widely across states, with the share of outstanding (by loan balance) as low as 16.1 percent in the District of Columbia and as high as 51.3 percent in Alaska. In general, the Ginnie Mae share is higher in states with lower home prices.

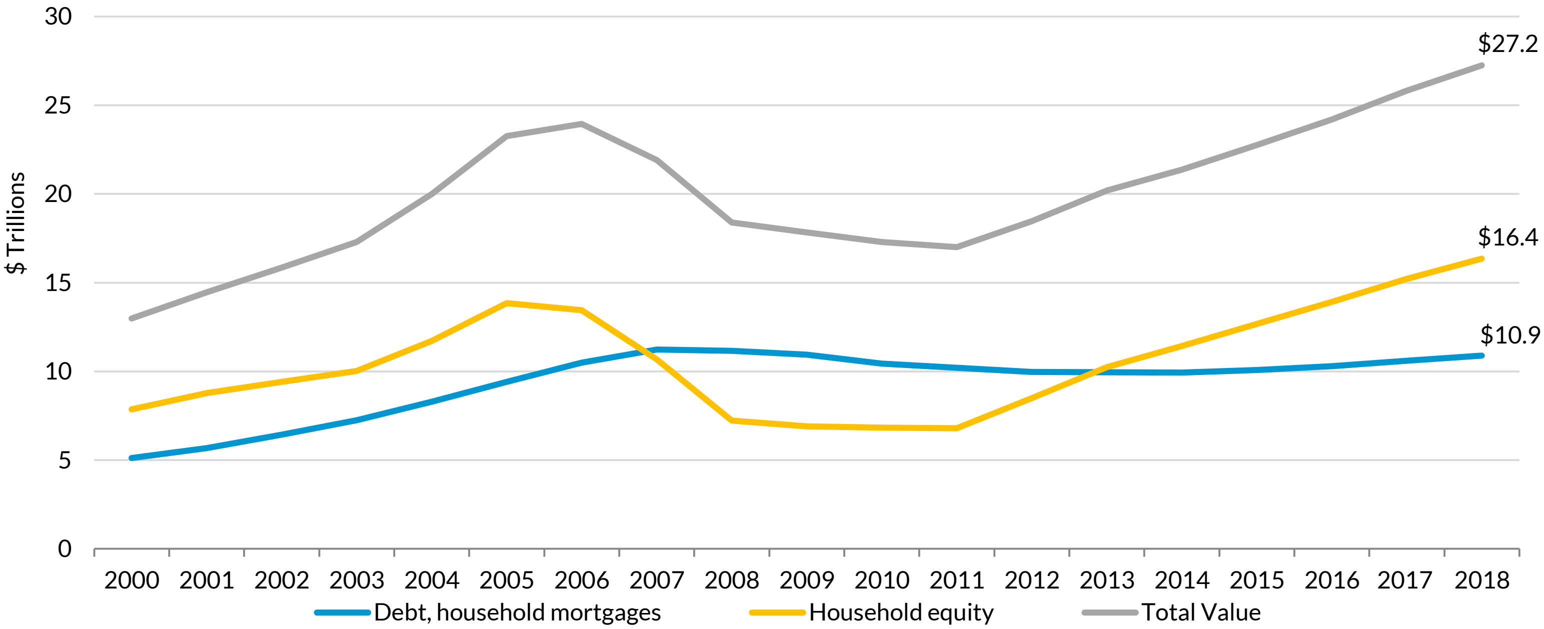
State	Agency Issuance (past 1 year)			Agency Outstanding		
	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)
National	33.3%	216.4	231.4	30.5%	164.7	187.5
Alabama	43.8%	165.0	186.9	44.8%	128.5	151.3
Alaska	51.1%	285.3	250.2	51.3%	233.5	199.0
Arizona	31.9%	216.7	220.1	31.7%	165.8	177.3
Arkansas	43.1%	144.8	169.8	44.4%	110.6	136.9
California	27.6%	352.1	333.9	21.2%	269.8	266.8
Colorado	31.7%	295.5	283.3	27.3%	218.5	223.2
Connecticut	32.1%	216.7	226.6	29.3%	183.7	189.2
Delaware	37.3%	215.7	226.6	36.1%	180.7	184.1
District of Columbia	18.7%	418.7	358.8	16.1%	301.7	302.4
Florida	40.2%	211.4	211.1	35.0%	163.9	169.4
Georgia	39.7%	188.7	211.8	38.5%	142.6	168.9
Hawaii	37.7%	493.2	396.1	30.6%	392.2	315.2
Idaho	32.4%	207.8	212.6	31.8%	153.3	164.8
Illinois	27.1%	179.1	198.3	24.4%	141.7	160.7
Indiana	38.0%	145.1	160.5	37.5%	111.0	125.7
Iowa	27.4%	147.4	163.1	25.6%	114.1	131.2
Kansas	36.2%	156.6	176.8	35.4%	120.4	138.7
Kentucky	39.4%	152.1	168.1	38.7%	121.8	132.4
Louisiana	42.0%	171.3	194.1	41.7%	137.1	158.7
Maine	35.2%	187.1	203.5	32.0%	153.1	160.1
Maryland	43.9%	285.6	265.1	39.2%	232.9	218.9
Massachusetts	24.6%	297.9	284.3	19.1%	236.5	227.8
Michigan	25.6%	149.2	170.2	25.0%	113.4	134.4
Minnesota	24.1%	202.6	214.3	23.9%	156.3	170.2
Mississippi	50.2%	154.9	174.2	50.2%	119.8	141.6
Missouri	35.5%	154.2	173.8	34.7%	120.9	138.8
Montana	29.8%	222.6	225.6	29.4%	169.6	175.7
Nebraska	32.2%	167.7	173.1	32.8%	122.4	137.8
Nevada	33.6%	255.0	238.5	35.4%	186.7	189.4
New Hampshire	31.6%	238.3	227.6	28.9%	193.7	180.7
New Jersey	29.8%	253.7	265.0	27.2%	211.7	218.9
New Mexico	41.7%	182.6	189.6	42.4%	141.4	152.7
New York	26.8%	249.2	268.9	25.3%	186.3	213.6
North Carolina	34.0%	185.3	206.8	33.8%	141.4	165.5
North Dakota	29.3%	213.9	206.6	25.9%	167.3	166.0
Ohio	35.1%	145.0	157.5	35.8%	112.7	126.4
Oklahoma	44.9%	154.9	173.7	47.8%	118.8	139.8
Oregon	27.0%	263.4	263.9	23.5%	198.5	206.1
Pennsylvania	32.3%	168.1	194.8	32.4%	137.1	158.4
Rhode Island	38.5%	234.4	226.0	33.2%	187.3	182.2
South Carolina	39.3%	187.4	196.3	37.3%	146.9	160.1
South Dakota	37.3%	179.0	188.2	35.1%	143.1	149.4
Tennessee	39.9%	187.2	204.6	39.8%	138.5	163.1
Texas	34.7%	199.8	218.1	35.6%	141.3	174.2
Utah	28.4%	250.9	259.4	28.0%	190.2	205.6
Vermont	22.2%	190.5	199.6	19.7%	166.0	160.0
Virginia	45.1%	271.0	259.8	41.0%	223.6	216.5
Washington	30.2%	294.4	295.1	27.7%	218.8	226.9
West Virginia	49.1%	156.3	154.8	45.4%	126.5	127.3
Wisconsin	22.2%	169.7	178.0	20.7%	134.5	141.5
Wyoming	41.2%	216.8	215.9	39.8%	177.9	175.9

Sources: *eMBS and Urban Institute.* ***Note:*** *Ginnie Mae outstanding share are based on loan balance as of February 2019. Ginnie Mae issuance is based on the last 12 months, from March 2018 to February 2019.*

State of the US Housing Market

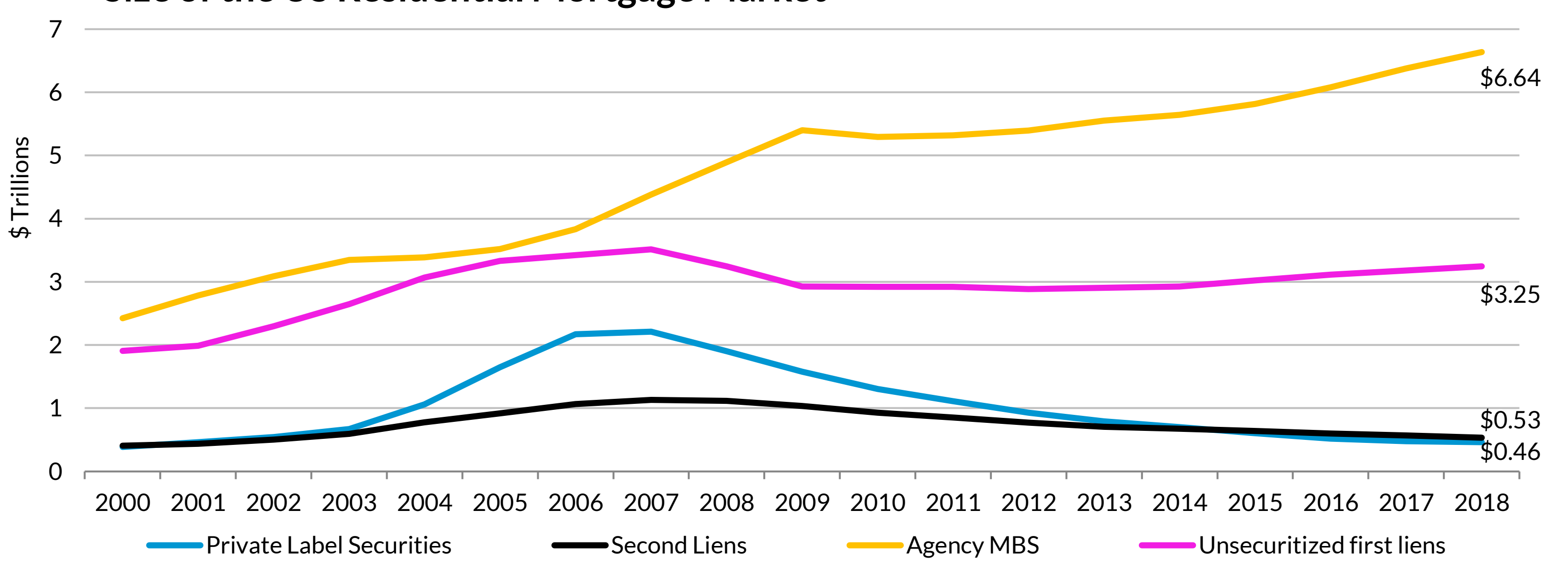
The Federal Reserve's Flow of Funds report has consistently indicated an increasing total value of the housing market driven by growing household equity since 2012, and 2018 Q4 was no different. While total mortgage debt outstanding increased slightly to $10.9 trillion, and household equity increased slightly to $16.4 trillion, bringing the total value of the housing market to $27.2 trillion, 13 percent higher than the pre-crisis peak in 2006. Agency MBS make up 61.0 percent of the total mortgage market, private-label securities make up 4.3 percent, and unsecuritized first liens at the GSEs, commercial banks, savings institutions, and credit unions make up 29.8 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. Data as of Q4 2018.*

Size of the US Residential Mortgage Market

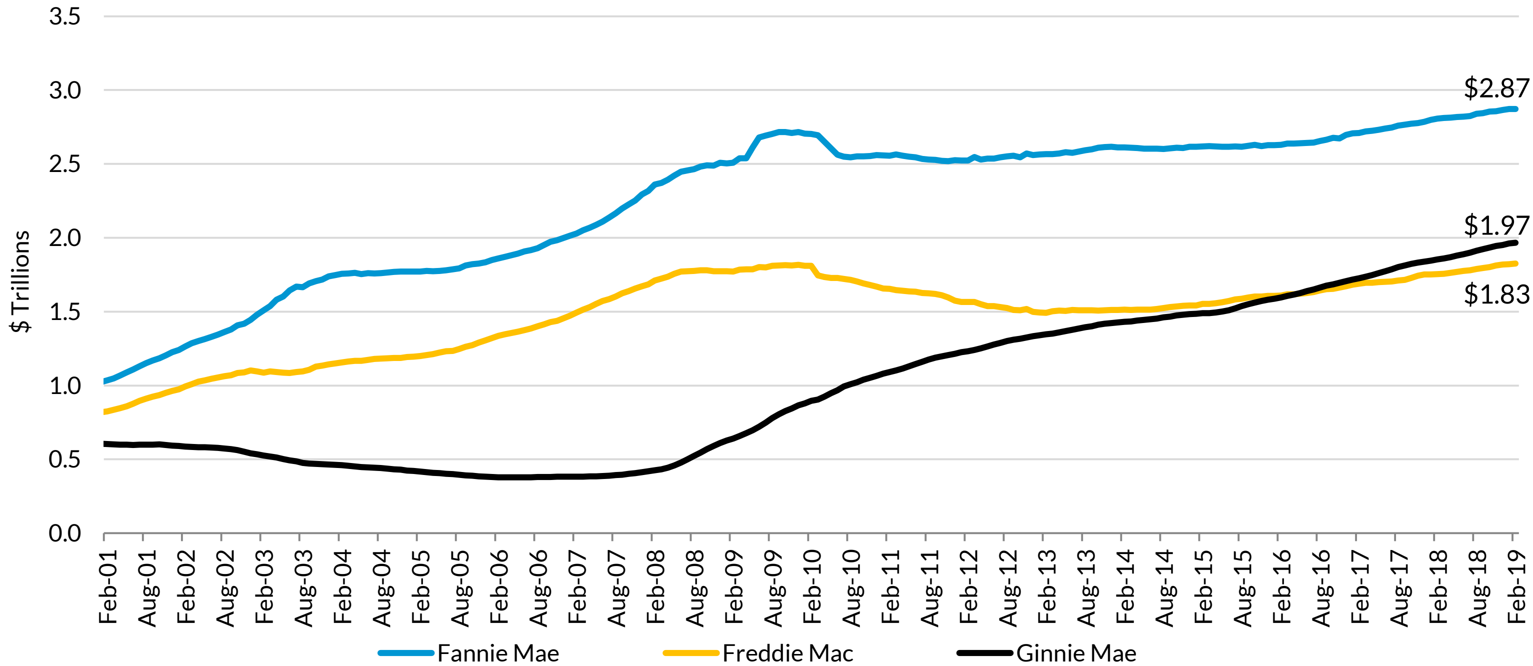


Sources: *Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.*
Note: *Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions. Data as of Q4 2018.*

State of the US Housing Market

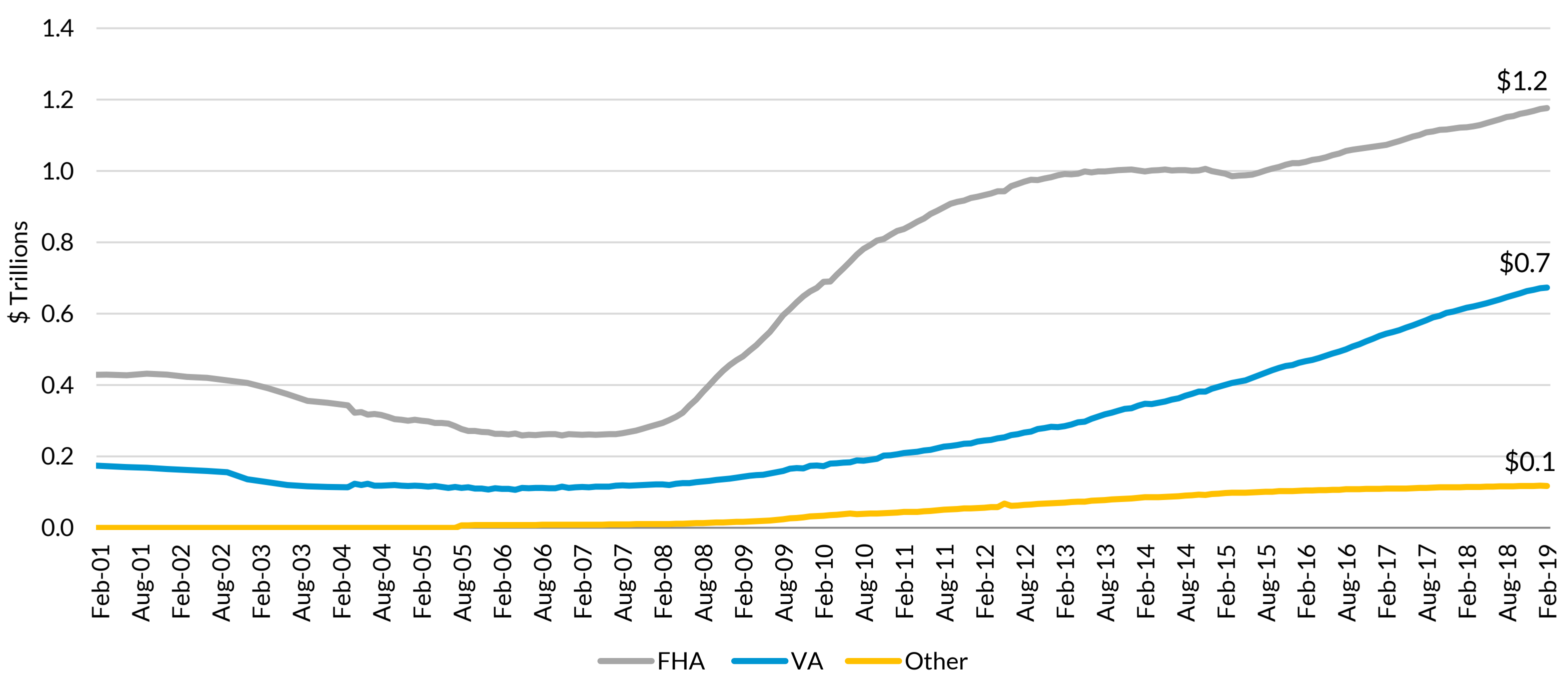
As of February 2019, outstanding securities in the agency market totaled $6.66 trillion and were 43.1 percent Fannie Mae, 27.4 percent Freddie Mac, and 29.5 percent Ginnie Mae. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. FHA comprises 59.8 percent of total Ginnie Mae outstanding, while VA comprises 34.2 percent.

Outstanding Agency Mortgage-Backed Securities



Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2019.*

Outstanding Ginnie Mae Mortgage-Backed Securities

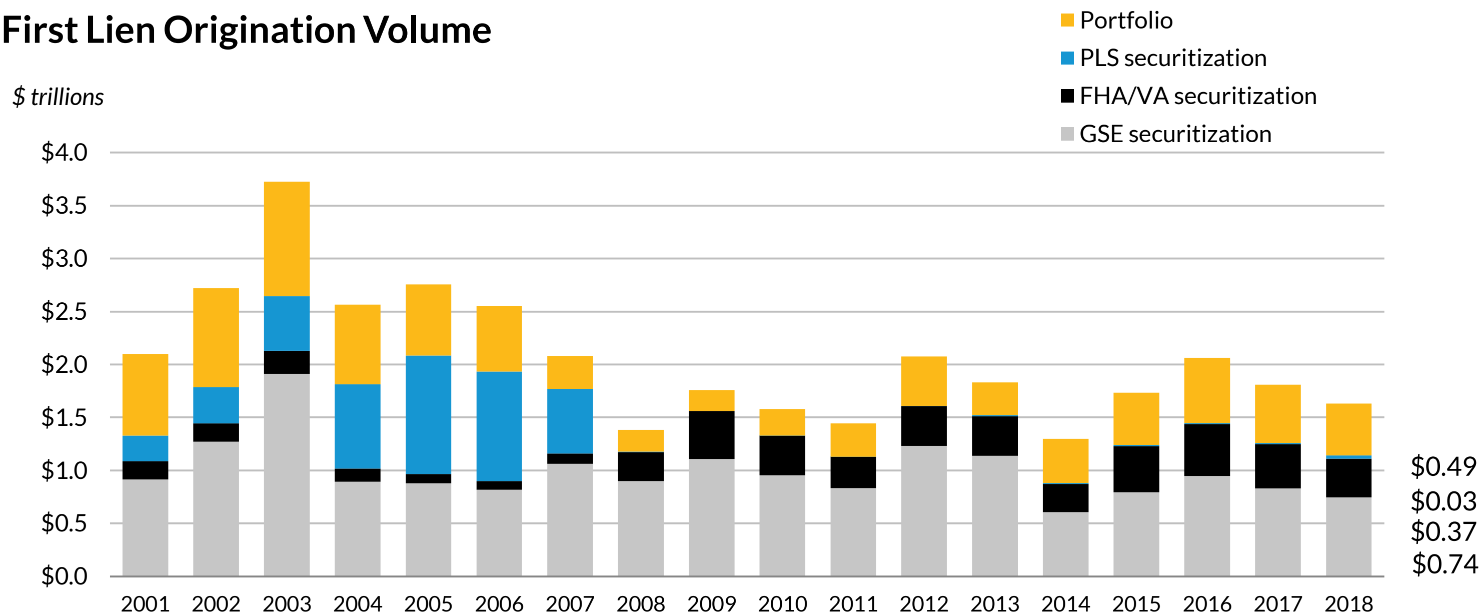


Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2019.*

State of the US Housing Market

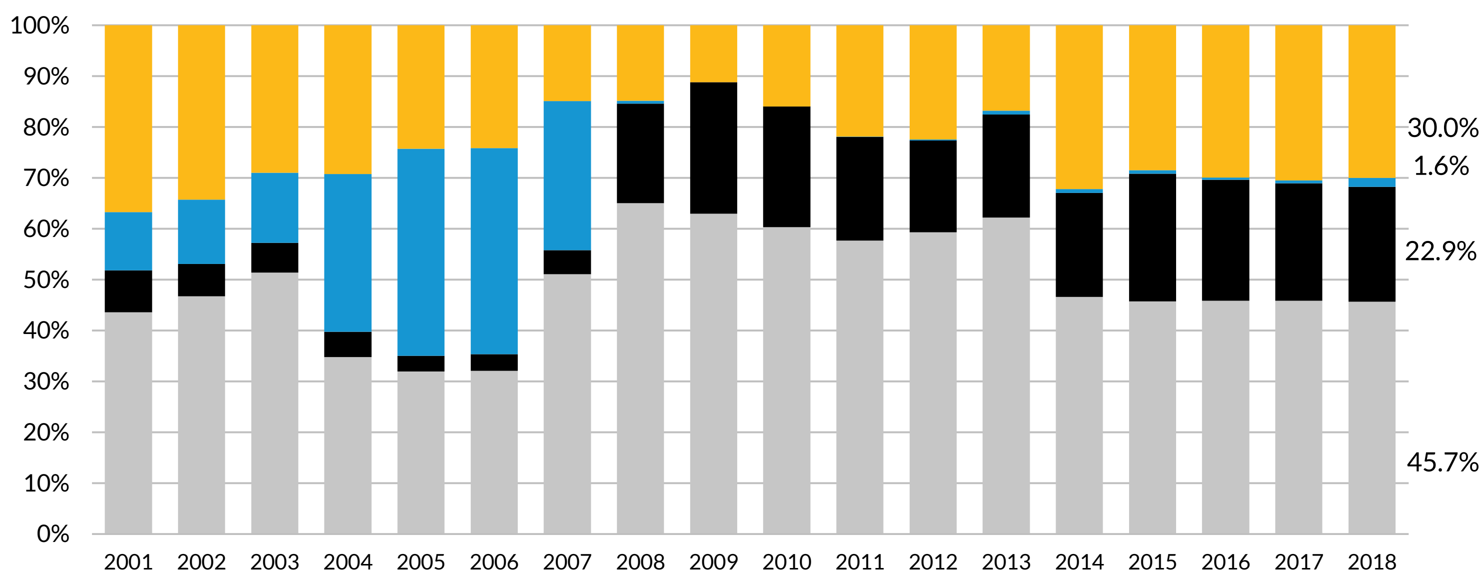
First lien originations totaled $1.63 trillion in 2018, down slightly from 2017, as higher interest rates curtailed refinance activity. The share of bank portfolio originations was 30.0 percent in the 2018, slightly below the 2017 level. The GSE share was 45.7 percent, on par with 2017. The FHA/VA share remained constant at 22.9 percent. Private-label securities comprised 1.6 percent of originations, higher than the 2017 share of 0.6 percent.

First Lien Origination Volume



Sources: *Inside Mortgage Finance and Urban Institute.* **Note:** *Data as of Q4 2018.*

First Lien Origination Share



Sources: *Inside Mortgage Finance and Urban Institute.* **Note:** *Data as of Q4 2018.*

US Agency Market, Originations

Agency gross issuance was $152.3 billion in the first two months of 2019, down 23.1 percent compared with the same period in 2018. Ginnie Mae gross issuance was down by 22.2 percent and GSE gross issuance was down by 23.6 percent. Within the Ginnie Mae market, FHA was down by 14.4 percent and VA origination was down by 29.6 percent. The broad decline in origination volume is the result of higher interest rates curtailing refinance volume. We expect to see the impact of the recent drop in interest rates, which has caused an increase in refi applications, to be very apparent in the next month or two.

Agency Gross Issuance

Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	$202.8	$157.9	$360.6	$102.2	$462.8
2001	$506.9	$378.2	$885.1	$171.5	$1,056.6
2002	$710.0	$529.0	$1,238.9	$169.0	$1,407.9
2003	$1,174.4	$700.5	$1,874.9	$213.1	$2,088.0
2004	$517.5	$355.2	$872.6	$119.2	$991.9
2005	$514.1	$379.9	$894.0	$81.4	$975.3
2006	$500.2	$352.9	$853.0	$76.7	$929.7
2007	$633.0	$433.3	$1,066.2	$94.9	$1,161.1
2008	$562.7	$348.7	$911.4	$267.6	$1,179.0
2009	$817.1	$462.9	$1,280.0	$451.3	$1,731.3
2010	$626.6	$377.0	$1,003.5	$390.7	$1,394.3
2011	$578.2	$301.2	$879.3	$315.3	$1,194.7
2012	$847.6	$441.3	$1,288.8	$405.0	$1,693.8
2013	$749.9	$426.7	$1,176.6	$393.6	$1,570.2
2014	$392.9	$258.0	$650.9	$296.3	$947.2
2015	$493.9	$351.9	$845.7	$436.3	$1,282.0
2016	$600.5	$391.1	$991.6	$508.2	$1,499.8
2017	$531.3	$345.9	$877.3	$455.6	$1,332.9
2018	$480.9	$314.1	$795.0	$400.6	$1,195.3
2019 YTD	$60.7	$39.1	$99.8	$52.5	$152.3
2019 YTD % Change YOY	-30.8%	-8.8%	-23.6%	-22.2%	-23.1%
2019 Ann.	$363.9	$234.8	$598.7	$314.8	$913.5

Ginnie Mae Breakdown: Agency Gross Issuance

Issuance Year	FHA	VA	Other	Total
2000	$80.2	$18.8	$3.2	$102.2
2001	$133.8	$34.7	$3.1	$171.5
2002	$128.6	$37.9	$2.5	$169.0
2003	$147.9	$62.7	$2.5	$213.1
2004	$85.0	$31.8	$2.5	$119.2
2005	$55.7	$23.5	$2.1	$81.4
2006	$51.2	$23.2	$2.3	$76.7
2007	$67.7	$24.2	$3.0	$94.9
2008	$221.7	$39.0	$6.9	$267.6
2009	$359.9	$74.6	$16.8	$451.3
2010	$304.9	$70.6	$15.3	$390.7
2011	$216.1	$82.3	$16.9	$315.3
2012	$253.4	$131.3	$20.3	$405.0
2013	$239.2	$132.2	$22.2	$393.6
2014	$163.9	$111.4	$21.0	$296.3
2015	$261.5	$155.6	$19.2	$436.3
2016	$281.8	$206.5	$19.9	$508.2
2017	$257.6	$177.8	$20.2	$455.6
2018	$222.6	$160.8	$17.2	$400.6
2019 YTD	$30.3	$20.6	$1.5	$52.5
2019 YTD % Change YOY	-14.4%	-29.6%	-44.7%	-22.2%
2019 Ann.	$182.1	$123.5	$9.2	$314.8

Sources: *eMBS and Urban Institute (top and bottom).*
Note : *Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of February 2019.*

US Agency Market, Originations

Agency net issuance totaled $26.9 billion in the first two months of 2019, down 29.0 percent compared to the same period in 2018; GSE net issuance was down much more. Ginnie Mae net issuance was $14.1 billion, comprising 52.5 percent of total agency net issuance. Ginnie Mae net issuance was down 5.4 percent compared to the same period in 2019. Ginnie Mae net issuance in January and February 2019 was comprised of 45.8 percent VA, 57.5 percent FHA.

Agency Net Issuance

Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	$92.0	$67.8	$159.8	$29.3	$189.1
2001	$216.6	$151.8	$368.4	-$9.9	$358.5
2002	$218.9	$138.3	$357.2	-$51.2	$306.1
2003	$293.7	$41.1	$334.9	-$77.6	$257.3
2004	$32.3	$50.2	$82.5	-$40.1	$42.4
2005	$62.5	$111.7	$174.2	-$42.2	$132.0
2006	$164.3	$149.3	$313.6	$0.2	$313.8
2007	$296.1	$218.8	$514.9	$30.9	$545.7
2008	$213.0	$101.8	$314.8	$196.4	$511.3
2009	$208.1	$42.5	$250.6	$257.4	$508.0
2010	-$156.4	-$146.8	-$303.2	$198.3	-$105.0
2011	-$32.6	-$95.8	-$128.4	$149.6	$21.2
2012	$32.9	-$75.3	-$42.4	$119.1	$76.8
2013	$57.5	$11.6	$69.1	$87.9	$157.0
2014	$0.5	$30.0	$30.5	$61.6	$92.1
2015	$10.2	$65.0	$75.1	$97.3	$172.5
2016	$68.6	$66.8	$135.5	$125.3	$260.8
2017	$90.2	$78.2	$168.5	$131.3	$299.7
2018	$79.4	$68.4	$147.7	$113.9	$261.6
2019 YTD	$6.7	$6.1	$12.8	$14.1	$26.9
2019 YTD % Change YOY	-67.0%	132.3%	-44.3%	-5.4%	-29.0%
2019 Ann.	$40.4	$36.4	$76.8	$84.8	$161.6

Ginnie Mae Breakdown: Net Issuance

Issuance Year	FHA	VA	Other	Total
2000	$29.0	$0.3	$0.0	$29.3
2001	$0.7	-$10.6	$0.0	-$9.9
2002	-$22.5	-$28.7	$0.0	-$51.2
2003	-$56.5	-$21.1	$0.0	-$77.6
2004	-$45.2	$5.1	$0.0	-$40.1
2005	-$37.3	-$12.1	$7.2	-$42.2
2006	-$4.7	$3.8	$1.2	$0.2
2007	$20.2	$8.7	$2.0	$30.9
2008	$173.3	$17.7	$5.4	$196.4
2009	$206.4	$35.1	$15.8	$257.4
2010	$158.6	$29.6	$10.0	$198.3
2011	$102.8	$34.0	$12.8	$149.6
2012	$58.9	$45.9	$14.3	$119.1
2013	$20.7	$53.3	$13.9	$87.9
2014	-$4.8	$53.9	$12.5	$61.6
2015	$22.5	$66.9	$7.9	$97.3
2016	$45.6	$73.2	$6.0	$124.9
2017	$50.1	$76.1	$5.0	$131.3
2018	$49.2	$61.2	$3.5	$113.9
2019 YTD	$8.1	$6.5	-$0.5	$14.1
2019 YTD % Change YOY	137.2%	-41.5%	-201.5%	-5.4%
2019 Ann.	$97.5	$77.6	-$5.5	$169.6

Sources: *eMBS and Urban Institute.* **Note :** *Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of February 2019.*

US Agency Market, Originations

Agency gross issuance has been generally declining as rates have risen, but the seasonal trend is very strong. This table allows for a comparison with the same month in previous years. February 2019 gross agency issuance of $70.7 billion is below the February 2018 level of $93.7 billion. We expect to see the impact of the recent drop in interest rates, which has caused an increase in refi applications, to be very apparent in the next month or two.

Monthly Agency Issuance

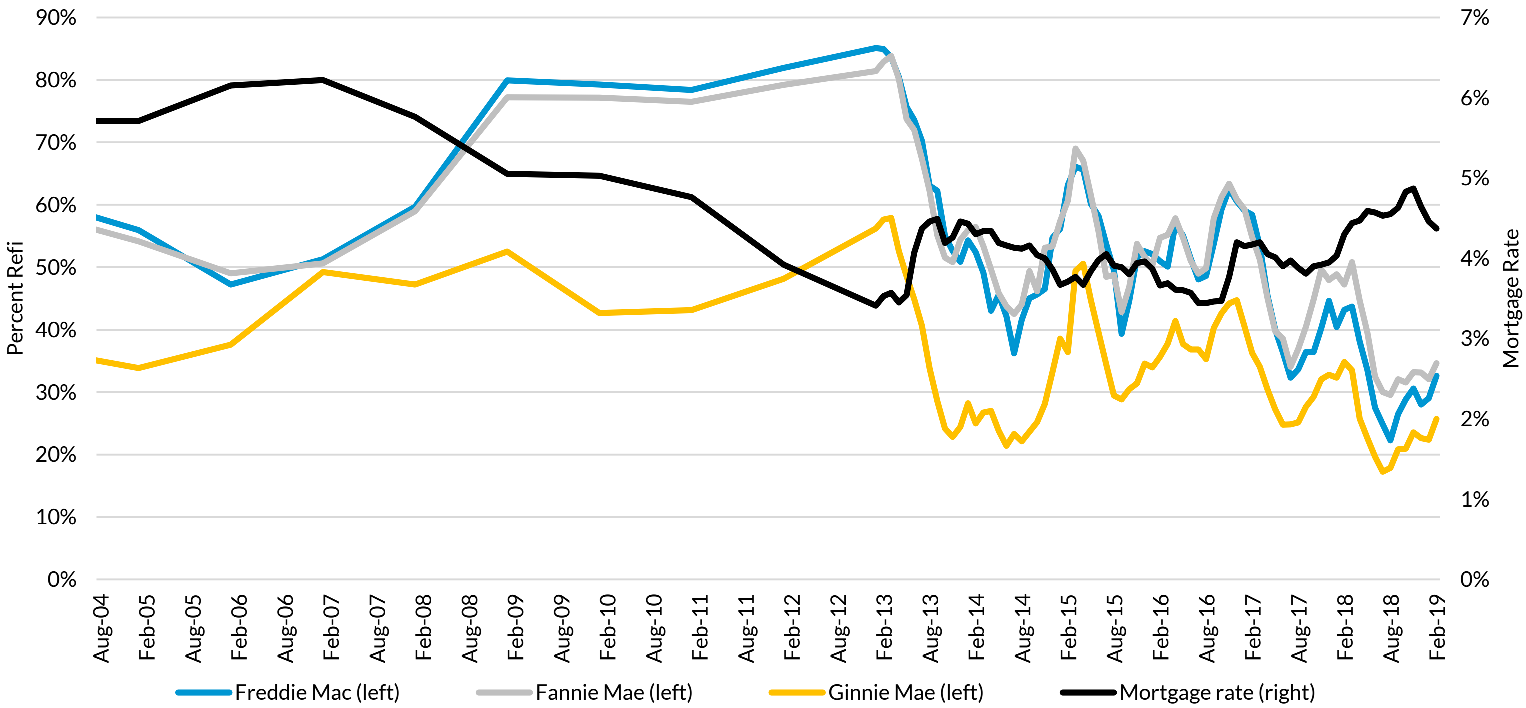
	Gross Issuance				Net Issuance			
Date	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-16	$35.6	$22.5	$32.5	$90.6	-$0.6	$1.0	$7.3	$7.8
Feb-16	$32.4	$21.2	$30.5	$84.1	$2.4	$3.1	$8.4	$13.9
Mar-16	$39.7	$27.5	$32.9	$100.1	$7.9	$8.2	$9.6	$25.8
Apr-16	$43.8	$26.2	$40.1	$110.1	$0.8	-$0.2	$8.8	$9.4
May-16	$44.2	$29.9	$41.6	$115.6	$2.4	$4.4	$11.4	$18.3
Jun-16	$46.7	$30.1	$43.9	$120.8	$2.7	$3.0	$11.9	$17.7
Jul-16	$49.8	$35.3	$46.1	$131.1	$2.3	$6.3	$10.8	$19.4
Aug-16	$54.9	$37.9	$46.7	$139.5	$10.4	$11.0	$13.8	$35.2
Sep-16	$65.8	$44.0	$52.5	$162.4	$8.7	$9.0	$12.5	$30.2
Oct-16	$66.0	$35.9	$47.4	$149.3	$11.8	$2.7	$9.3	$24.5
Nov-16	$48.8	$40.2	$47.2	$136.3	-$3.5	$7.9	$10.3	$14.8
Dec-16	$72.7	$40.5	$46.8	$160.0	$23.3	$10.4	$10.8	$44.6
Jan-17	$55.6	$38.5	$42.6	$136.6	$10.3	$10.7	$10.3	$31.9
Feb-17	$37.6	$27.4	$33.1	$98.1	$3.1	$6.5	$9.2	$18.9
Mar-17	$39.5	$24.4	$31.3	$95.2	$10.3	$6.2	$9.6	$26.3
Apr-17	$39.3	$21.2	$36.4	$97.0	$4.8	$0.4	$11.7	$17.3
May-17	$40.3	$22.6	$36.4	$99.3	$7.6	$2.7	$13.1	$23.6
Jun-17	$45.7	$25.1	$39.9	$110.7	$8.3	$2.4	$13.2	$24.1
Jul-17	$45.3	$27.6	$40.6	$113.5	$5.8	$3.5	$12.1	$21.5
Aug-17	$49.1	$29.3	$42.8	$121.1	$12.0	$6.7	$15.6	$33.9
Sep-17	$47.3	$27.9	$40.2	$115.5	$7.4	$3.8	$10.5	$21.7
Oct-17	$42.9	$34.6	$38.4	$115.9	$6.4	$12.5	$10.7	$29.6
Nov-17	$43.5	$37.2	$37.8	$118.5	$4.6	$13.6	$8.2	$26.4
Dec-17	$45.3	$30.0	$36.2	$111.5	$9.6	$8.2	$6.8	$24.6
Jan-18	$47.4	$21.4	$35.2	$104.0	$12.4	$0.3	$7.8	$20.6
Feb-18	$40.3	$21.5	$31.9	$93.7	$8.0	$2.3	$7.1	$17.4
Mar-18	$35.6	$21.3	$29.0	$85.9	$4.9	$3.0	$6.1	$14.0
Apr-18	$36.3	$26.2	$32.7	$95.2	$1.7	$6.1	$9.1	$16.8
May-18	$38.9	$27.5	$33.7	$100.1	$4.5	$7.2	$10.6	$22.4
Jun-18	$38.2	$28.8	$35.6	$102.5	$2.2	$6.8	$10.5	$19.5
Jul-18	$40.3	$26.2	$35.6	$102.1	$4.2	$3.7	$10.7	$18.6
Aug-18	$50.4	$29.9	$37.5	$117.8	$14.9	$7.9	$12.8	$35.6
Sep-18	$41.8	$30.1	$34.8	$106.6	$5.7	$6.2	$9.1	$21.0
Oct-18	$39.8	$27.4	$33.2	$100.3	$10.1	$7.6	$12.1	$29.7
Nov-18	$35.1	$30.1	$32.4	$97.6	$2.6	$10.8	$9.6	$22.9
Dec-18	$36.9	$23.9	$28.4	$89.1	$8.2	$6.4	$8.4	$23.0
Jan-19	$33.3	$19.2	$29.0	$81.6	$5.5	$2.5	$9.5	$17.5
Feb-19	$27.3	$19.9	$23.5	$70.7	$1.2	$3.6	$4.6	$9.5

Sources: *eMBS and Urban Institute.*
Note : *Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of February 2019.*

US Agency Market, Originations

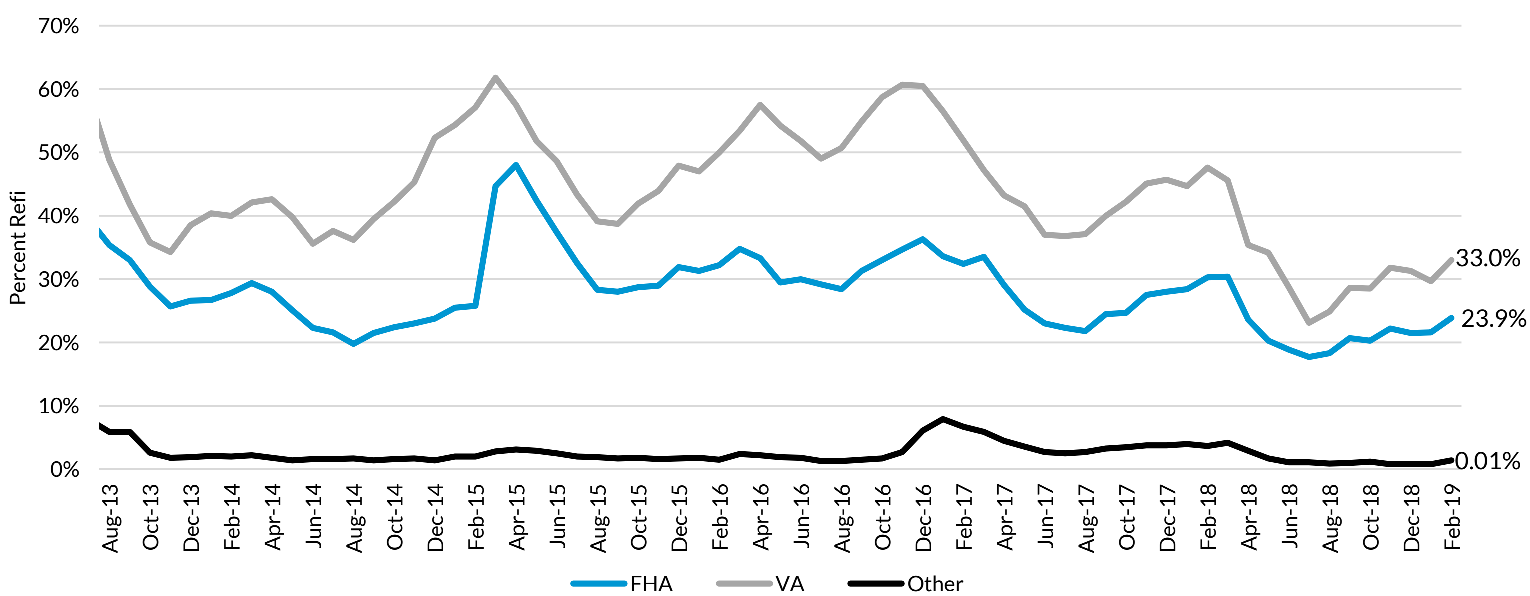
The Ginnie Mae refi share stood at 26 percent in February 2019, below the 35 and 33 percent shares for Fannie Mae and Freddie Mac, respectively. Within Ginnie Mae, VA had the highest refi share at 33 percent in February 2019, followed by FHA's 24 percent. In the spring and summer of 2018, refi share for all agencies fell sharply due to rising interest rates and seasonal upticks in purchase activity. The refi share stabilized after the summer surge in purchase activity ended; it has ticked up slightly in early 2019 as rates have trended down.

Percent Refi at Issuance



Sources: *eMBS and Urban Institute.* **Note**: *Based on at-issuance balance. Data as of February 2019.*

Percent Refi at Issuance: Ginnie Mae Breakdown

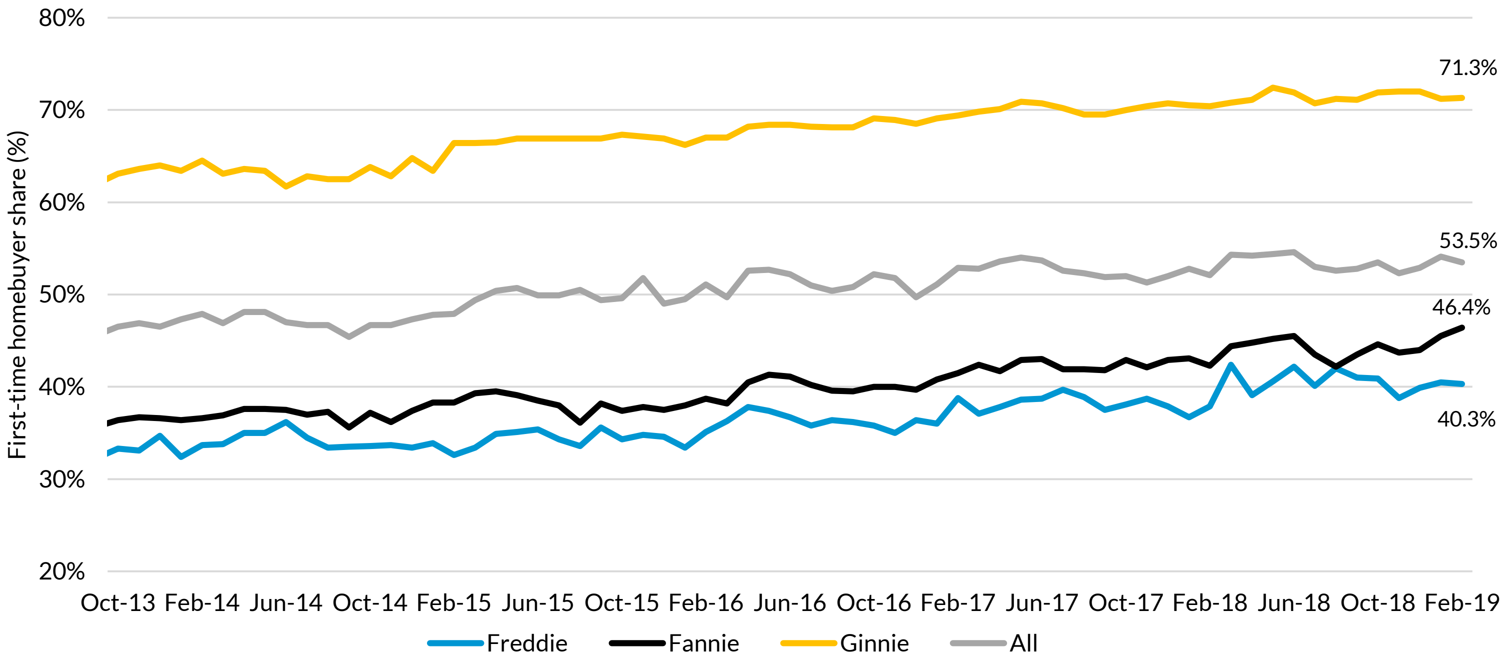


Sources: *eMBS and Urban Institute.*
Note: *Based on at-issuance balance. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2019.*

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans increased slightly to 71.3 percent in February 2019, just below the 72.4 percent historical high reached in May 2018. First time homebuyers comprise a significantly higher share of the Ginnie Mae purchase market than of the GSE purchase market, with first time homebuyers accounting for 46.4 percent and 40.3 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in February 2019, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, a much higher LTV and similar DTI.

First Time Homebuyer Share: Purchase Only Loans



Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2019.*

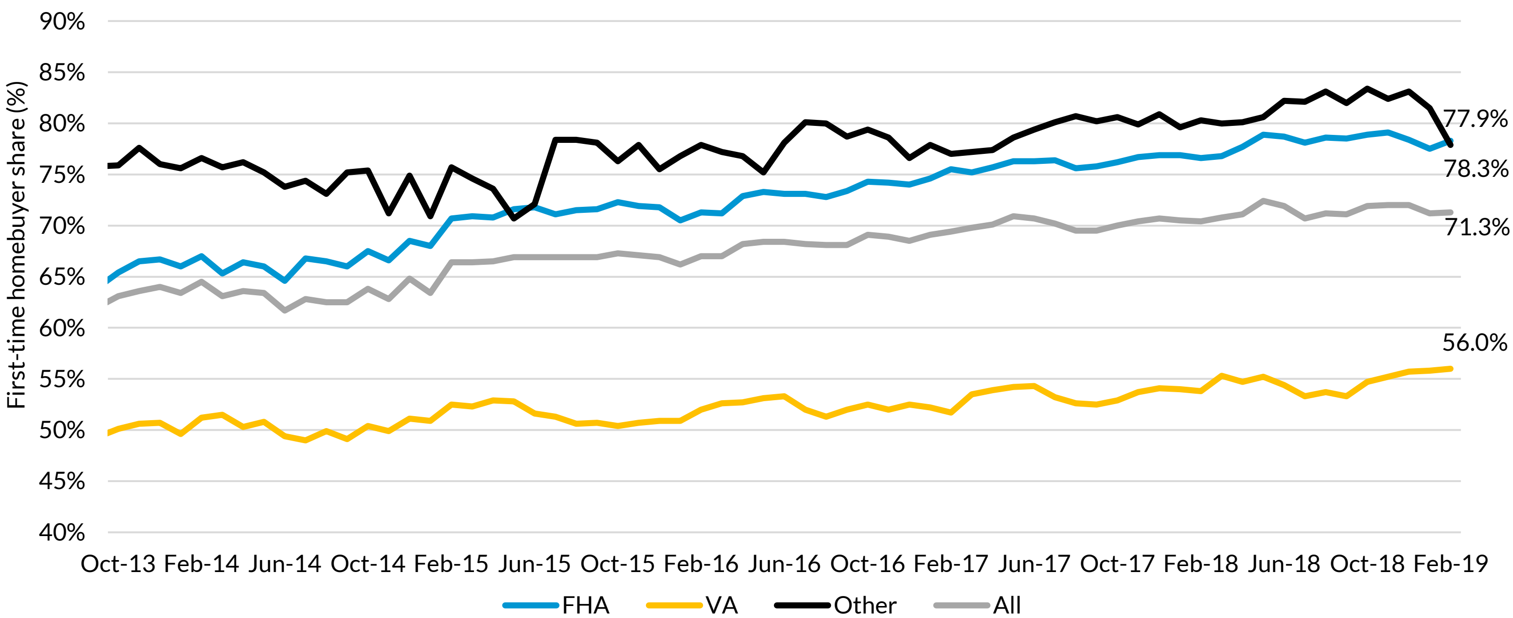
	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	235,562	268,300	229,525	248,102	211,101	248,633	222,701	256,151
Credit Score	735.1	751.5	740.1	754.7	676.7	699.0	708.6	738.5
LTV (%)	88.4	79.6	86.1	78.4	96.6	95.2	91.8	83.4
DTI (%)	37.2	37.6	36.0	36.9	42.9	43.6	39.6	39.0
Loan Rate (%)	5.0	4.9	5.0	4.9	5.0	4.9	5.0	4.9

Sources: *eMBS and Urban Institute.*
Note: *In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Data as of February 2019.*

Credit Box

Within the Ginnie Mae purchase market, 77.9 percent of FHA loans, 56.0 percent of VA loans and 78.3 percent of other loans represent financing for first time home buyers in February 2019. The bottom table shows that based on mortgages originated in February 2019, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, higher LTV and lower DTI.

First Time Homebuyer Share: Ginnie Mae Purchase Only Loans Breakdown by Source



Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2019.*

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	205,147	218,577	238,979	284,608	138,925	153,234	211,101	248,633
Credit Score	668.8	672.9	696.0	726.7	700.5	684.6	676.7	699.0
LTV (%)	95.5	93.9	99.7	96.4	99.2	98.3	96.6	95.2
DTI (%)	43.8	44.5	41.3	42.8	35.4	36.7	42.9	43.6
Loan Rate (%)	5.1	5.0	4.9	4.7	4.9	5.1	5.0	4.9

Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2019. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV.*

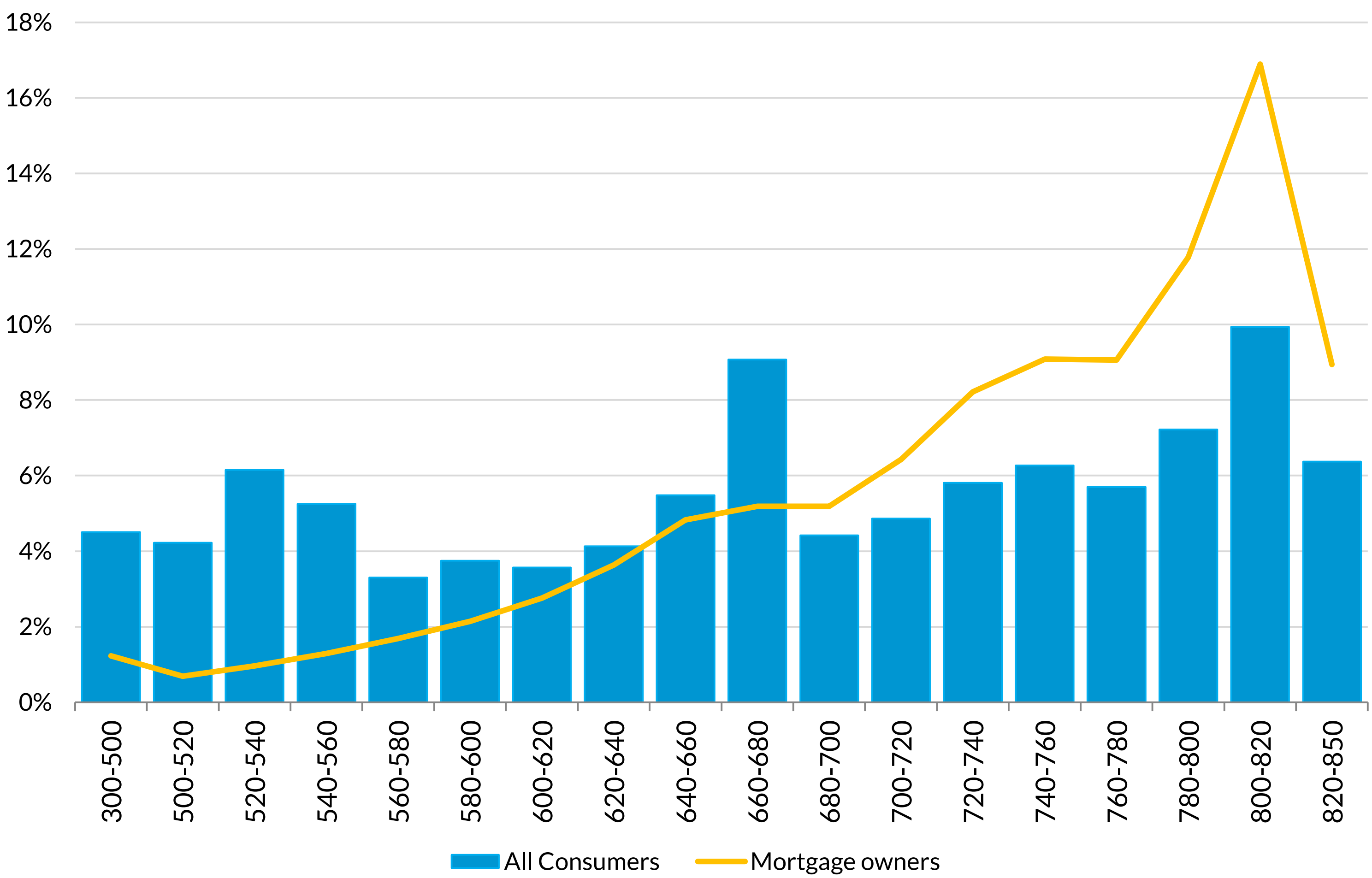
Credit Box

Consumers who have a mortgage are concentrated at the high end of the general credit score spectrum. The top table shows that the median FICO score for all consumers (682) is equal to the 25th percentile of those with a mortgage (682).

FICO Score Distribution: Mortgage Owners vs All Consumers

All Consumers- Percentiles								
Minimum	**P5**	**P10**	**P25**	**P50**	**P75**	**P90**	**P95**	**Maximum**
300	503	524	587	682	774	813	822	839

Mortgage Owners- Percentiles								
Minimum	**P5**	**P10**	**P25**	**P50**	**P75**	**P90**	**P95**	**Maximum**
300	570	615	682	752	801	818	824	839



Sources: *Credit Bureau Data and Urban Institute.*
Note: *Data as of August 2017.*

February 2019 Credit Box at a Glance

In February 2019, the median Ginnie Mae FICO score was 673 versus 745 for Fannie and 752 for Freddie. Note that the FICO score for the 10th percentile was 616 for Ginnie Mae, versus 671 for Fannie and 679 for Freddie. Within the Ginnie Mae market, FHA loans have a median FICO score of 662, VA loans have a median FICO score of 702 and other loans have a median FICO score of 696.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	200,991	642	680	731	775	797	724
Fannie	72,499	680	712	752	783	800	745
Freddie	57,245	686	720	758	787	801	750
Ginnie	71,247	620	642	674	721	768	683
Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	96,830	640	676	720	765	792	717
Fannie	41,290	660	692	732	772	796	730
Freddie	30,683	667	700	741	776	797	735
Ginnie	24,857	605	636	670	709	753	673
All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	297,821	641	678	727	772	796	722
Fannie	113,789	671	704	745	780	799	739
Freddie	87,928	679	712	752	784	800	745
Ginnie	96,104	616	641	673	717	765	680

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	71,247	620	642	674	721	768	683
FHA	46,546	615	637	664	698	737	670
VA	22,367	628	658	710	763	793	710
Other	2,334	631	657	697	740	770	697
Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	24,857	605	636	670	709	753	673
FHA	14,050	597	627	657	690	725	659
VA	10,774	620	651	690	735	772	691
Other	33	581	605	652	697	736	656
All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	96,104	616	641	673	717	765	680
FHA	60,596	610	635	662	696	734	667
VA	33,141	626	655	702	755	789	703
Other	2,367	630	657	696	740	770	696

Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2019.*

February 2019 Credit Box at a Glance

In February 2019, the median loan-to-value ratio (LTV) was 96.5 percent for Ginnie Mae, and 80 percent for both Fannie Mae and Freddie Mac. The 90th percentile was 101 percent for Ginnie Mae, and 95-97 percent for Fannie Mae and Freddie Mac. Within the Ginnie Mae market, the median LTV was 96.5 for FHA, 100.0 for VA and 101.0 for other programs.

Purchase LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	201,287	70.0	80.0	95.0	96.5	99.8	87.2
Fannie	72,568	65.0	80.0	85.0	95.0	97.0	83.3
Freddie	57,287	60.0	75.0	80.0	95.0	95.0	80.8
Ginnie	71,432	92.4	96.5	96.5	100.0	102.0	96.2
Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	97,067	43.0	59.0	74.0	80.4	92.0	69.9
Fannie	41,298	40.0	55.0	69.0	78.0	80.0	64.4
Freddie	30,687	39.0	54.0	69.0	78.0	80.0	64.5
Ginnie	25,082	67.7	80.9	86.5	97.0	100.0	85.5
All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	298,354	56.0	75.0	85.0	96.5	97.0	81.6
Fannie	113,866	50.0	68.0	80.0	90.0	97.0	76.4
Freddie	87,974	49.0	67.0	80.0	90.0	95.0	75.1
Ginnie	96,514	82.4	92.6	96.5	99.8	101.0	93.4

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	71,432	92.4	96.5	96.5	100.0	102.0	96.2
FHA	46,672	92.8	96.5	96.5	96.5	96.5	95.1
VA	22,408	91.1	100.0	100.0	102.2	103.0	98.2
Other	2,352	93.9	98.7	101.0	101.0	102.0	99.0
Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	25,082	67.7	80.9	86.5	97.0	100.0	85.5
FHA	14,090	66.2	78.9	86.5	86.5	96.6	81.9
VA	10,958	70.0	84.7	95.7	100.0	102.2	90.2
Other	34	67.5	77.1	85.9	98.0	98.7	83.6
All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	96,514	82.4	92.6	96.5	99.8	101.0	93.4
FHA	60,762	82.3	89.9	96.5	96.5	96.5	92.1
VA	33,366	81.7	95.0	100.0	101.0	103.0	95.6
Other	2,386	93.2	98.7	101.0	101.0	102.0	98.8

Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Data as of February 2019.*

February 2019 Credit Box at a Glance

In February 2019, the median Ginnie Mae debt-to-income ratio (DTI) was 43.9 percent, considerably higher than the 38-39 percent median DTI for Fannie Mae and Freddie Mac. The 90th percentile for Ginnie Mae was 54.7 percent, also much higher than the 48 percent DTI for the GSEs. Within the Ginnie Mae market, the median FHA DTI ratio was 44.8 percent, versus 42.5 percent for VA and 36.5 percent for other lending programs.

Purchase DTI							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	200,973	25.0	32.7	40.0	46.0	50.0	39.0
Fannie	72,567	24.0	31.0	39.0	45.0	48.0	37.2
Freddie	57,285	23.0	30.0	38.0	44.0	48.0	36.2
Ginnie	71,121	30.2	37.0	44.0	50.1	54.8	43.1
Refi DTI							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	93,510	24.0	31.0	39.0	45.0	49.0	37.8
Fannie	40,836	23.0	30.0	38.0	45.0	48.0	36.8
Freddie	30,464	22.0	29.0	37.0	43.0	47.0	35.9
Ginnie	22,210	28.4	35.6	43.5	49.7	54.4	42.2
All DTI							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	294,483	25.0	32.0	40.0	46.0	50.0	38.6
Fannie	113,403	23.0	31.0	39.0	45.0	48.0	37.1
Freddie	87,749	23.0	30.0	38.0	44.0	48.0	36.1
Ginnie	93,331	29.8	36.7	43.9	50.0	54.7	42.9

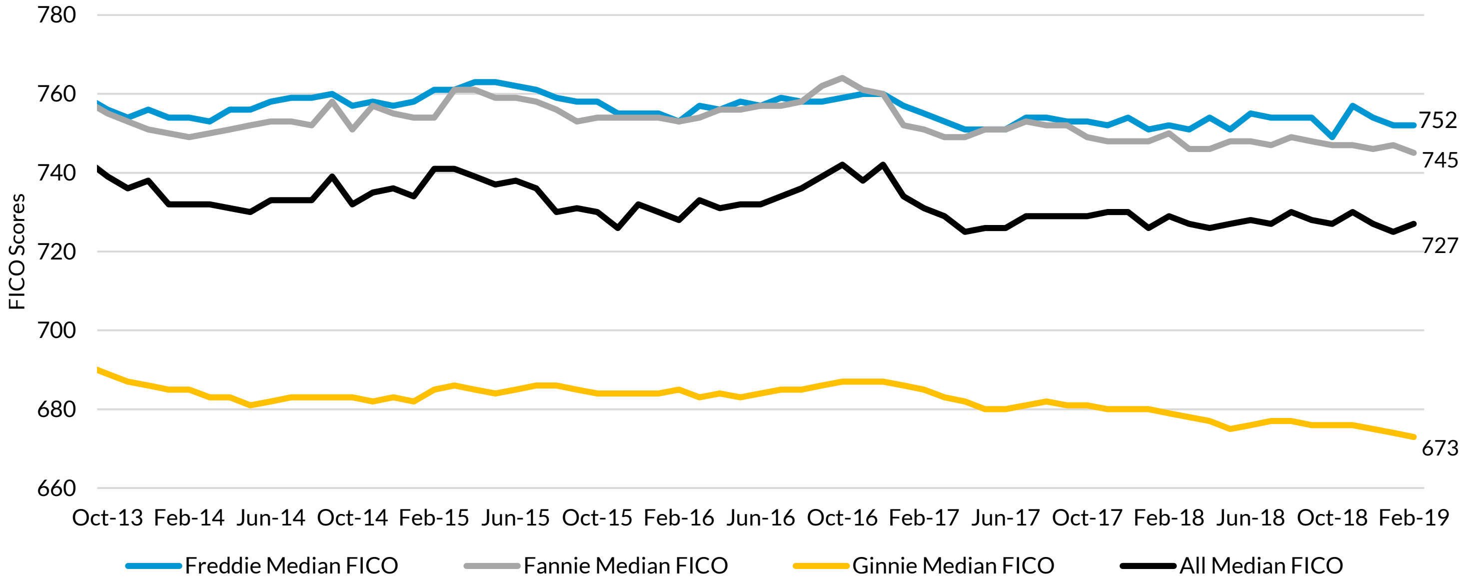
Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	71,121	30.2	37.0	44.0	50.1	54.8	43.1
FHA	46,666	31.6	38.4	44.9	50.8	54.9	44.0
VA	22,213	28.3	35.2	42.5	49.3	54.7	42.0
Other	2,242	26.4	31.5	36.6	40.5	43.3	35.6
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	22,210	28.4	35.6	43.5	49.7	54.4	42.2
FHA	12,562	29.2	36.5	44.3	50.0	54.6	42.8
VA	9,637	27.5	34.7	42.4	49.1	54.1	41.5
Other	11	16.2	20.1	26.7	40.8	41.0	29.6
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	**P10**	**P25**	**Median**	**P75**	**P90**	**Mean**
All	93,331	29.8	36.7	43.9	50.0	54.7	42.9
FHA	59,228	31.0	38.0	44.8	50.7	54.8	43.7
VA	31,850	28.0	35.0	42.5	49.2	54.5	41.8
Other	2,253	26.4	31.5	36.5	40.5	43.3	35.6

Sources: *eMBS and Urban Institute.* **Note**: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2019.*

Credit Box: Historical

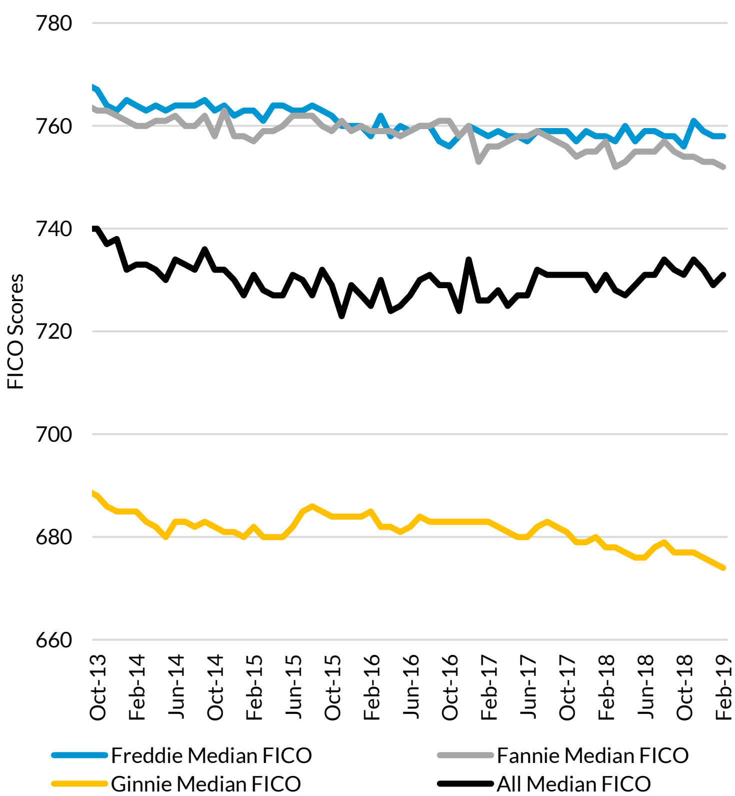
The median FICO score for all agency MBS originated in January was 727, slightly higher than in January 2019. The figures show that the median FICO score for Ginnie Mae borrowers has always been considerably lower than for GSE borrowers. The difference between Ginnie Mae and GSE borrowers is wider in purchase loans than in refi loans.

FICO Scores for All Loans



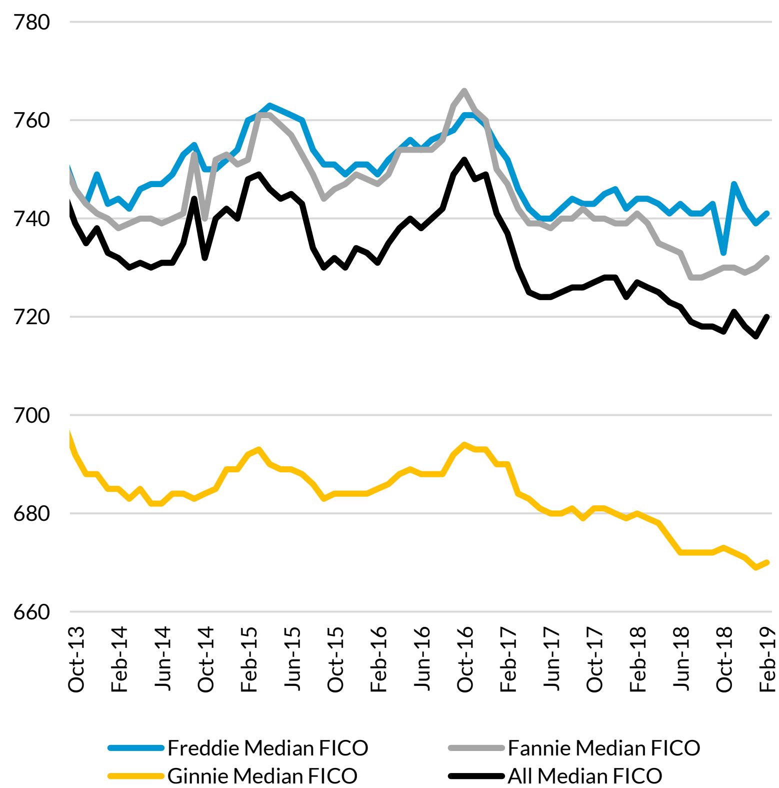
Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2019.*

FICO Scores for Purchase Loans



Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2019.*

FICO Scores for Refinance Loans

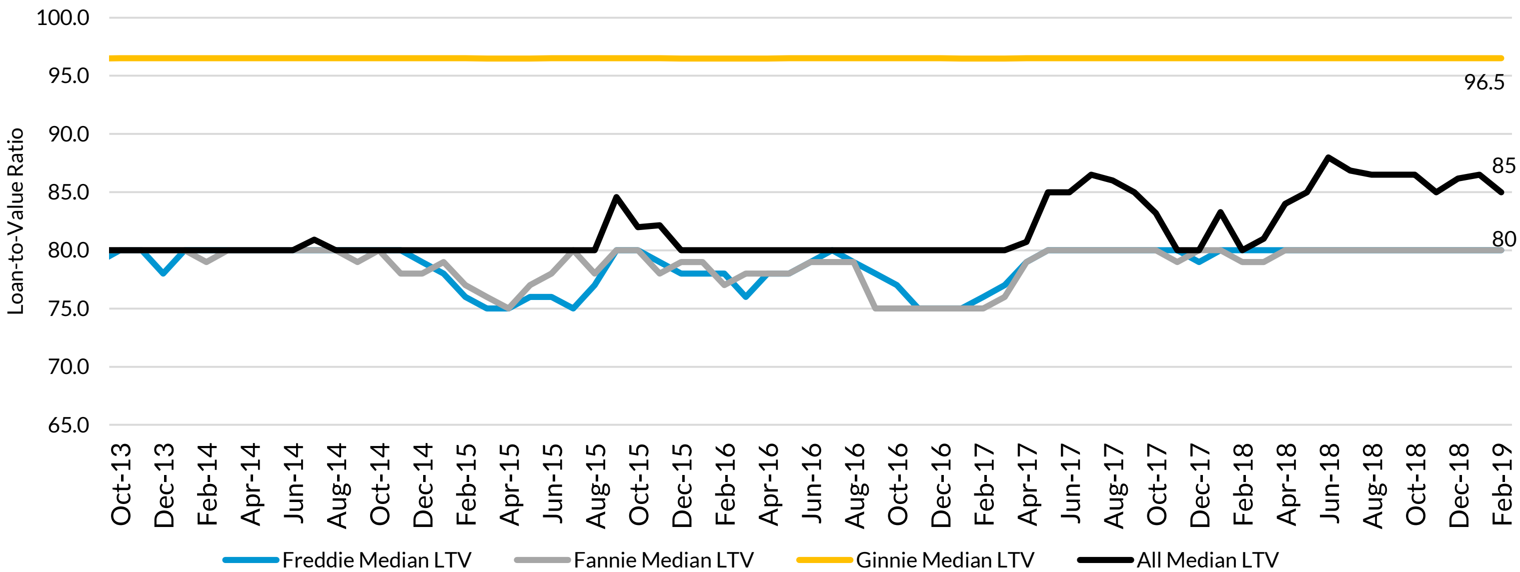


Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2019.*

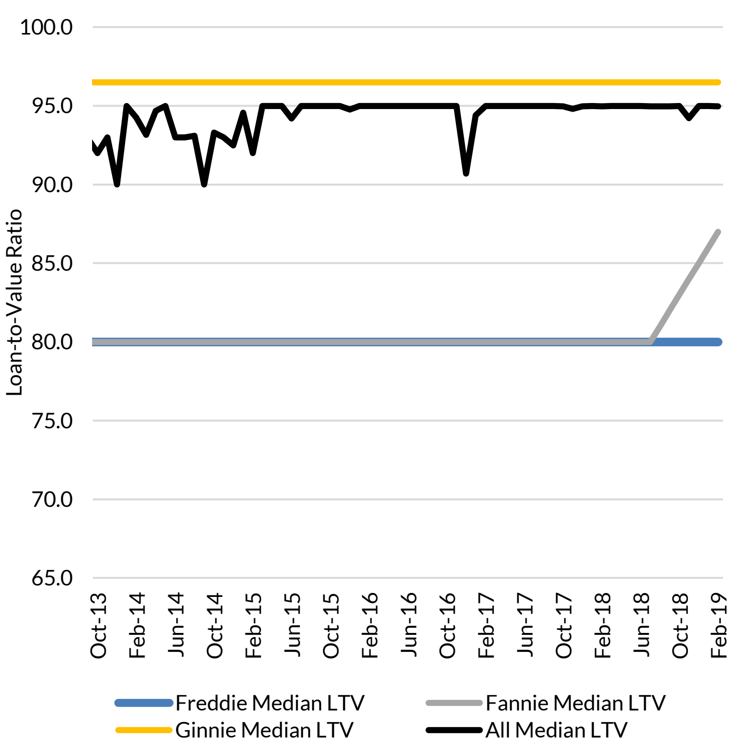
Credit Box: Historical

Median LTVs for Ginnie Mae loans have historically been at 96.5 percent, much higher than the 80 percent LTVs for the GSEs. Through time, both Ginnie Mae and GSE refinances have LTVs about 6-16 points lower than their purchase counterparts.

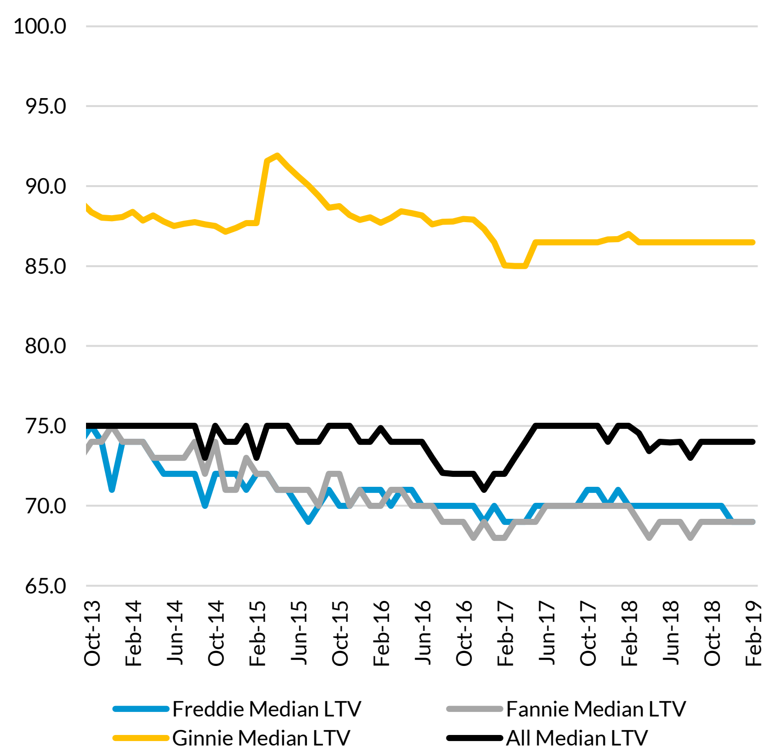
LTV Ratio for All Loans



LTV Ratio for Purchase Loans



LTV Ratio for Refinance Loans

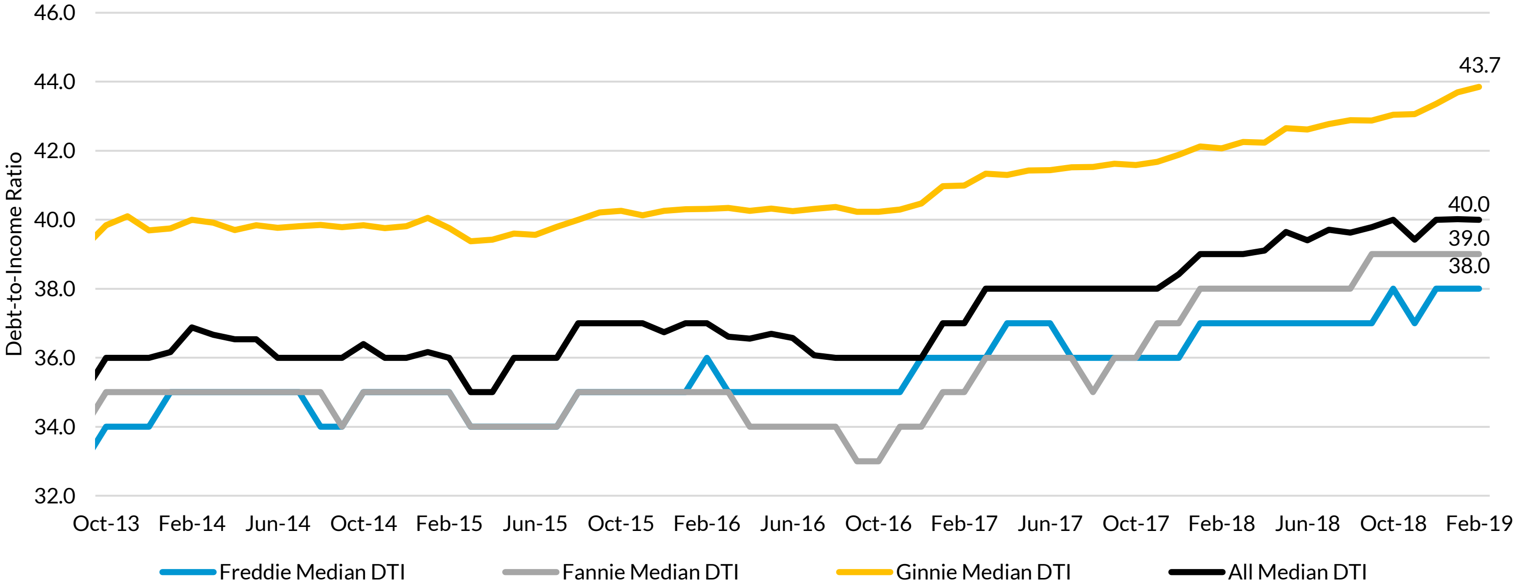


Sources: *eMBS and Urban Institute.* **Note:** *In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Sources and note apply to all three graphs. Data as of February 2019.*

Credit Box: Historical

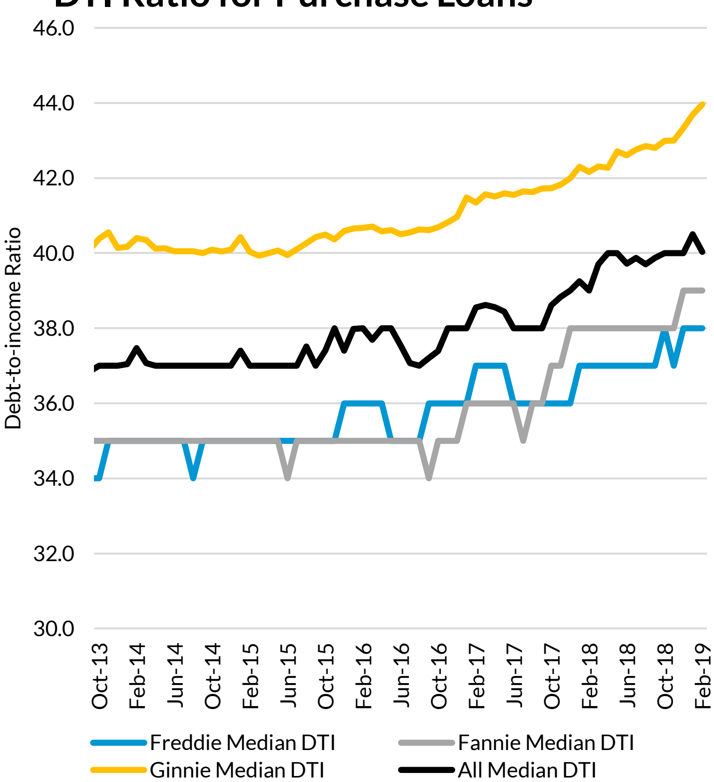
Median debt-to-income ratios on Ginnie Mae loans have historically been in the low 40s, considerably higher than for the GSEs. DTIs have been inching up over the past two years for both Ginnie Mae and GSE loans, with the movement more pronounced for Ginnie Mae. Increases in DTI are very typical in an environment of rising interest rates and rising home prices. As interest rates have stabilized over the last few months, GSE DTIs have stabilized, while Ginnie DTIs continue to creep up.

DTI Ratio for All Loans



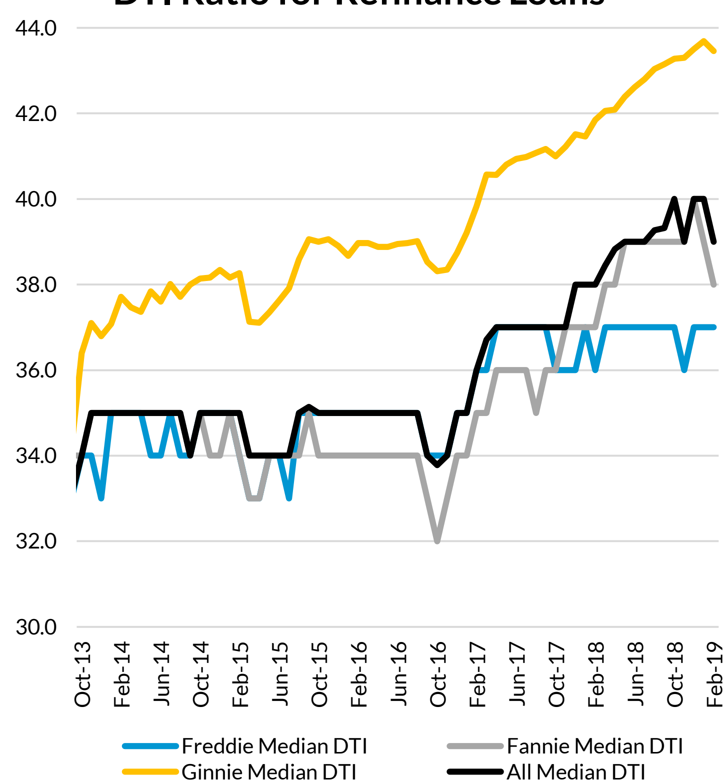
Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2019.*

DTI Ratio for Purchase Loans



Sources: *eMBS and Urban Institute.*
Note: *Data as of February 2019.*

DTI Ratio for Refinance Loans

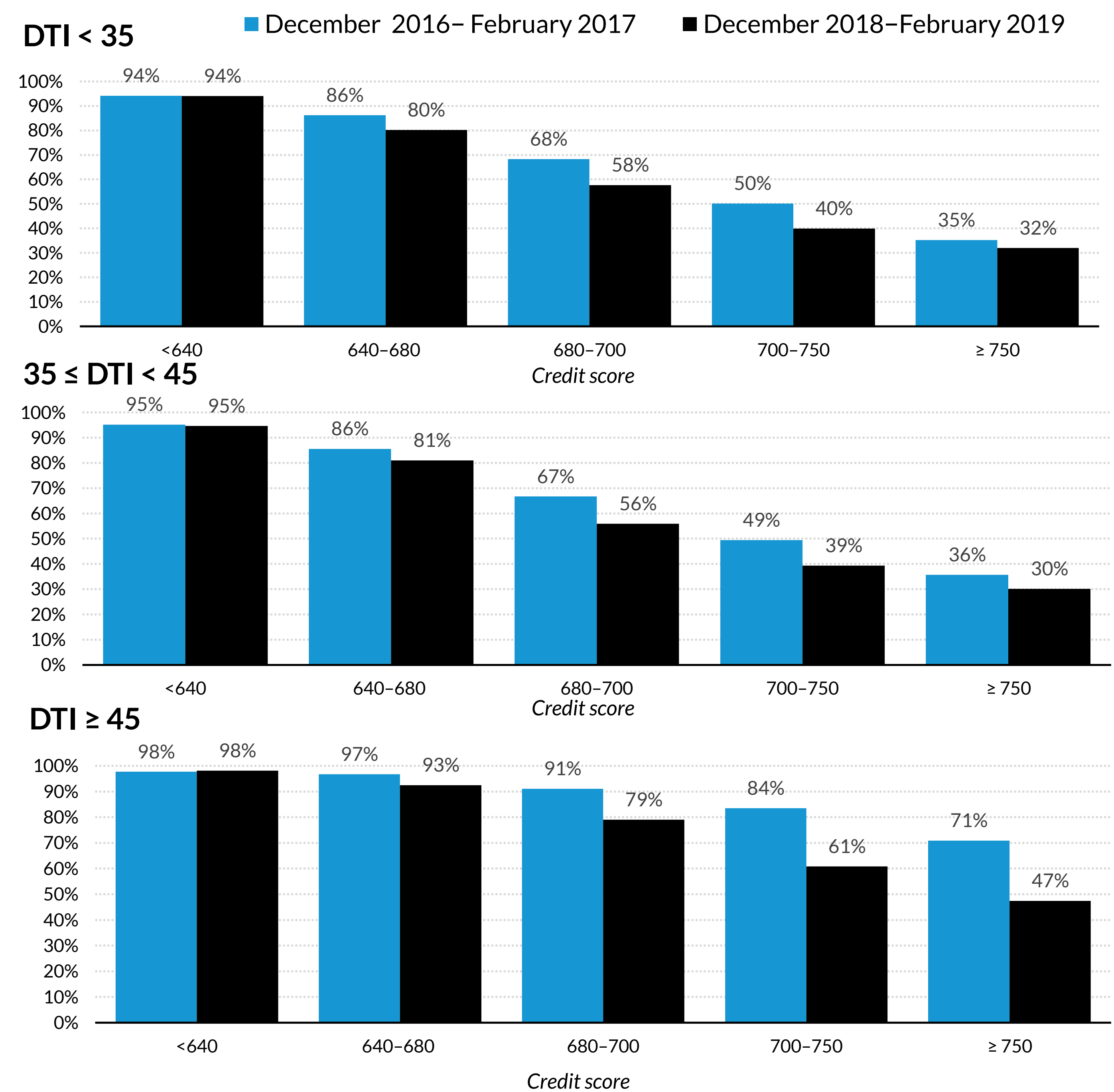


Sources: *eMBS and Urban Institute.*
Note: *Data as of February 2019.*

Credit Box: Historical

This table shows Ginnie Mae's share of agency high-LTV lending by credit score and FICO. In each DTI bucket, Ginnie Mae's share is more concentrated in lower FICO scores than in higher FICO scores. In the Dec 2018-Feb 2019 period, Ginnie Mae accounted for 94 percent of agency issuance for DTIs under 35 and FICOs below 640, compared to just 32 percent for DTIs below 35 and FICO 750 and higher. The Ginnie/GSE split in the 35-45 DTI bucket looks a lot like the below 35 percent DTI bucket. Ginnie Mae's share of issuance was higher for DTIs of 45 and above, as compared with the two lower DTI buckets. Ginnie Mae share of loans with a DTI of 45 and above and a FICO of 680-700 was 79 percent; it was 56-58 percent for the same FICO in the lower DTI buckets. Comparing this period to 2 years earlier, it is clear that GSEs have stepped up their higher LTV lending in all but the lowest FICO buckets; taking market share from Ginnie Mae.

Ginnie Mae Share of Agency Market by DTI and FICO for Loans with LTV ≥ 95



Sources: *eMBS and Urban Institute.*

High LTV Loans: Ginnie Mae vs. GSEs

Ginnie Mae dominates high-LTV lending, with 69.9 percent of its Dec 2018–Feb 2019 issuances having LTVs of 95 or above, compared to 21.4 percent for the GSEs. The GSEs have increased their high-LTV lending share from 12.0 percent in Dec 2016–Feb 2017, while Ginnie Mae has seen a slight decline, down from 70.3 percent in the Dec 2016–Feb 2017 period. As home price appreciation and interest rates have increased, the share of high-DTI lending (loans with DTI ≥ 45) has increased across the FICO spectrum.

Share of Loans with LTV ≥ 95

	Ginnie Mae	GSE	All
December 2016– February 2017	70.3%	12.0%	27.4%
December 2018–February 2019	69.9%	21.4%	37.5%

Agency Market Share by DTI and FICO for Loans with LTV ≥ 95

December 2016– February 2017

	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.9%	6.2%	3.5%	8.4%	10.1%	31.0%
35 –45	5.0%	10.3%	5.6%	12.3%	10.2%	43.3%
≥ 45	3.3%	7.8%	3.7%	6.7%	4.2%	25.7%
All	11.2%	24.2%	12.8%	27.3%	24.5%	100.0%

December 2018– February 2019

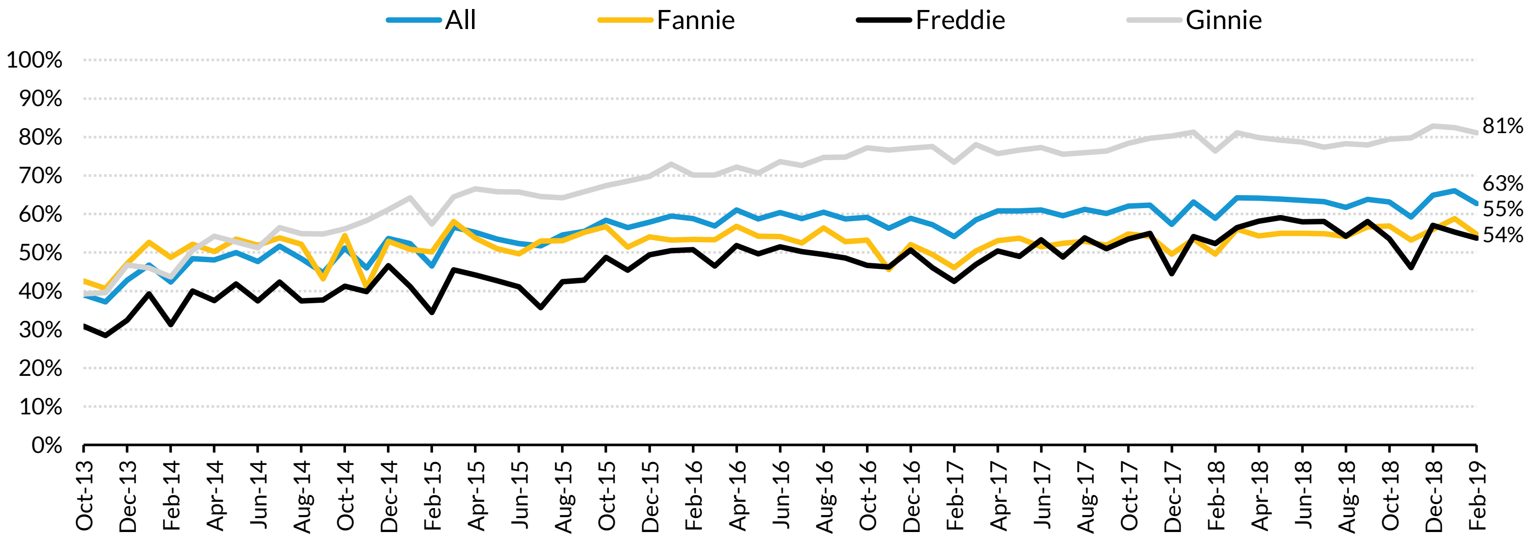
	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.7%	4.2%	2.3%	6.2%	7.9%	23.4%
35 –45	5.5%	8.8%	4.7%	11.2%	9.9%	40.0%
≥ 45	5.5%	9.6%	4.7%	9.8%	7.0%	36.6%
All	13.8%	22.5%	11.7%	27.3%	24.8%	100.0%

Sources: *eMBS and Urban Institute.*

Nonbank Originators

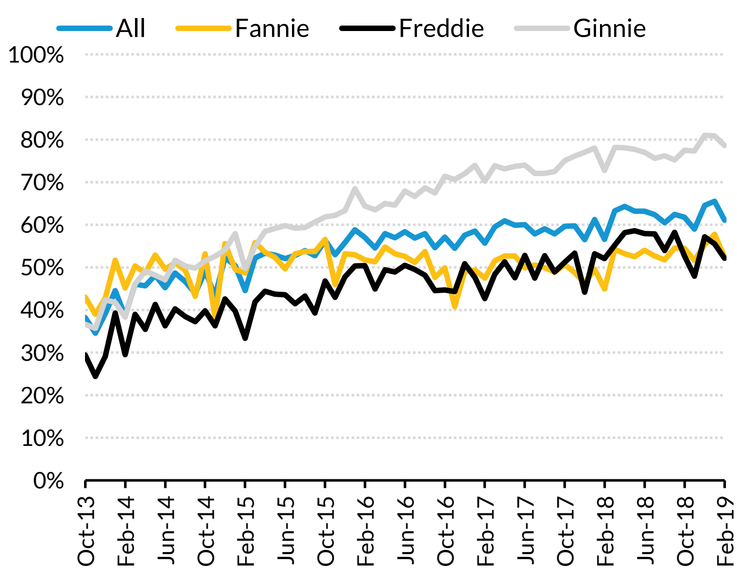
The nonbank origination share has been generally increasing since 2013. In February 2019, the Ginnie Mae nonbank originator share fell slightly to 81 percent, still considerably higher than the GSEs' 54-55 percent share. For Ginnie Mae, the nonbank share for refis was higher than for purchases. The differences were more modest for the GSEs.

Nonbank Origination Share: All Loans

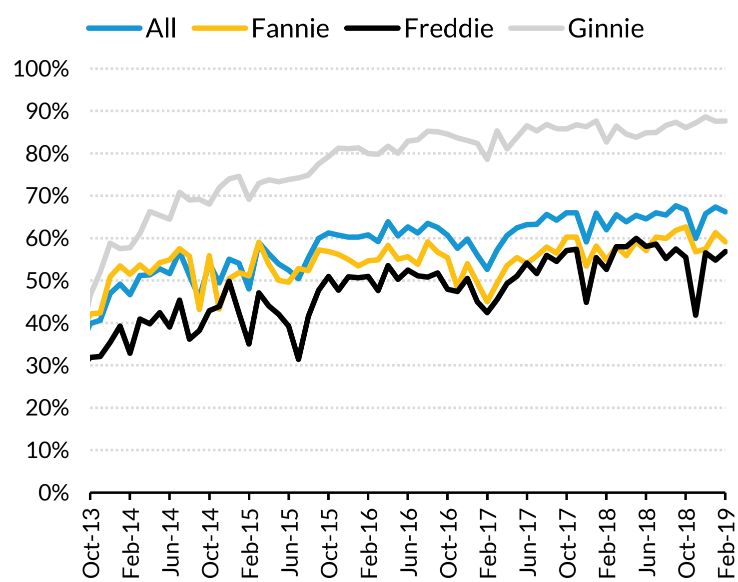


Sources: *eMBS and Urban Institute*
Note: *Data as of February 2019.*

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

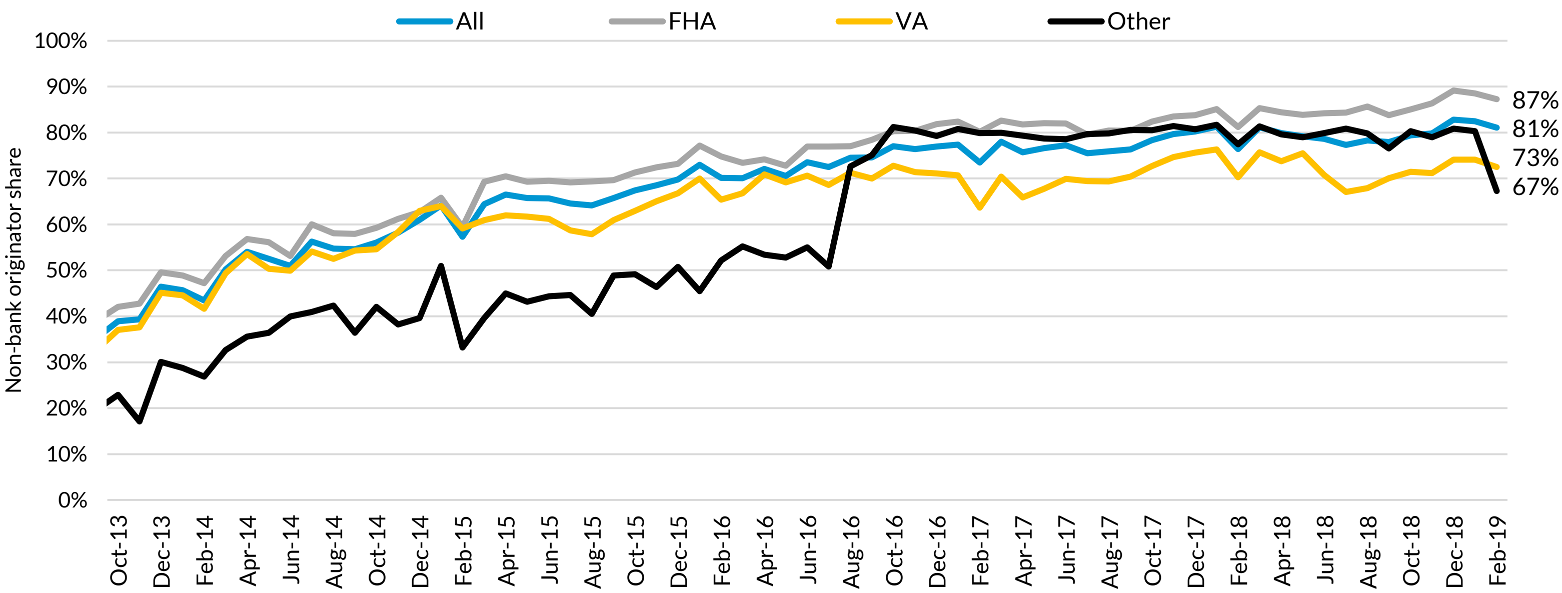


Sources: *eMBS and Urban Institute.* **Note: "***Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2019.*

Ginnie Mae Nonbank Originators

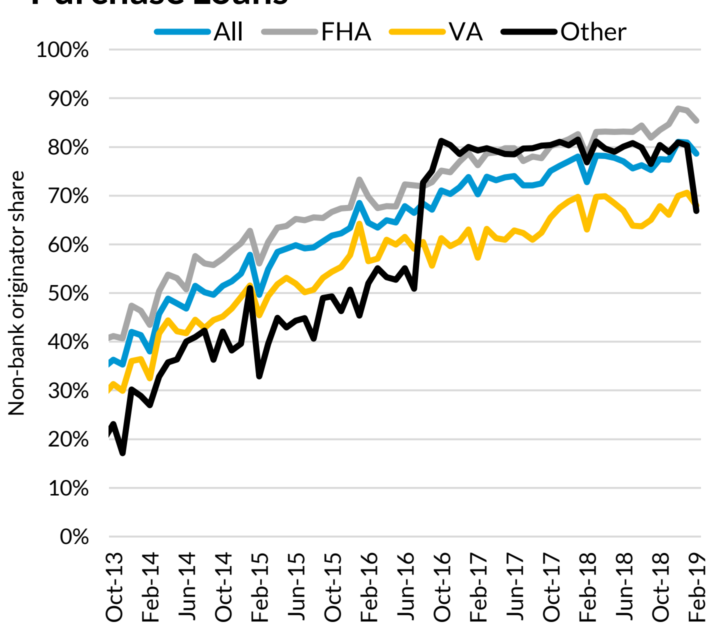
In February 2019, Ginnie Mae's nonbank share stood at 81 percent, just off the historical high reached in December 2018. The nonbank originator share for FHA declined slightly to 87 percent, also just below the historical high reached in December 2018. The nonbank originator share for VA was 73 percent, and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, fell to 67 percent.

Ginnie Mae Nonbank Originator Share: All Loans

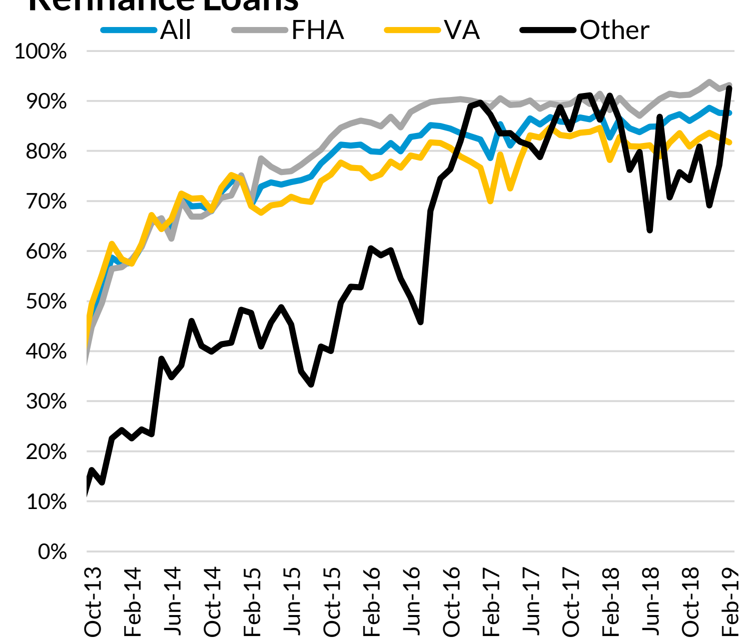


Sources: *eMBS and Urban Institute*
Note: *Data as of February 2019.*

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

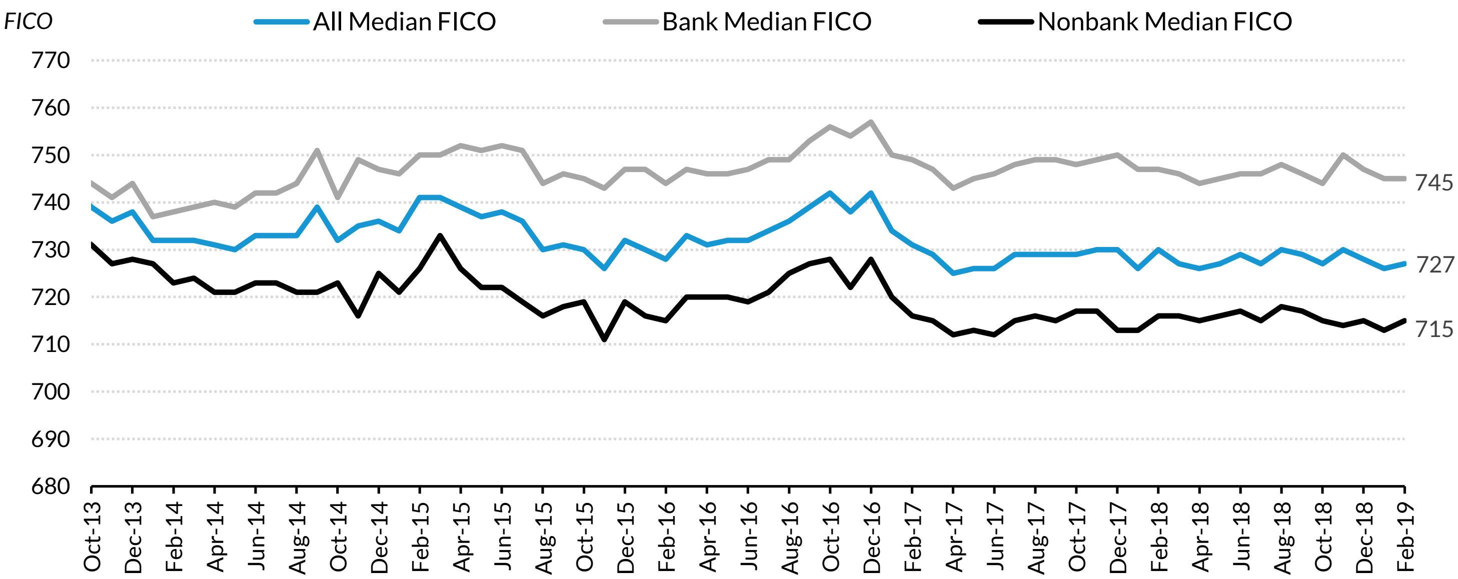


Sources: *eMBS and Urban Institute.* **Note: "***Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2019.*

Nonbank Credit Box

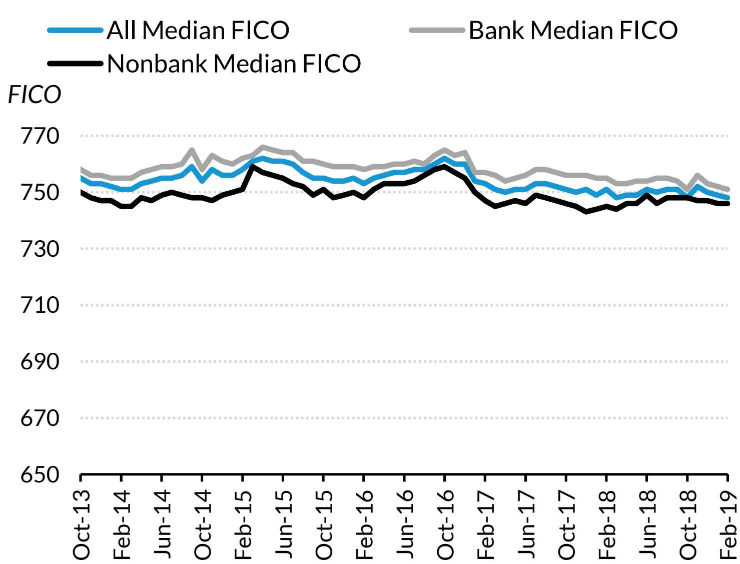
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have declined since 2014 with a further relaxation in FICOs since early 2017. 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



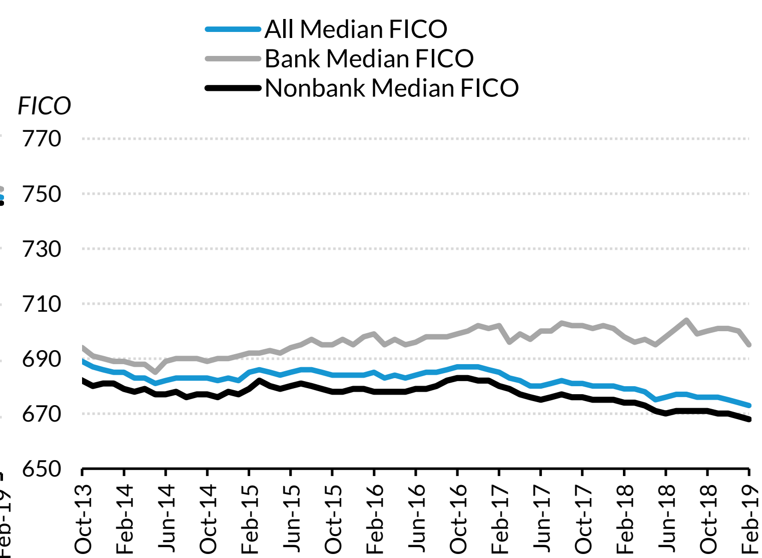
Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2019.*

GSE FICO: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.*
Note: *Data as of February 2019.*

Ginnie Mae FICO: Bank vs. Nonbank

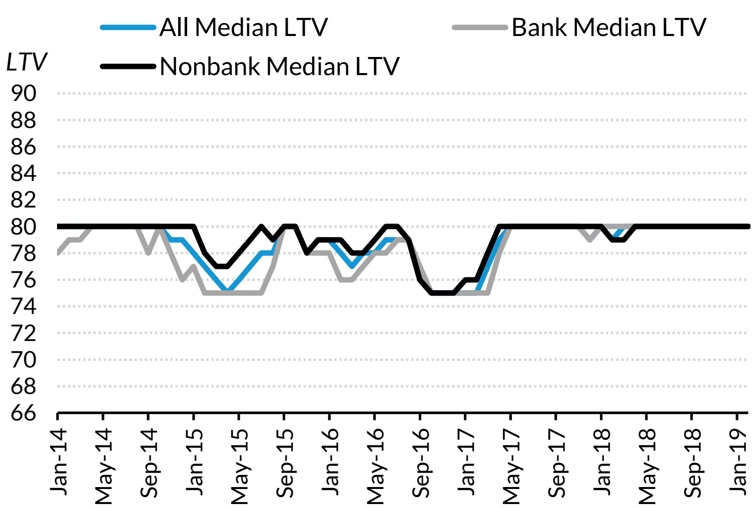


Sources: *eMBS and Urban Institute.*
Note: *Data as of February 2019.*

Nonbank Credit Box

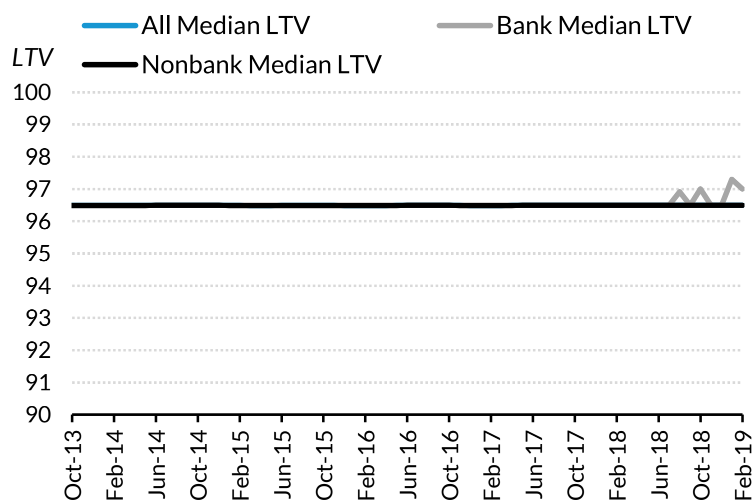
The median LTV ratios for loans originated by nonbanks are similar to that of their bank counterparts, while the median DTIs for nonbank loans are higher, indicating that nonbanks are more accommodating in this dimension as well as in the FICO dimension. Note that since early 2017, there has been a measurable increase in DTIs. This is true for both bank and non-bank originations. Rising DTIs are to be expected amid rising rates and strong house price appreciation.

GSE LTV: Bank vs. Nonbank



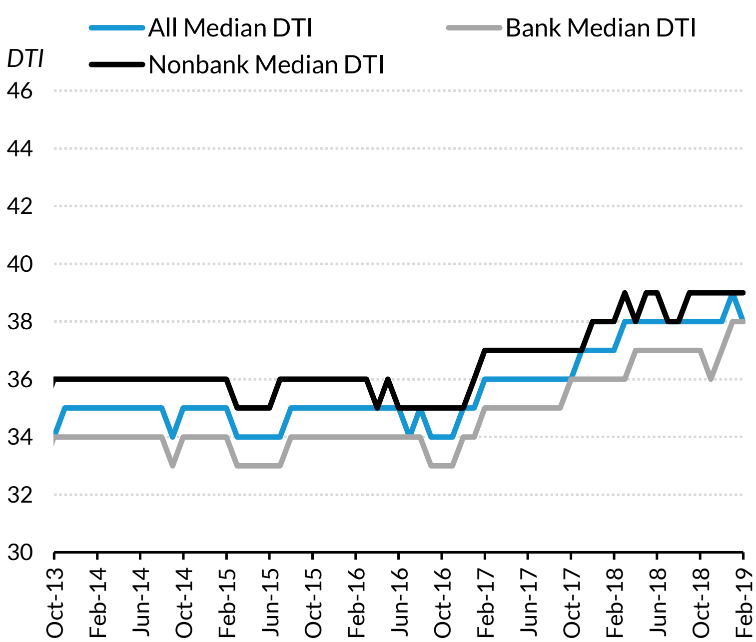
Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2019.*

Ginnie Mae LTV: Bank vs. Nonbank



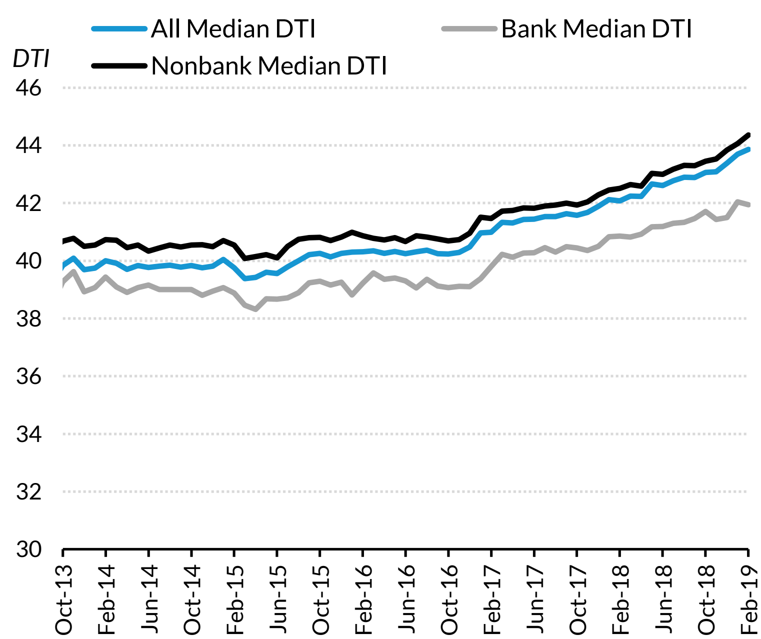
Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2019.*

GSE DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2019.*

Ginnie Mae DTI: Bank vs. Nonbank

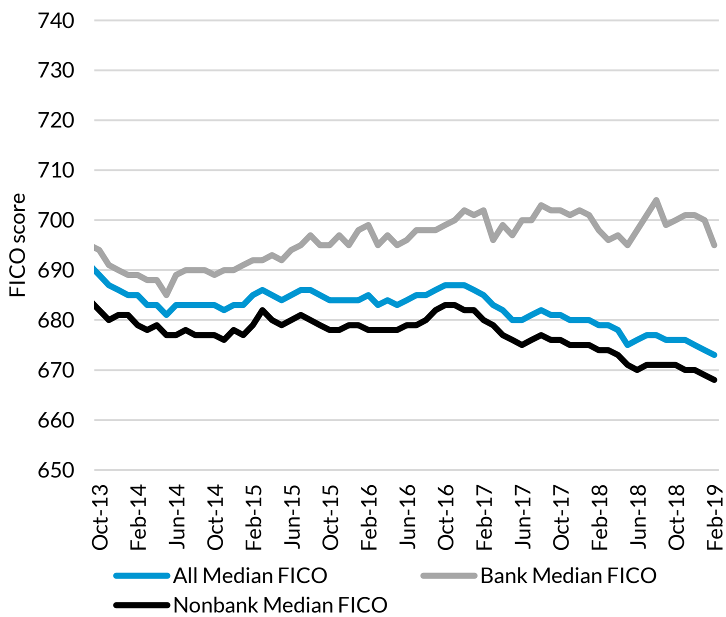


Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2019.*

Ginnie Mae Nonbank Originators: Credit Box

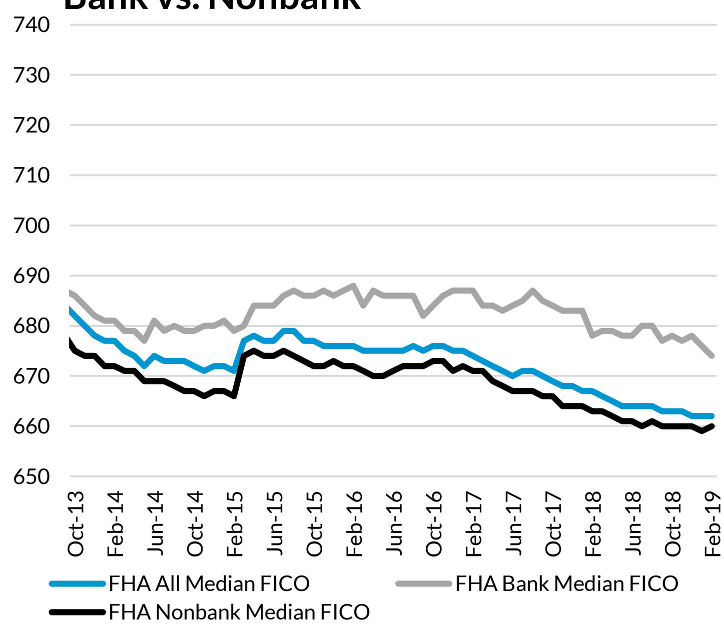
The FICO scores for Ginnie Mae bank and nonbank originators fell in February 2019. The spread in the FICO scores between banks and nonbanks is near the widest level since 2013. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



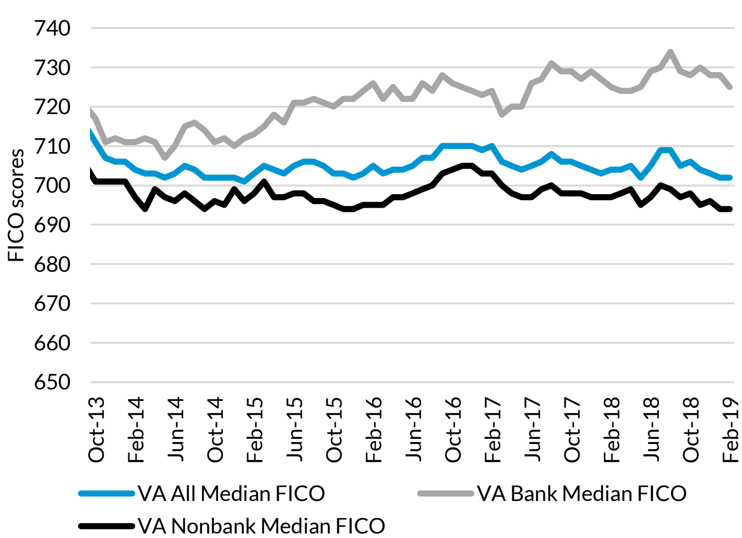
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2019.*

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



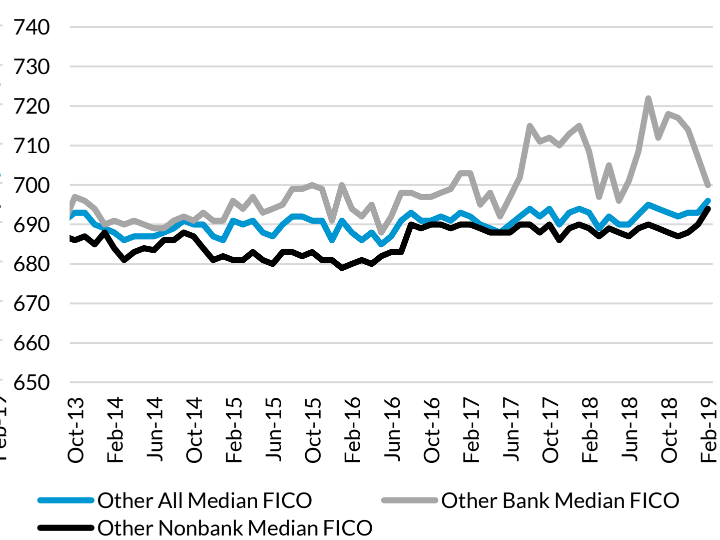
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2019.*

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *Data as of February 2019.*

Ginnie Mae Other FICO Scores: Bank vs. Nonbank

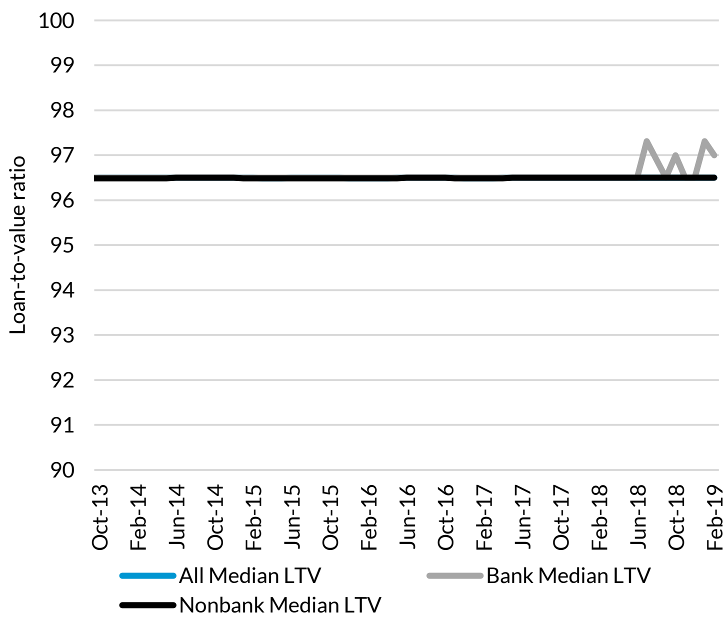


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2019.*

Ginnie Mae Nonbank Originators: Credit Box

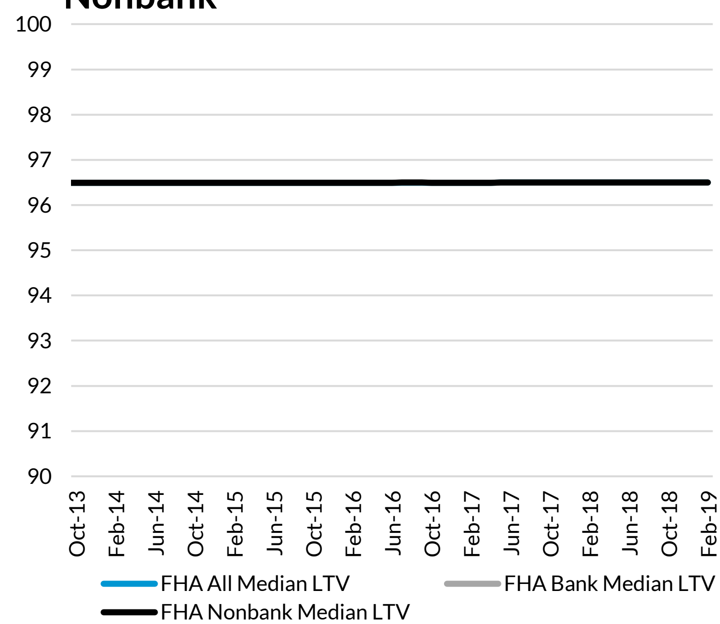
An analysis of the loans backing Ginnie Mae origination indicates that there are virtually no differences in median LTV ratios between bank originated loans and nonbank originated loans.

Ginnie Mae LTV: Bank vs. Nonbank



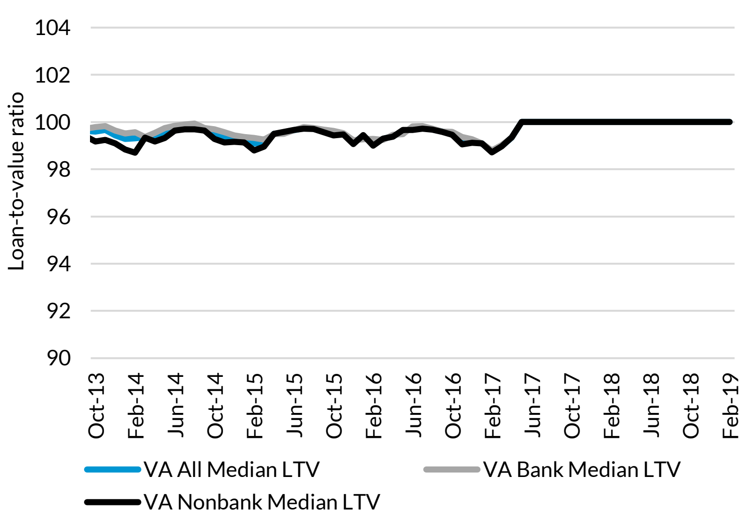
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2019.*

Ginnie Mae FHA LTV: Bank vs. Nonbank



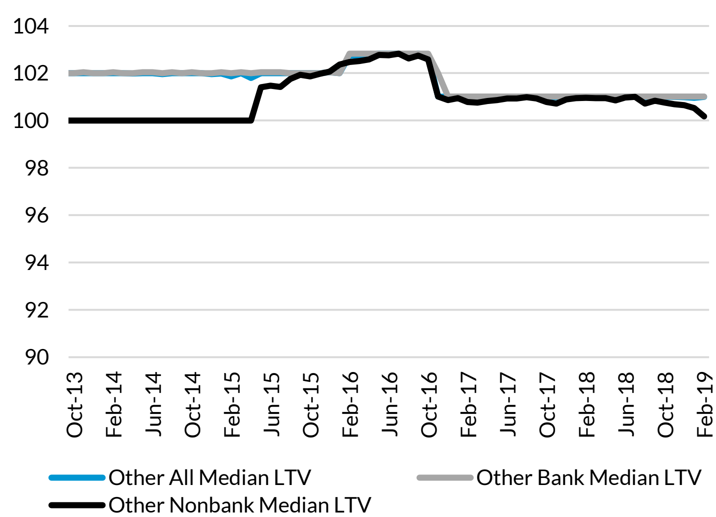
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2019.*

Ginnie Mae VA LTV: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *Data as of February 2019.*

Ginnie Mae Other LTV: Bank vs. Nonbank

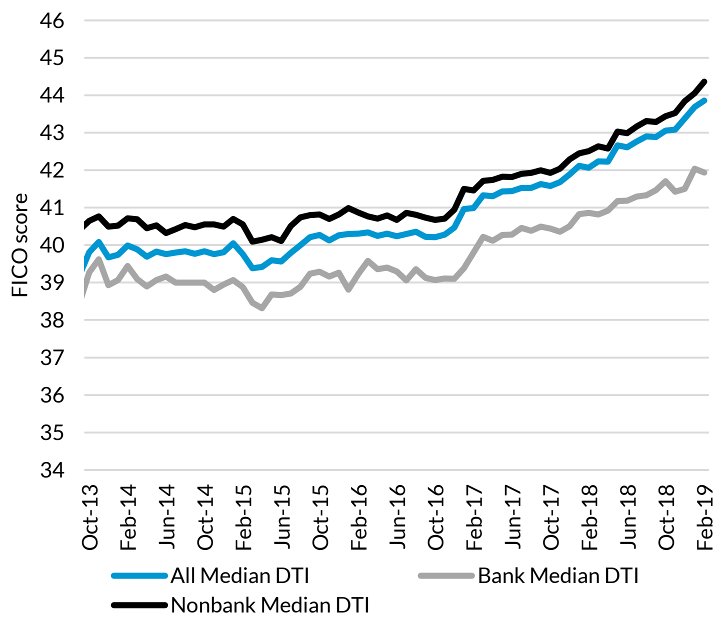


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2019.*

Ginnie Mae Nonbank Originators: Credit Box

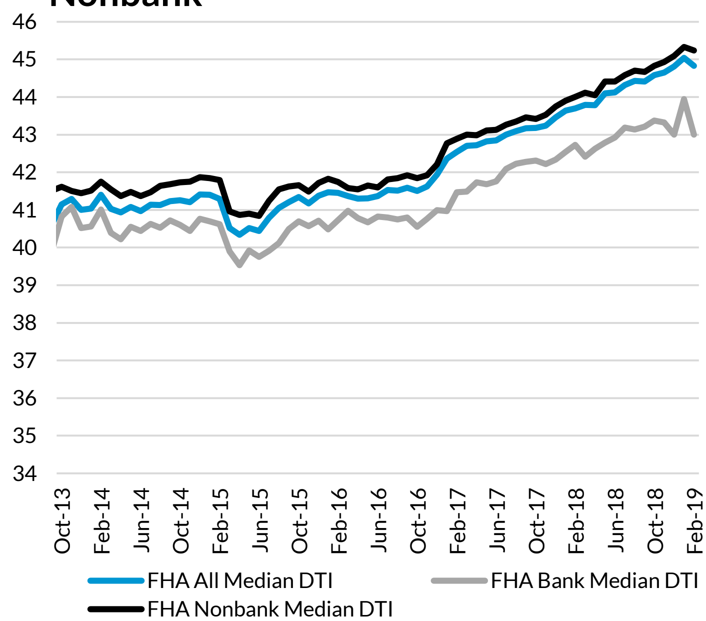
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA loans experienced notable increases since early 2017 for both bank and nonbank originations, while the Other origination DTIs stayed relatively flat. Rising DTIs are expected in a rising rate environment.

Ginnie Mae DTI: Bank vs. Nonbank



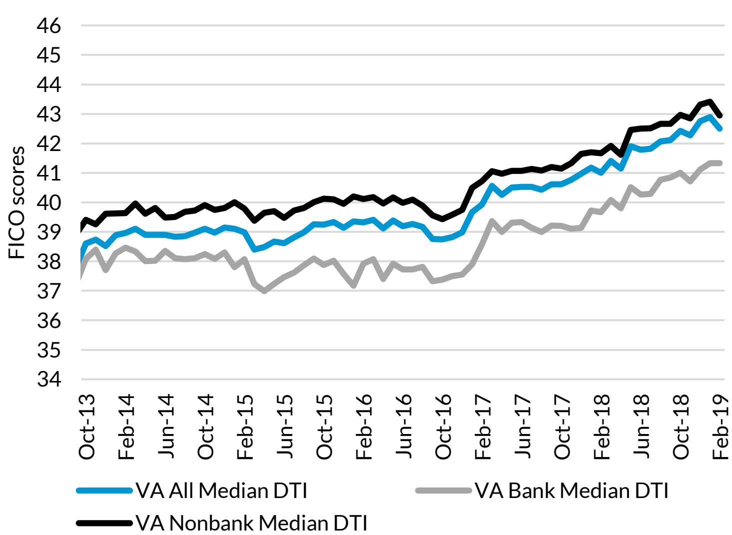
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2019.*

Ginnie Mae FHA DTI: Bank vs. Nonbank



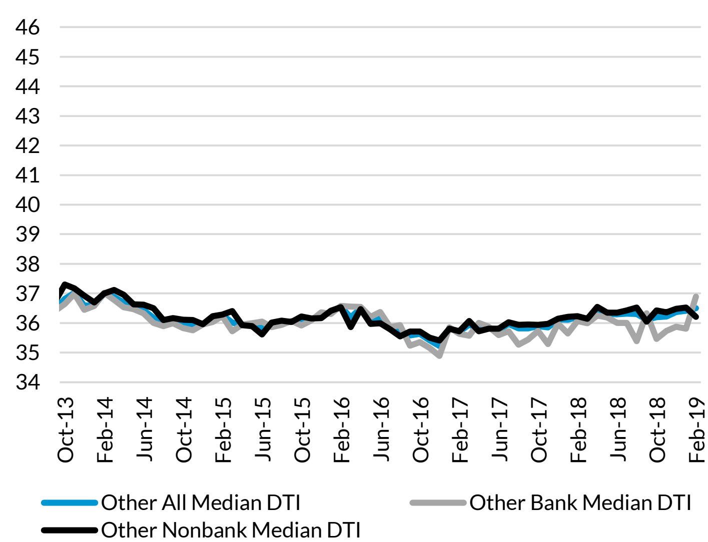
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2019.*

Ginnie Mae VA DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *Data as of February 2019.*

Ginnie Mae Other DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2019.*

Holders of Ginnie Mae MSRs

This table shows 30 largest owners of mortgage servicing rights (MSR) by UPB for Ginnie Mae securitizations. As of February 2019, over half (52.1 percent) of the Ginnie Mae MSRs are owned by the top six firms. The top 30 firms collectively own 84.7 percent. Eighteen of these 30 are non-depositories, the remaining 12 are depository institutions.

Top 30 Holders of Ginnie Mae Mortgage Servicing Rights (MSRs), by UPB

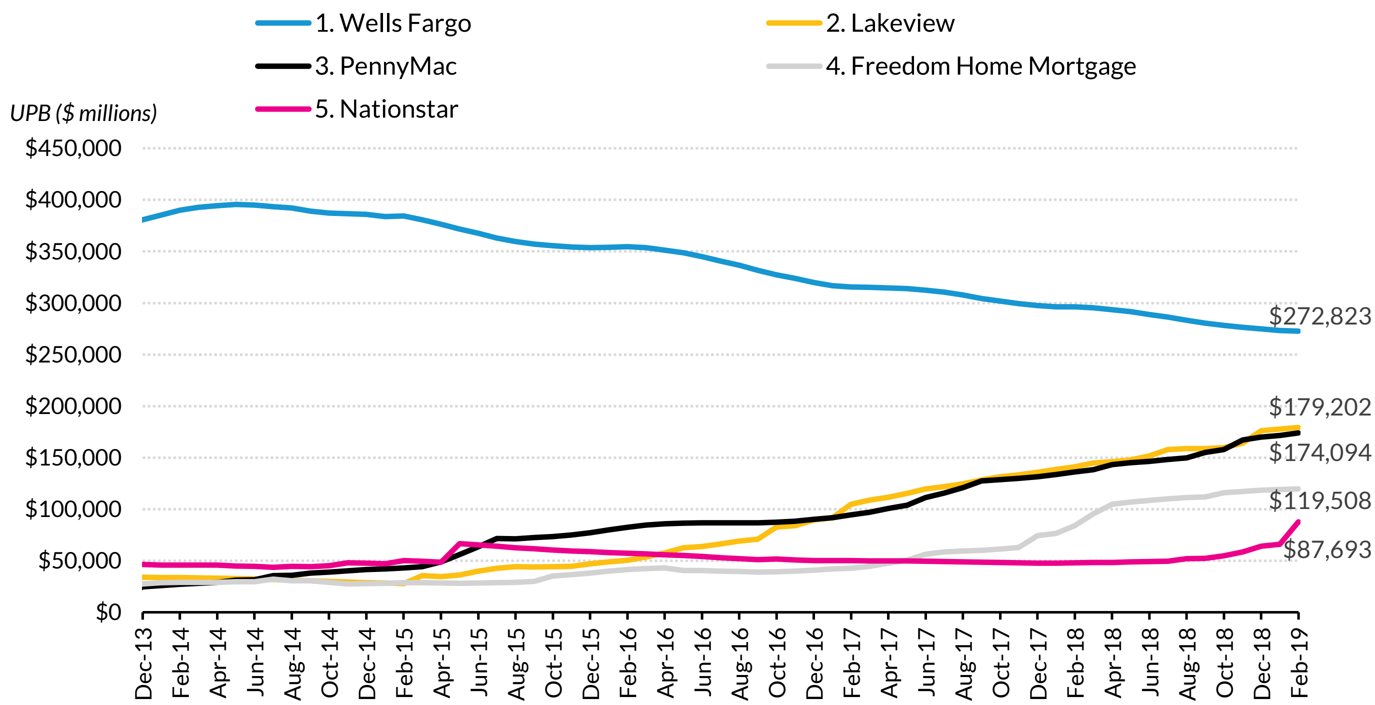
Rank	MSR Holder	UPB ($ millions)	Share	Cumulative Share
1	Wells Fargo	$272,823	15.8%	15.8%
2	Lakeview	$179,202	10.4%	26.2%
3	PennyMac	$174,094	10.1%	36.3%
4	Freedom Home Mortgage	$119,508	6.9%	43.2%
5	Nationstar	$87,693	5.1%	48.3%
6	Quicken Loans	$65,007	3.8%	52.1%
7	US Bank	$60,755	3.5%	55.6%
8	JPMorgan Chase	$56,136	3.3%	58.8%
9	Caliber Home Loans	$45,323	2.6%	61.5%
10	Carrington Home Mortgage	$43,613	2.5%	64.0%
11	USAA Federal Savings Bank	$37,176	2.2%	66.1%
12	NewRez	$28,507	1.7%	67.8%
13	Navy Federal Credit Union	$24,214	1.4%	69.2%
14	Midfirst Bank	$24,089	1.4%	70.6%
15	The Money Source	$21,422	1.2%	71.8%
16	Amerihome Mortgage	$20,337	1.2%	73.0%
17	Ditech Financial	$18,378	1.1%	74.1%
18	Suntrust	$18,346	1.1%	75.1%
19	Loan Depot	$17,080	1.0%	76.1%
20	Home Point Financial	$16,876	1.0%	77.1%
21	Branch Banking and Trust	$16,200	0.9%	78.0%
22	Guild Mortgage	$15,700	0.9%	78.9%
23	Pingora	$14,974	0.9%	79.8%
24	Ocwen	$13,346	0.8%	80.6%
25	Roundpoint	$13,208	0.8%	81.4%
26	Flagstar Bank	$12,537	0.7%	82.1%
27	Bank of America	$12,464	0.7%	82.8%
28	Citizens Bank	$11,562	0.7%	83.5%
29	PNC	$11,131	0.6%	84.1%
30	Planet Home Lending	$9,706	0.6%	84.7%

Sources: *eMBS and Urban Institute*. **Note:** *Data as of February 2019.*

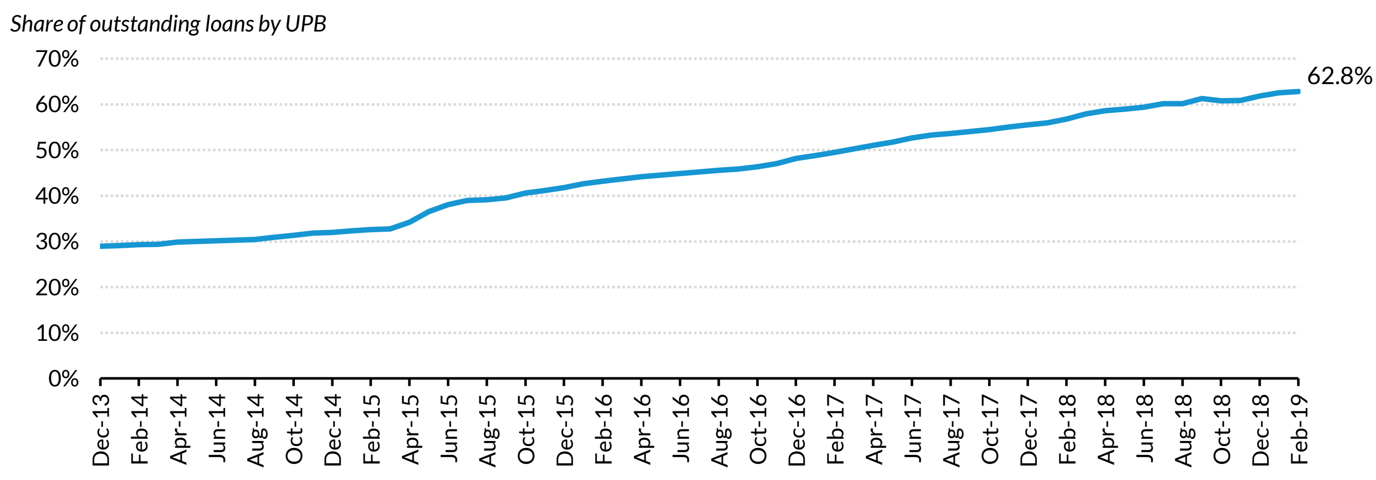
Holders of Ginnie Mae MSRs

The composition of the largest owners of Ginnie Mae MSR has evolved quite a bit over time. In December 2013, Wells Fargo and JP Morgan Chase were the two largest owners of Ginnie Mae MSRs, holding $375 billion and $139 billion in servicing UPB respectively. Although Wells Fargo is still the largest player, its portfolio has shrunk to $273 billion. Lakeview, PennyMac, Freedom Home Mortgage, and Nationstar (all nonbanks) make up the remainder of the top five largest holders of MSRs, owning $179 billion, $174 billion, $120 billion, and $87 billion respectively as of January 2019. JPMorgan Chase is no longer in the top five. As of February 2019, nonbanks collectively owned servicing rights for 62.8 percent of all outstanding unpaid principal balance guaranteed by Ginnie Mae. In December 2013, the nonbank share was much smaller at 27.7 percent.

Top 5 MSR Holders: Outstanding Ginnie Mae Loans by UPB



Share of Ginnie Mae MSRs held by Nonbanks



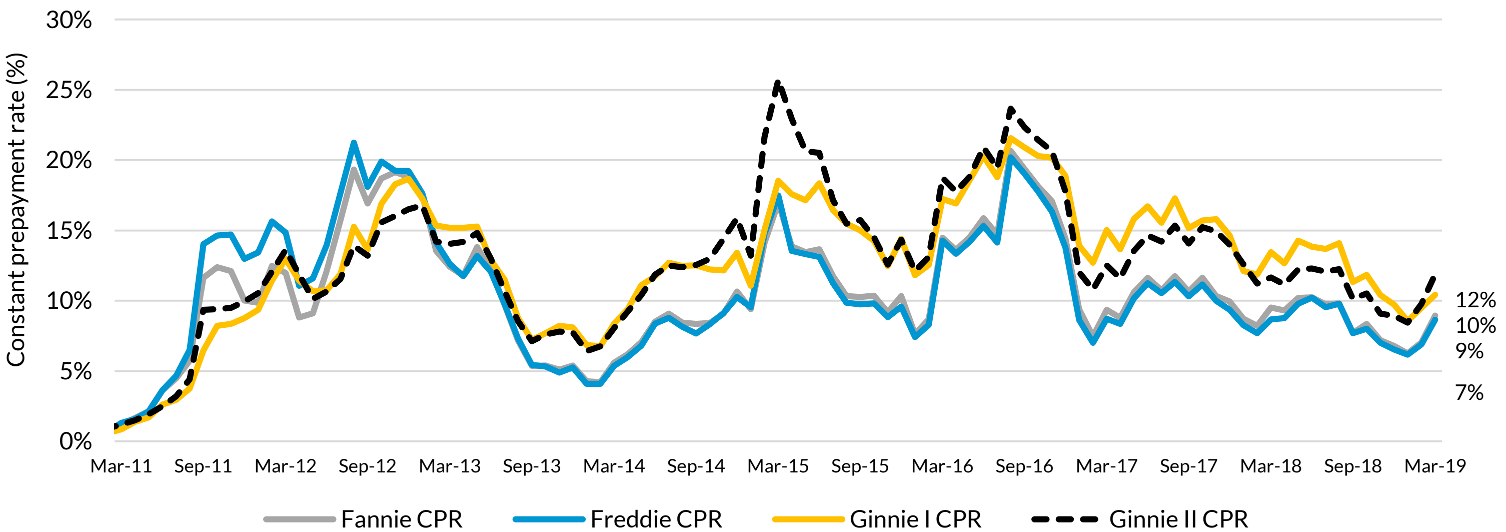
Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2019.*

Prepayments

Prepayments on Ginnie Mae securities were lower than on GSE securities from 2011 through early-2013, but have been higher since. These increased Ginnie speeds reflect the growing share of VA loans, which tend to prepay faster than either FHA or GSE loans. In addition, FHA puts fewer restrictions on streamlined refinances, and unlike GSE streamline refinances, requires no credit report and no appraisal. Some of the upfront mortgage insurance premium can also be applied to the refinanced loan. Moreover, both FHA and VA permit refinancing of existing mortgages after 6 months, while the GSEs do not allow refinancing for a year.

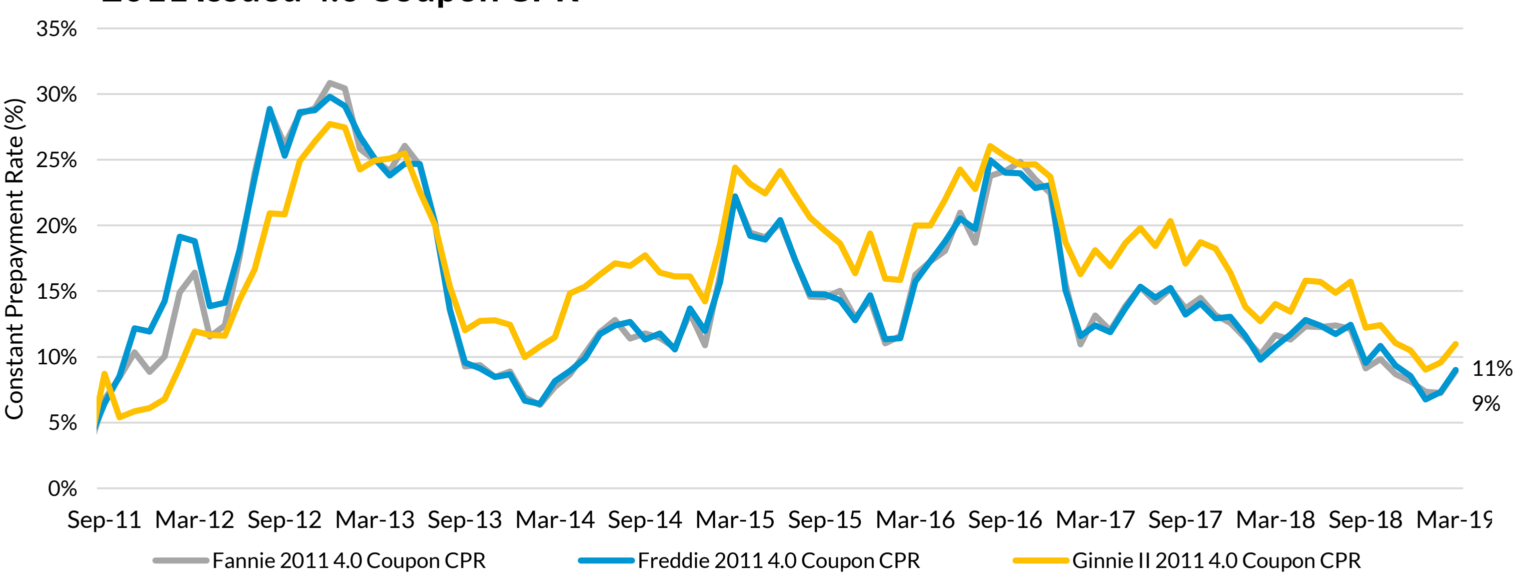
With the increase in interest rates since November 2016, the prepayment speeds for all agencies have slowed down considerably. Over the past 18 months, with the bulk of the mortgage universe finding it non-economical to refinance, the small month to month variation in speeds reflects seasonality, changes in day count and changes in rates. With the recent drop in interest rates, we should see some pick up in prepayment activity, as was apparent this month, but expect it to remain muted as long as mortgage rates remain above 4 percent.

Aggregate Prepayments



Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2019.*

2011 Issued 4.0 Coupon CPR



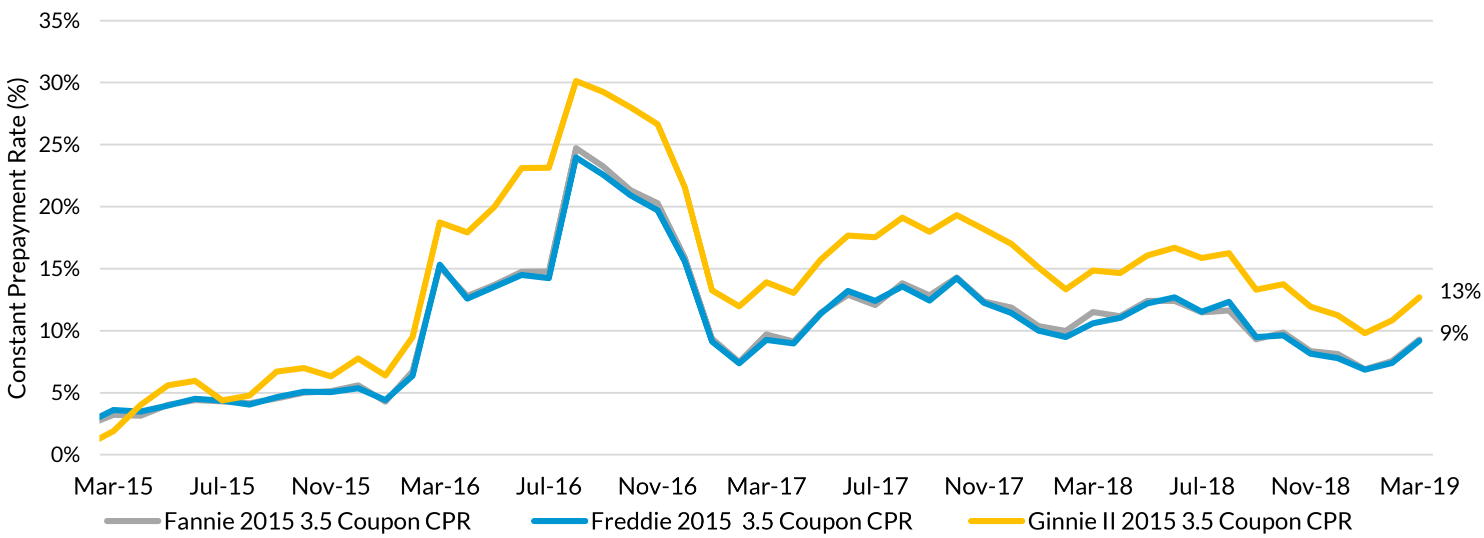
Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2019.*

Prepayments

The 2015 Ginnie II 3.5s and the 2016 Ginnie II 3.0s, the largest coupon cohorts of those vintage years, have prepaid consistently faster than their conventional counterparts. 2015 and 2016 originations are more heavily VA loans than the 2011 origination shown on the preceding page. VA loans prepay faster than either FHA or GSE loans. The FHA streamlined programs are likely another contributor to the faster speeds.

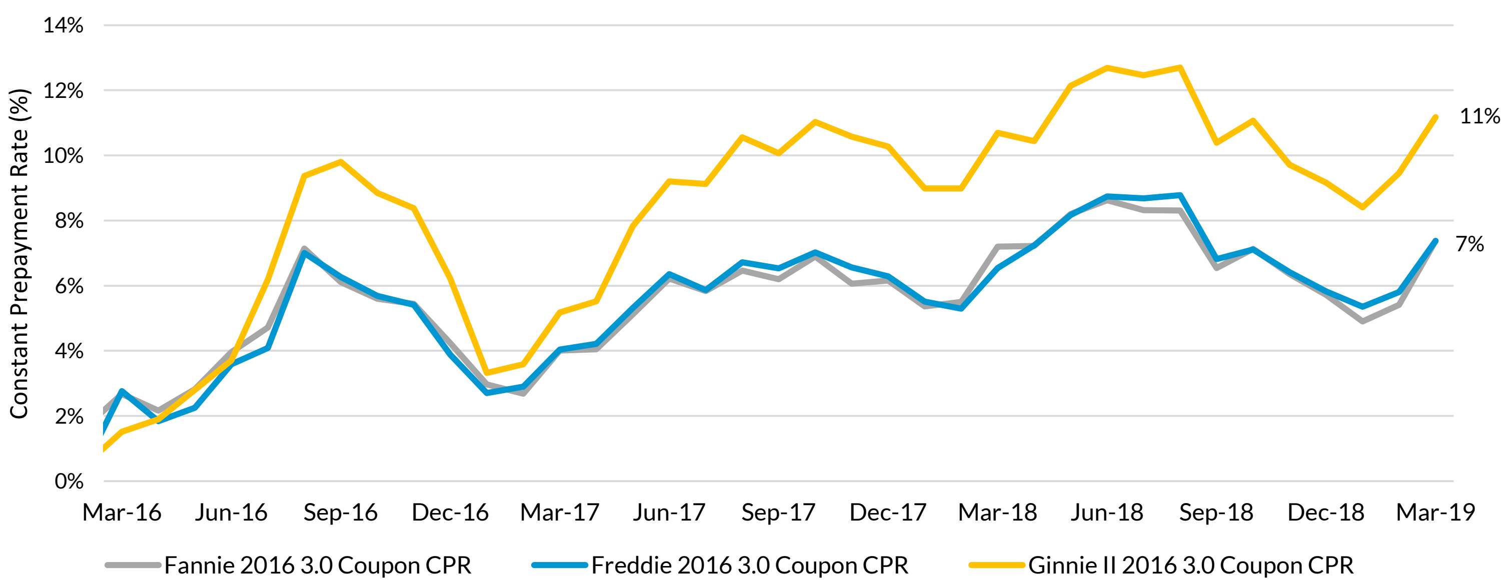
After a sharp mortgage rate increase in November 2016, the prepayment speeds of Ginnie Mae and conventional loans both fell dramatically. Over the past year, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflect seasonality, changes in day count and changes in mortgage interest rates. With mortgage rates above 4 percent, we expect prepayments to stay low relative to recent past.

2015 Issued 3.5 Coupon CPR



Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2019.*

2016 Issued 3.0 Coupon CPR

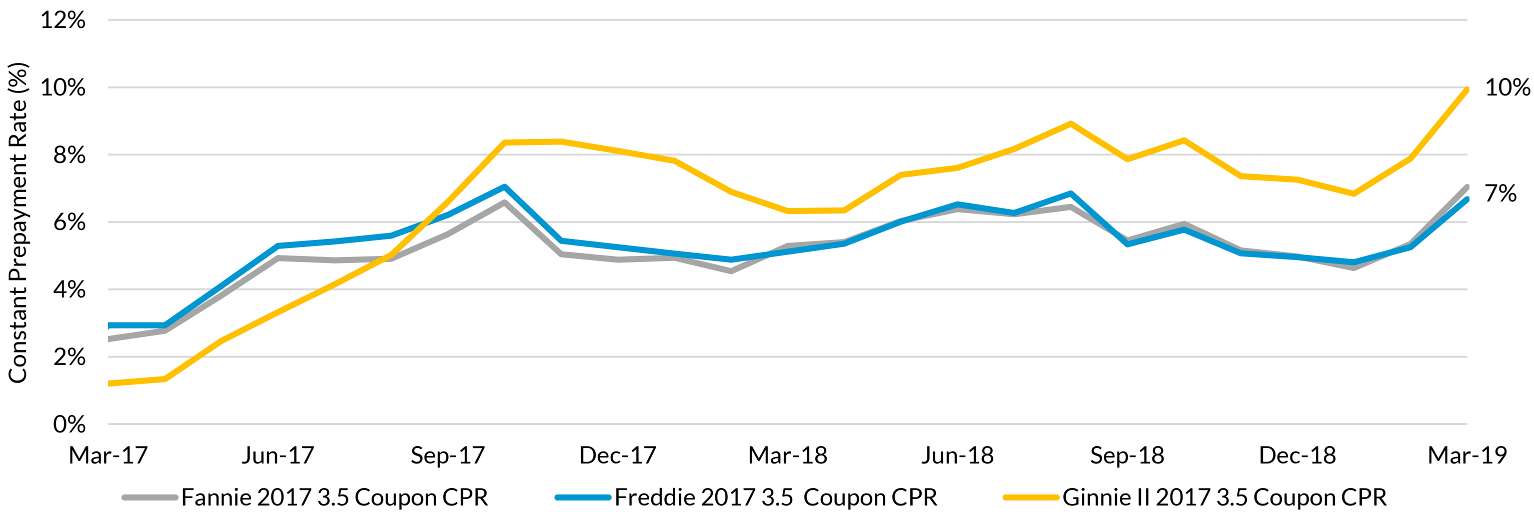


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2019.*

Prepayments

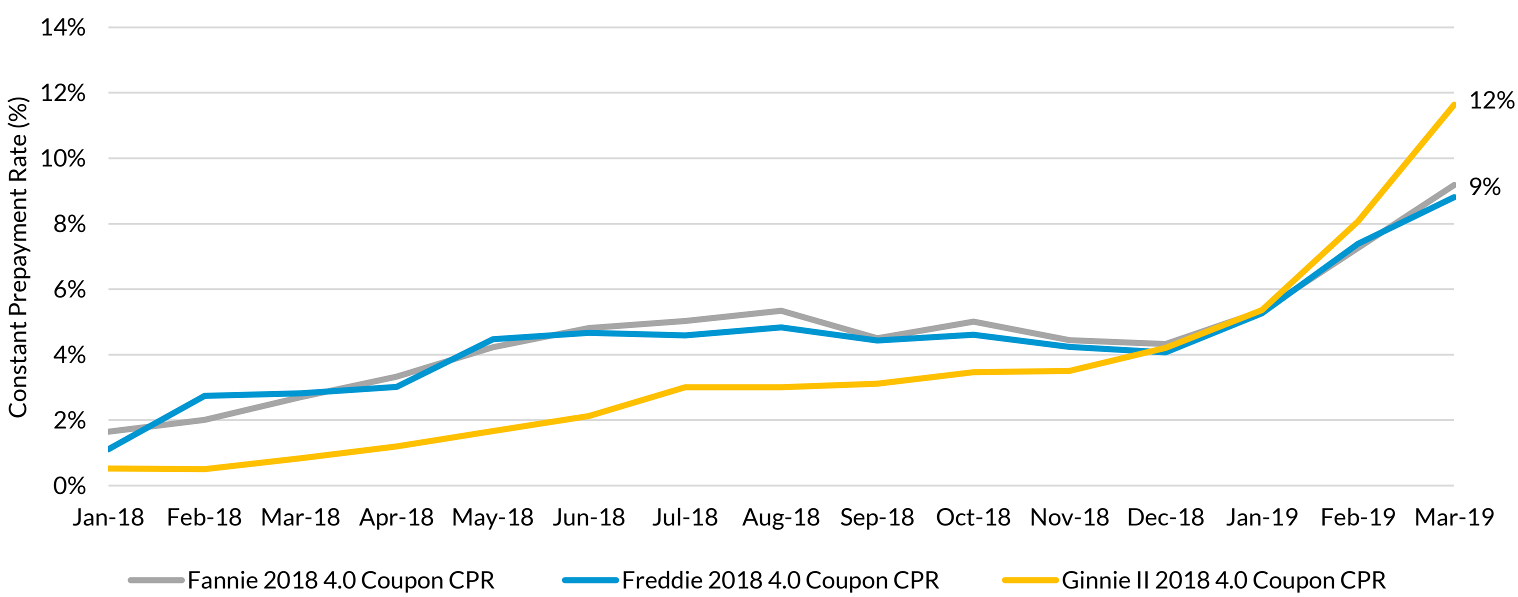
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayments in the early months. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of those vintage years. Despite slower seasoning, 2017 Ginnie II 3.5s have been prepaying faster than their conventional counterparts since late 2017, due primarily to fast VA prepayment speeds. In comparison, the 2018 Ginnie II 4.0s have, for the most part, prepaid slower than their conventional counterparts. Speeds picked up for all 2018 4.0s towards the end of 2018 through March 2019, likely driven by falling mortgage rates since November.

2017 Issued 3.5 Coupon CPR



Sources: *Credit Suisse and Urban Institute.* **Note:** *Data as of March 2019.*

2018 Issued 4.0 Coupon CPR

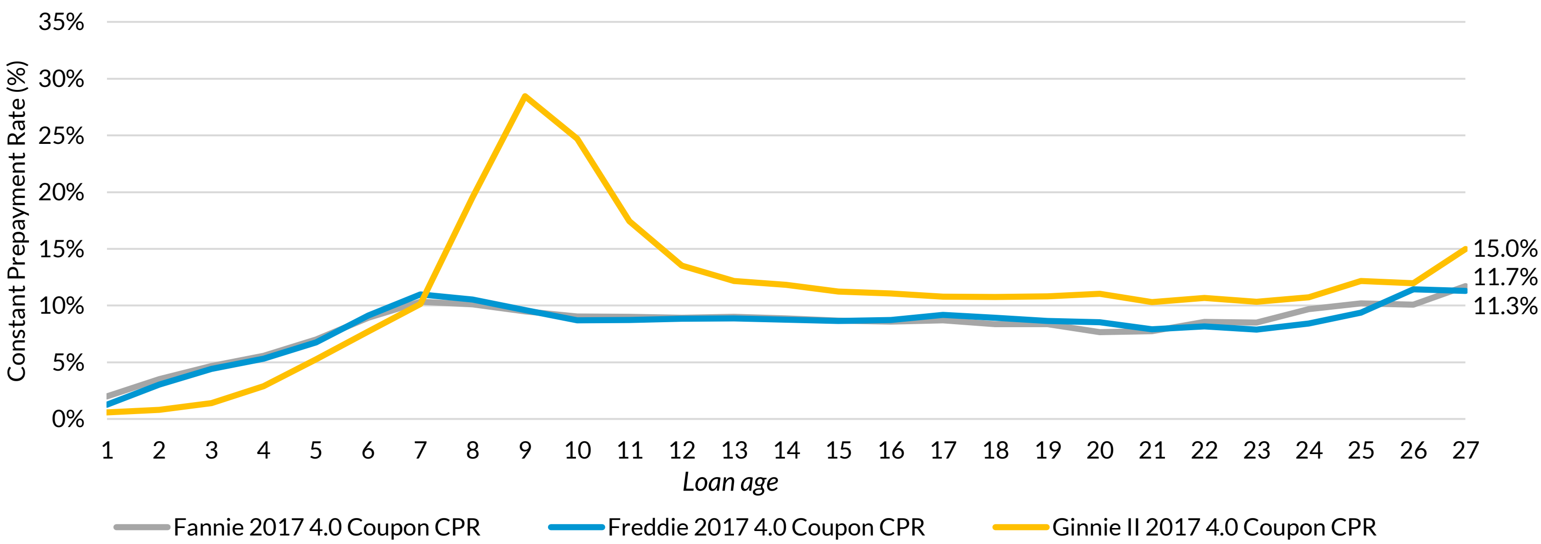


Sources: *Credit Suisse and Urban Institute.* **Note:** *Data as of March 2019.*

Prepayments

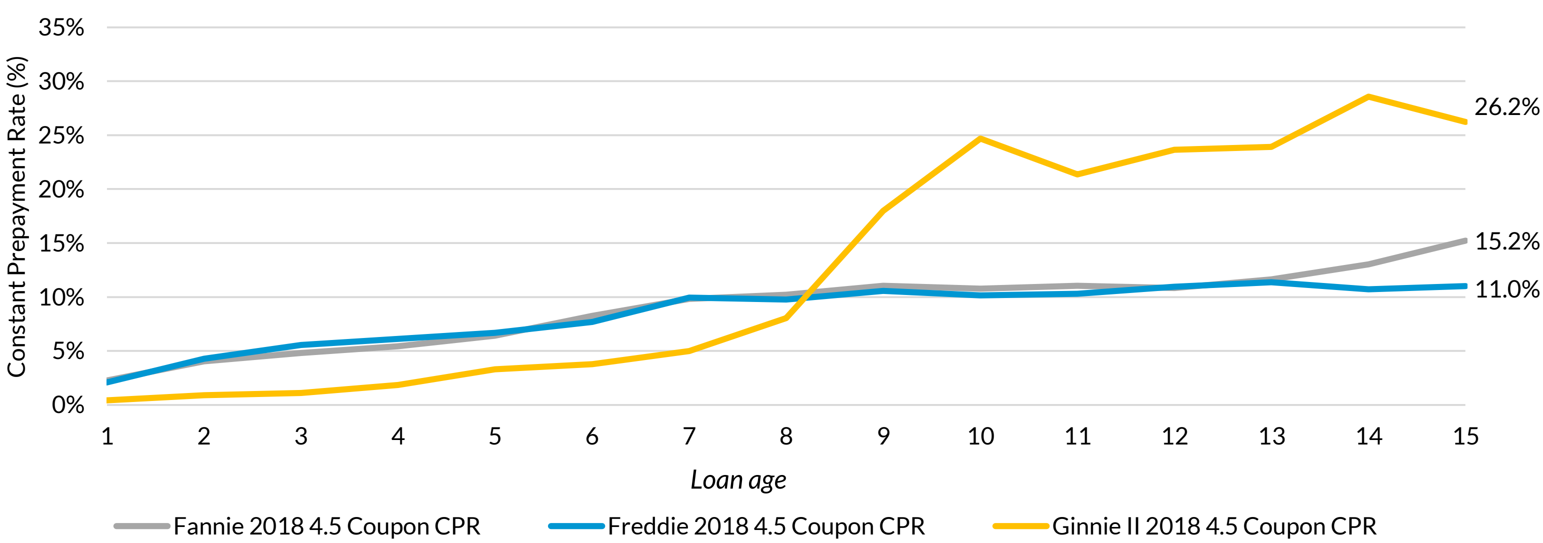
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined Refi program (IRRRL). The 2018 Ginnie II 4.5s do not show increased speeds until the 9-10 month point; reflecting both the effect of lower rates and the actions taken by both Ginnie Mae and the VA in H1 2018 to curb this abuse. Ginnie Mae actions have included suspending a few servicers whose VA prepayment speeds are especially high from selling VA loans into Ginnie Mae II securities, as well as rewriting the pooling requirements so that if loans that do not meet the seasoning requirement are refinanced, the new loan is ineligible for securitization. In addition, VA has implemented a net tangible benefit test, requiring the lender to show the borrower has obtained a benefit from the refinance.

2017 Issued 4.0 Coupon CPR, by Loan Age



Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2019.*

2018 Issued 4.5 Coupon CPR, by Loan Age

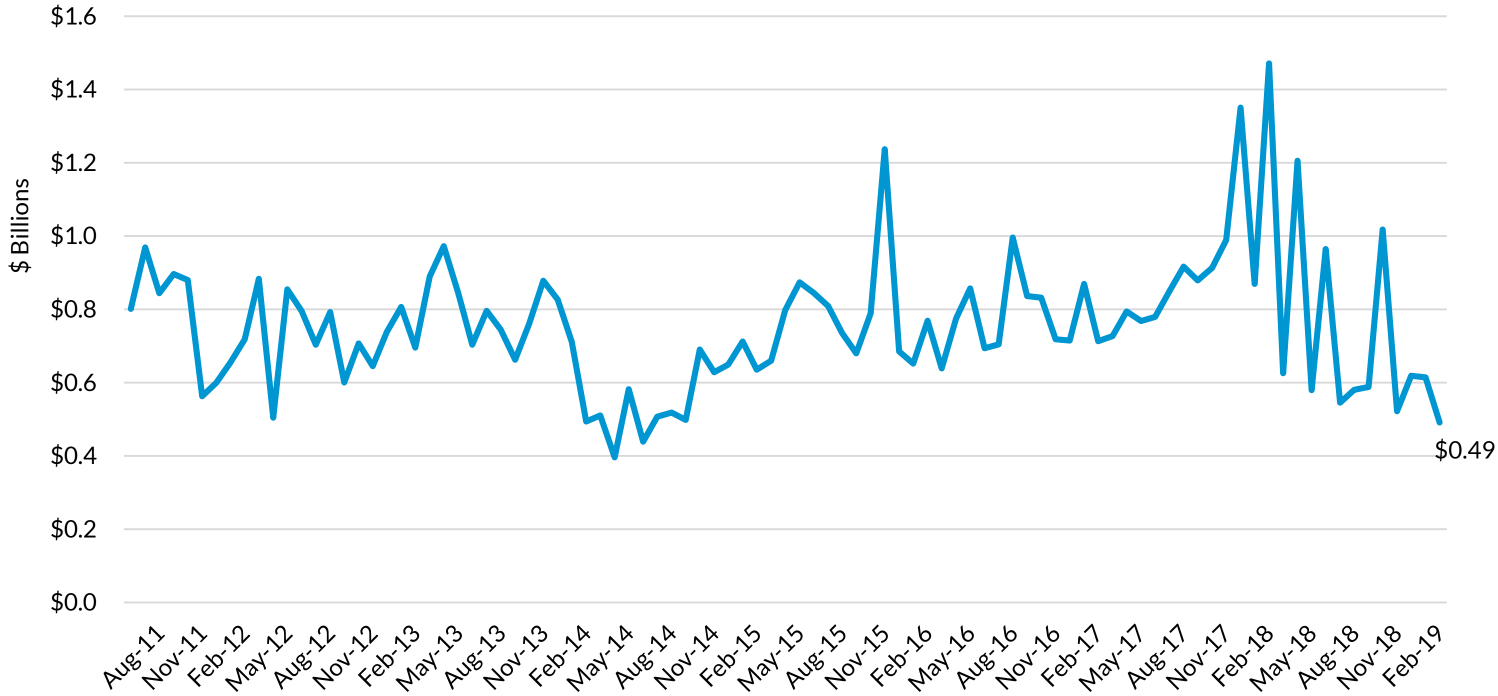


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2019.*

Other Ginnie Mae Programs Reverse Mortgage Volumes

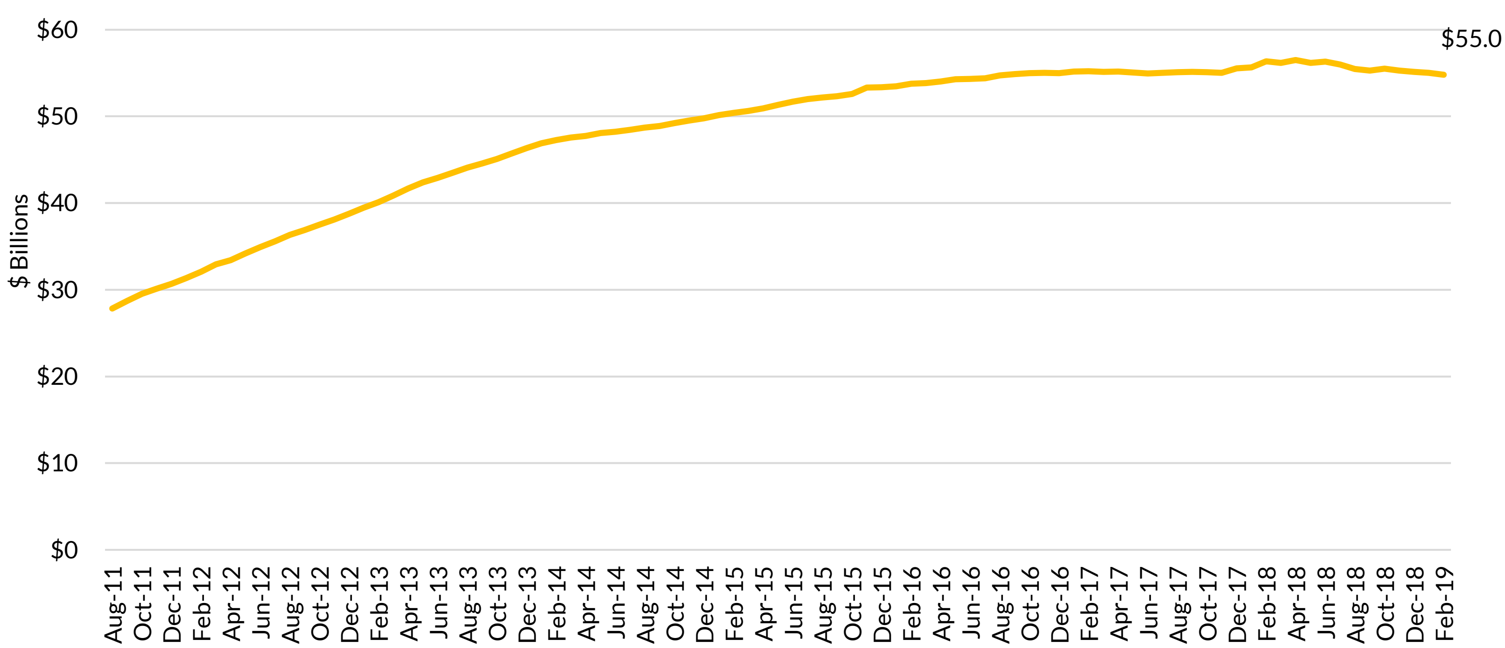
Ginnie Mae reverse mortgage issuance has been volatile in recent months. The February 2019 volume decreased to $0.49 billion, near the lower end of the range in recent years. Issuance has been declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In February 2019, outstanding reverse mortgage securities totaled $55.0 billion.

HMBS Issuance Volume



Sources: *Ginnie Mae and Urban Institute.* ***Note:*** *Data as of February 2019.*

HMBS Outstanding

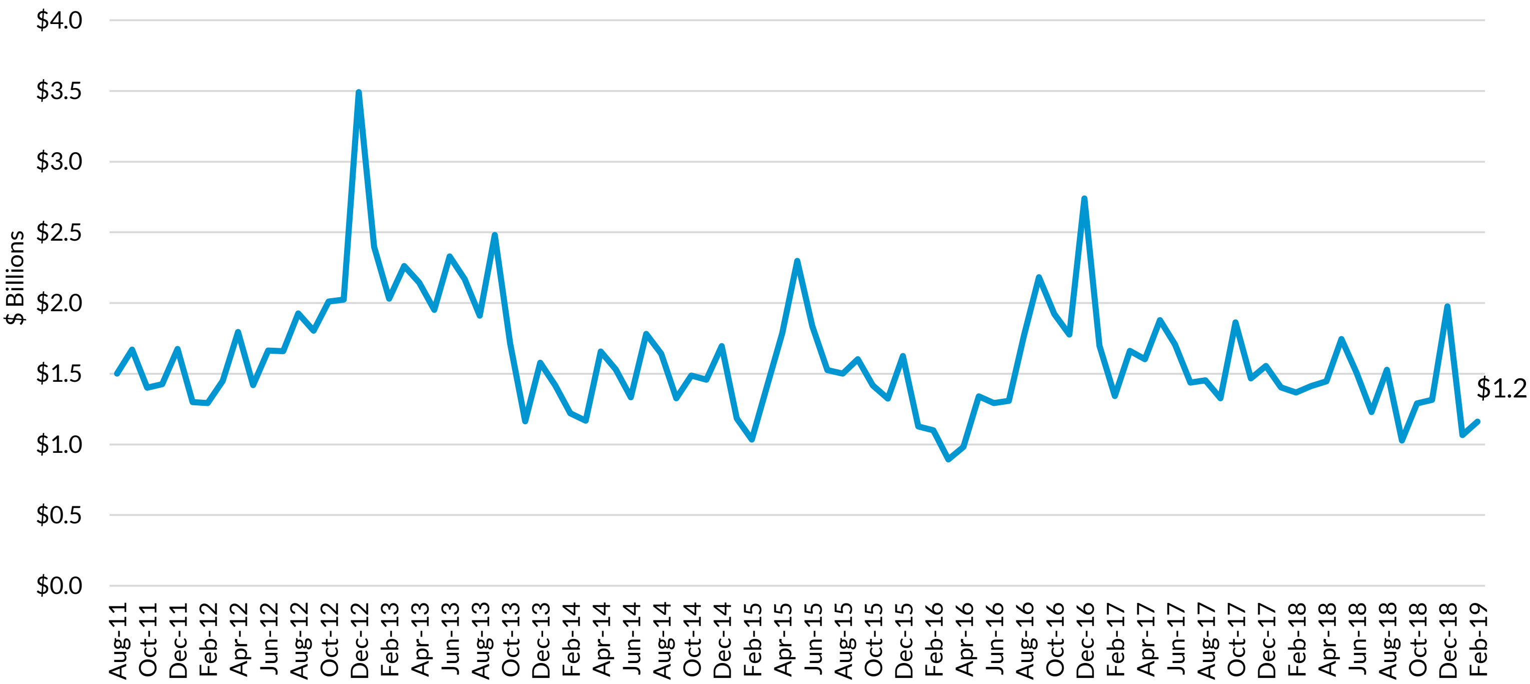


Sources: *Ginnie Mae and Urban Institute.* ***Note:*** *Data as of February 2019.*

Other Ginnie Mae Programs
Multifamily Market

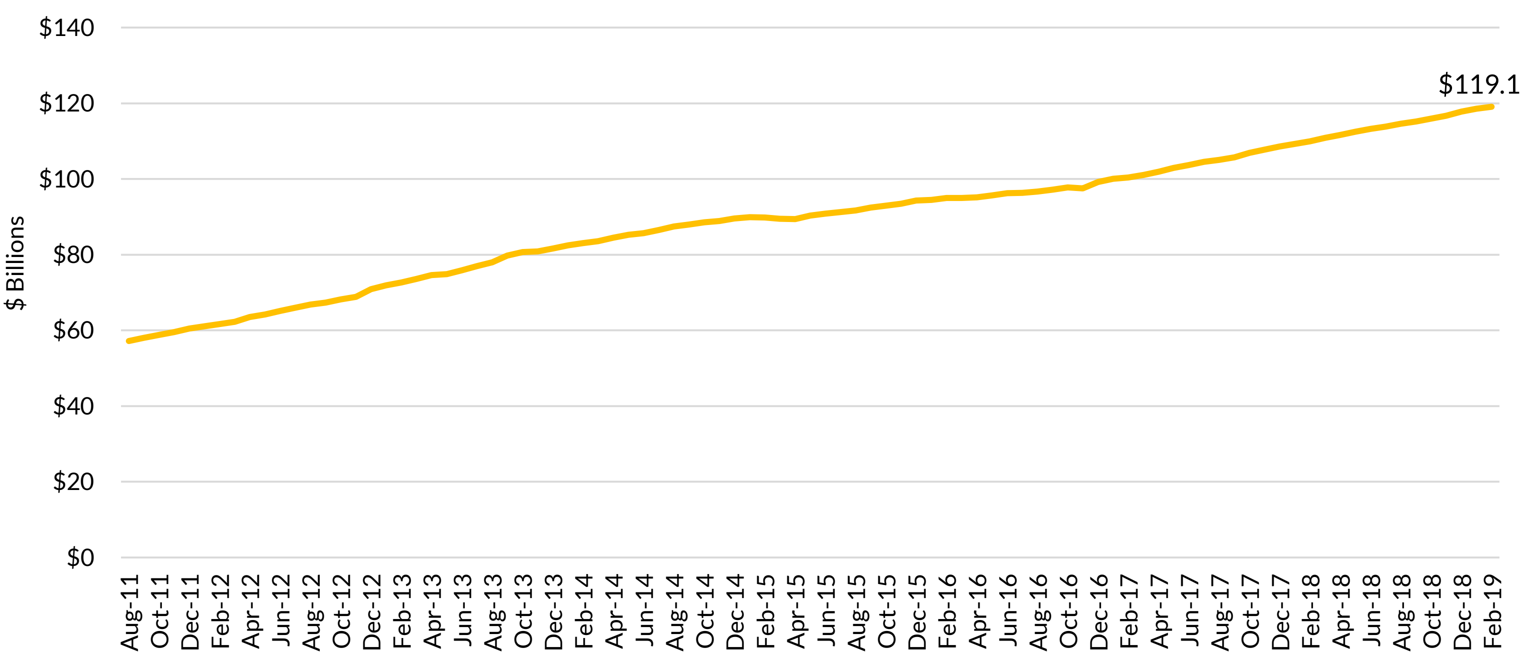
Ginnie Mae multifamily issuance volume in February 2019 totaled $1.2 billion, below average issuance levels over the past 18 months. Outstanding multifamily securities totaled $119.1 billion in February.

Ginnie Mae Multifamily MBS Issuance



Sources: *Ginnie Mae and Urban Institute.* **Note**: *Data as of February 2019.*

Ginnie Mae Multifamily MBS Outstanding

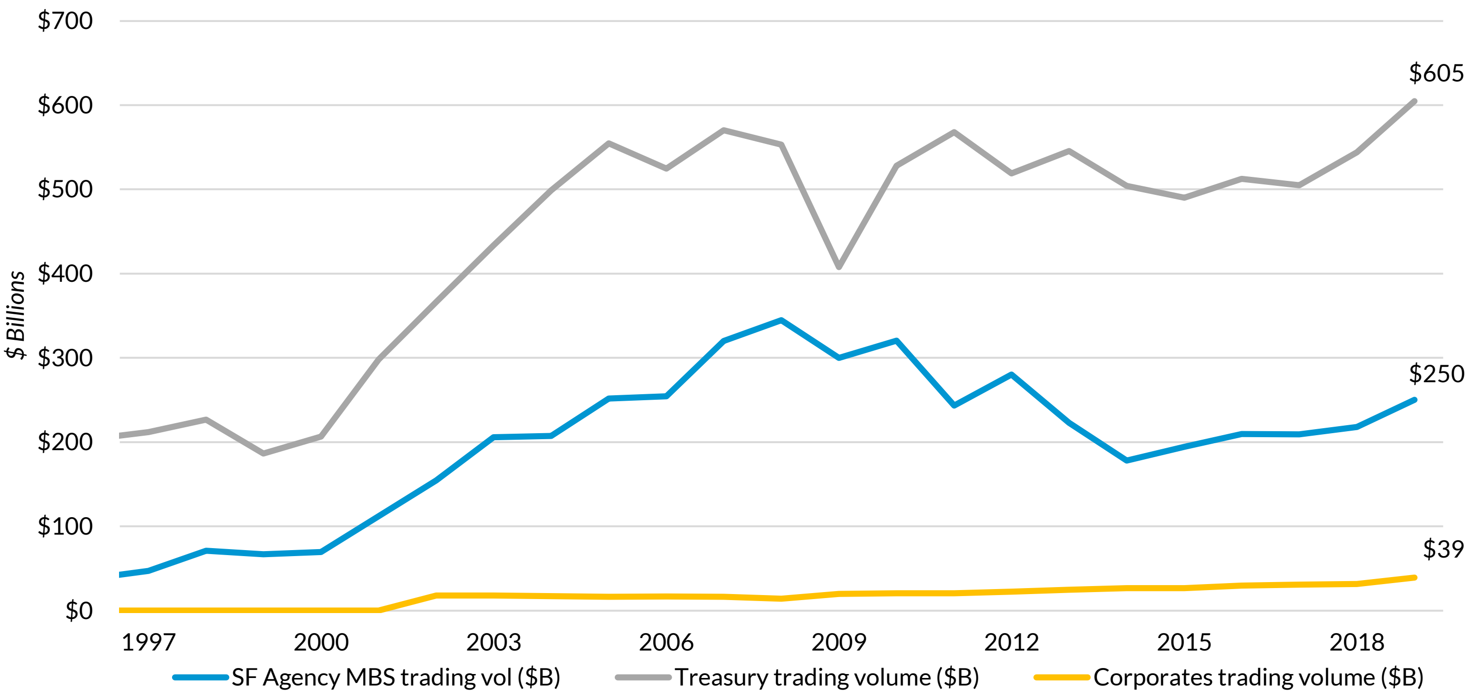


Sources: *Ginnie Mae and Urban Institute.* **Note**: *Data as of February 2019.*

Market Conditions

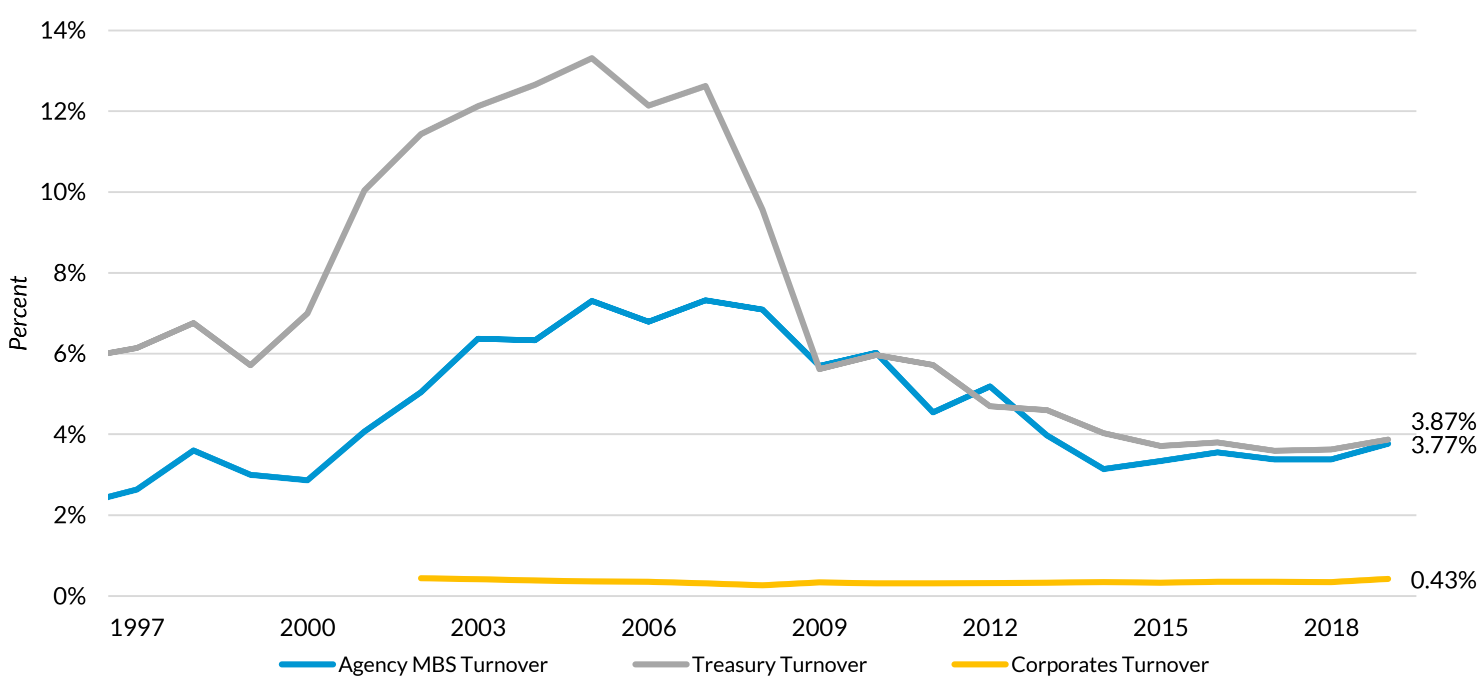
Agency MBS trading volume was $250 billion/day on average 2019 YTD, more robust than in the 2014-2018 period. Agency MBS turnover in 2019 YTD also has been slightly higher than the 2014-2018 period; in the first two months of 2019, average daily MBS turnover was 3.77 percent, above the 2018 average of 3.39 percent. Both average daily mortgage and Treasury turnover are down from their pre-crisis peaks. Corporate turnover is miniscule relative to either Agency MBS or Treasury turnover.

Average Daily Fixed Income Trading Volume by Sector



Sources: *SIFMA and Urban Institute.* ***Note:*** *Data as of March 2019.*

Average Daily Turnover by Sector

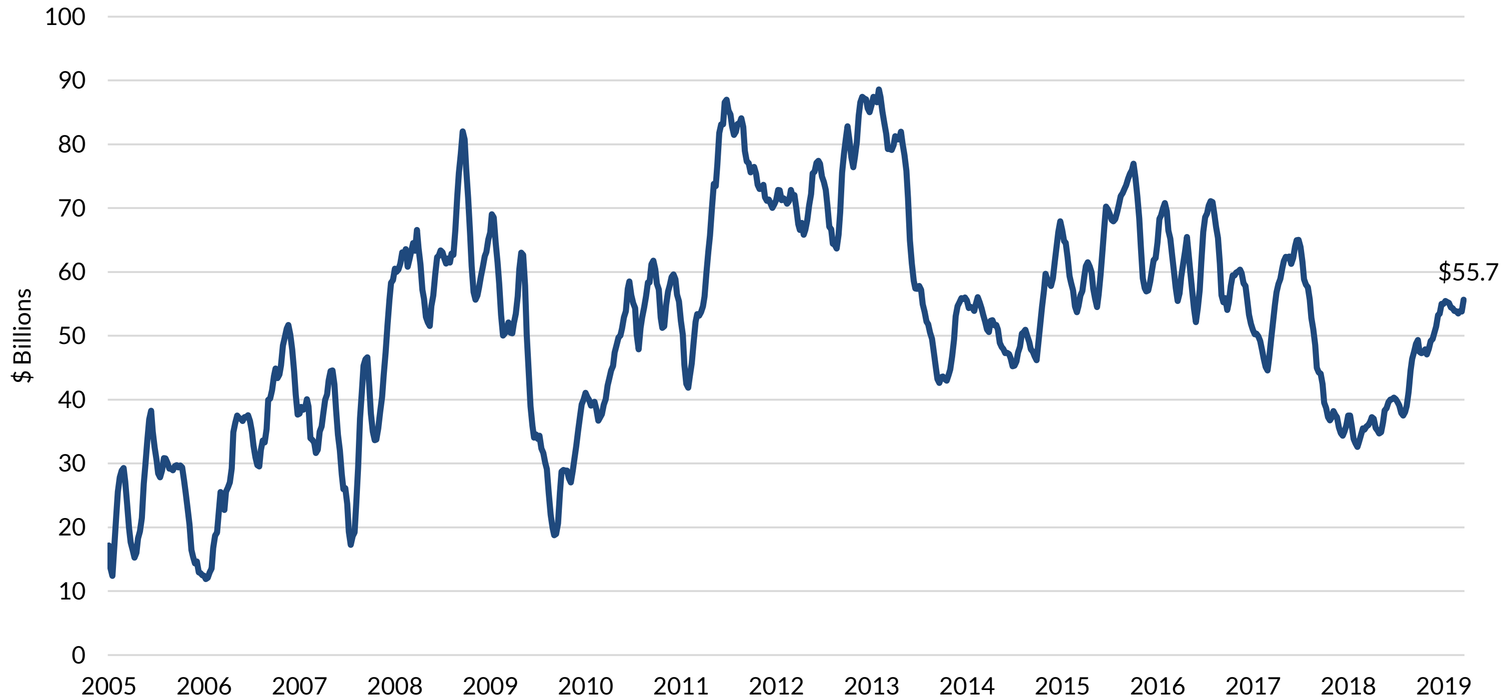


Sources: *SIFMA and Urban Institute.* ***Note:*** *Data as of March 2019.*

Market Conditions

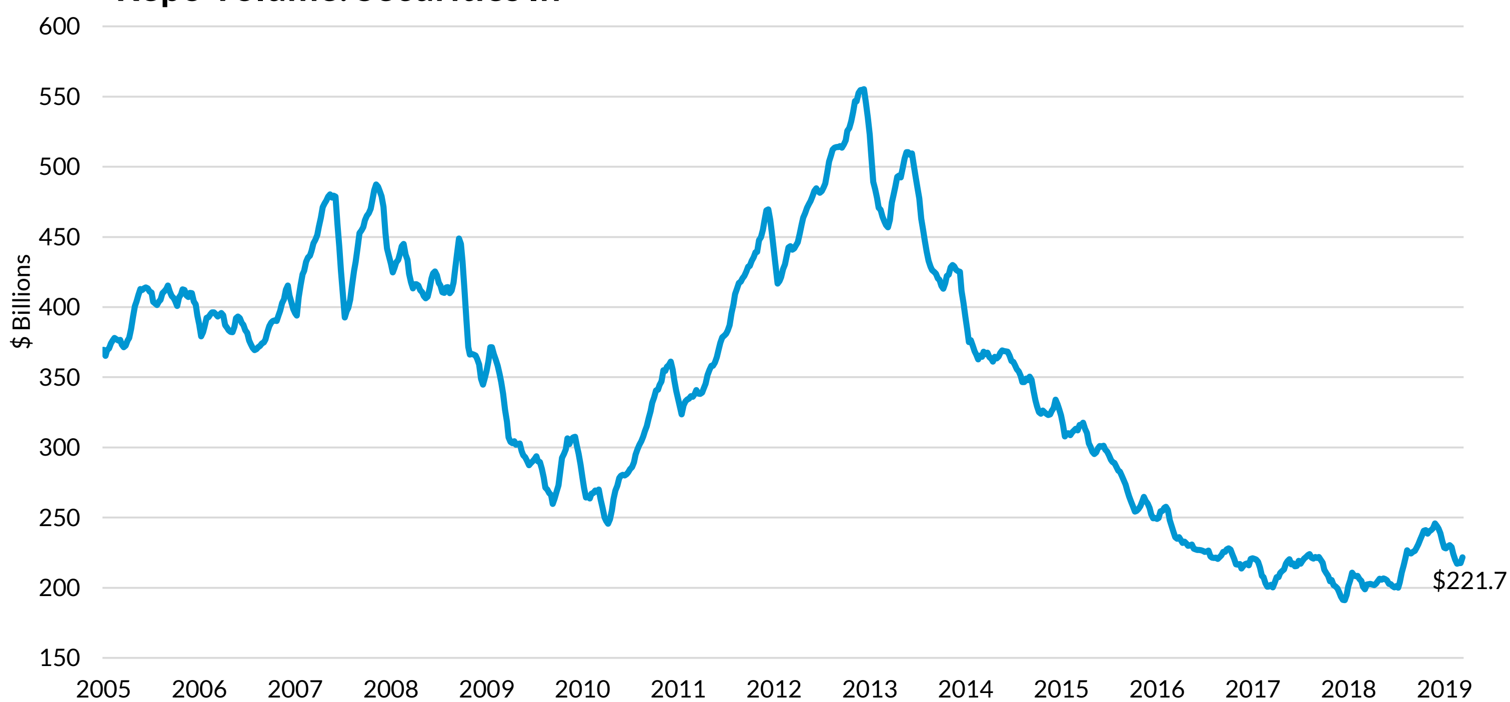
Dealer net positions in agency MBS are down from the 2012-2013 time period, but remain within historic ranges. Gross dealer positions are likely to have fallen more than net positions. The volume of repurchase activity is up slightly from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

Dealer Net Positions: Federal Agency and GSE MBS



Sources: *Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute.* **Note:** *Data as of March 2019.*

Repo Volume: Securities In

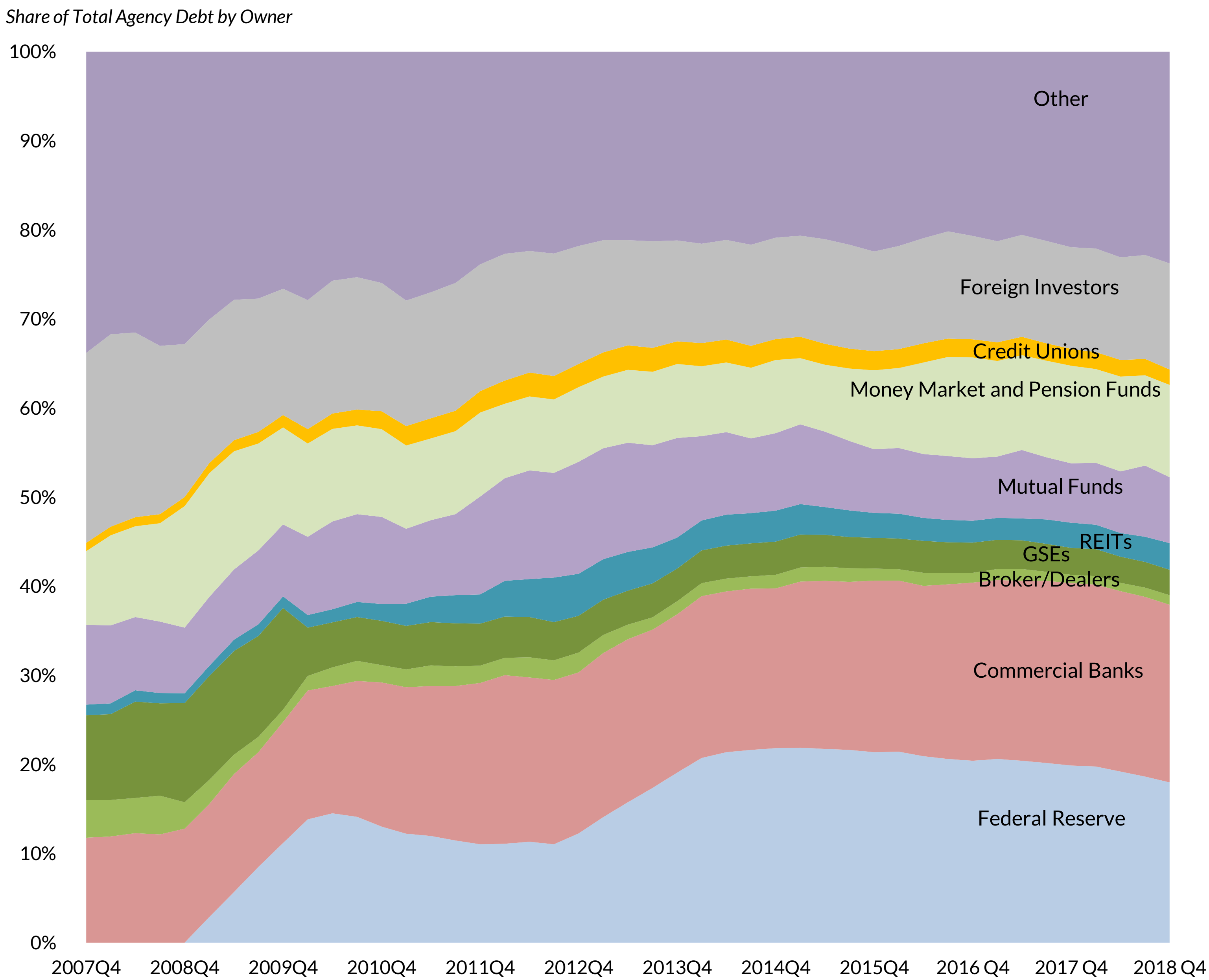


Sources: *Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute.* **Note:** *Data as of March 2019.*

MBS Ownership

The largest holders of agency debt (Agency MBS + Agency notes and bonds) include the Federal Reserve (18 percent), commercial banks (20 percent) and foreign investors (12 percent). The broker/dealer and GSE shares are a fraction of what they once were.

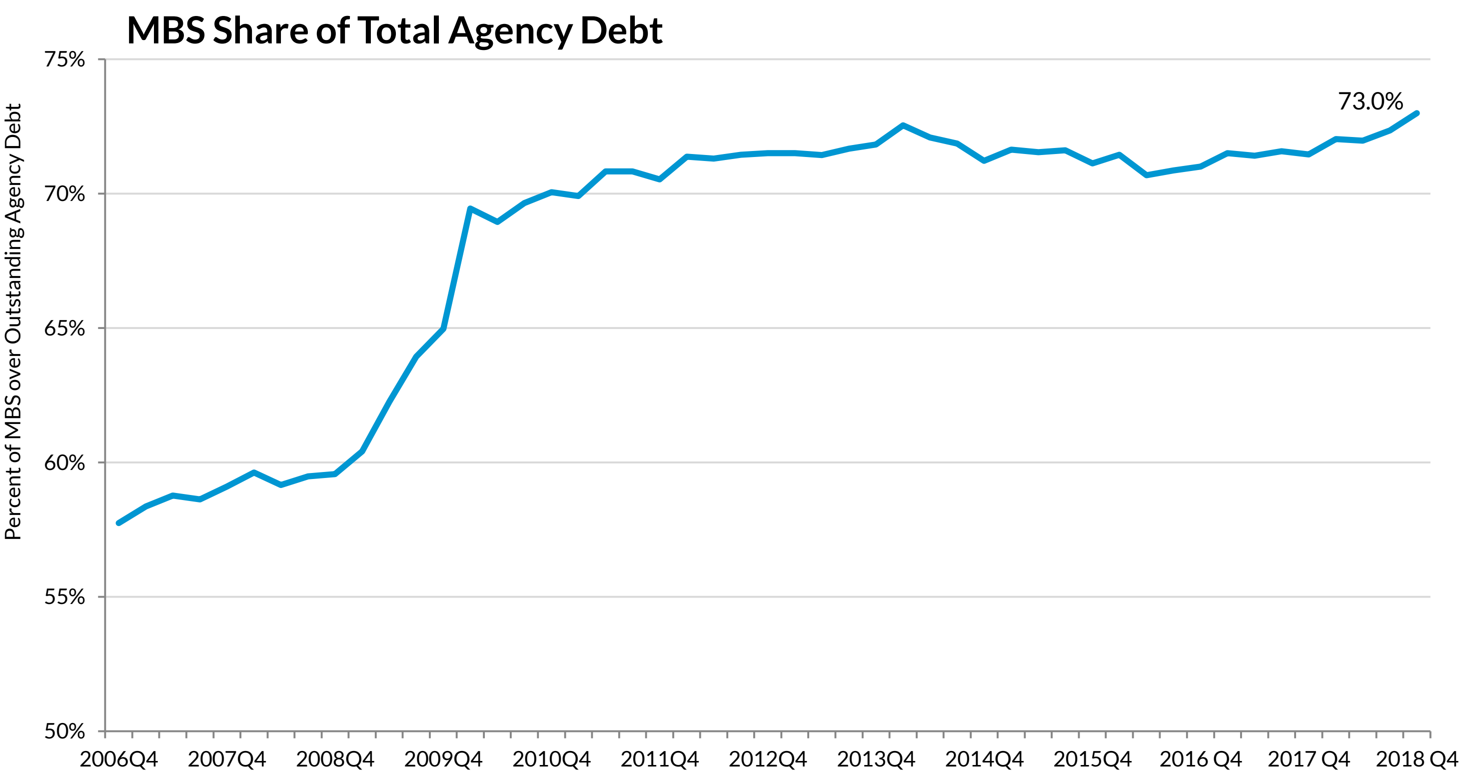
Who owns Total Agency Debt?



Sources: *Federal Reserve Flow of Funds and Urban Institute.* **Note**: *Data as of Q4 2018.*

MBS Ownership

As Fannie and Freddie reduce the size of their retained portfolio, fewer agency notes and bonds are required to fund that activity, hence the MBS share of total agency debt increases. As of Q4 2018, the MBS share of total agency debt stood at 73.0 percent. Commercial banks are now the largest holders of Agency MBS. Out of their $1.9 trillion in holdings as of the end of March 2019, $1.4 trillion was held by the top 25 domestic banks.



***Sources**: Federal Reserve Flow of Funds and Urban Institute. **Note**: Data as of Q4 2018.*

	Commercial Bank Holdings ($Billions)								Week Ending			
	Feb-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar 6	Mar 13	Mar 20	Mar 27
Largest Domestic Banks	1,279.0	1,318.4	1,318.7	1,319.8	1,332.8	1,360.1	1,389.4	1,399.0	1,404.9	1,409.3	1,412.9	1,420.7
Small Domestic Banks	480.6	485.4	486.0	484.8	482.2	485.3	490.6	491.9	494.8	495.9	484.7	494.5
Foreign Related Banks	31.4	24.9	23.0	23.5	24.6	27.7	25.4	25.4	25.0	24.6	25.1	26.6
Total, Seasonally Adjusted	1,791.0	1,828.7	1,827.7	1,828.1	1,839.6	1,873.1	1,905.4	1,916.3	1,924.7	1,929.8	1,922.7	1,941.8

***Sources**: Federal Reserve Bank and Urban Institute. **Note**: Data as of March 2019.*

MBS Ownership

Out of the $1.8 trillion in MBS holdings at banks and thrifts as of Q4 2018, $1.4 trillion was agency pass-through: $980.6 trillion in GSE pass-throughs and $380.4 billion in Ginnie Mae pass-throughs. Another $419.6 billion was agency CMOs, while non-agency holdings totaled $37.38 billion. After three quarters of successive decline, MBS holdings at banks and thrifts increased in Q4, 2018. This increase came from Ginnie Mae and GSE pass-throughs, as well as agency CMOs.

Bank and Thrift Residential MBS Holdings

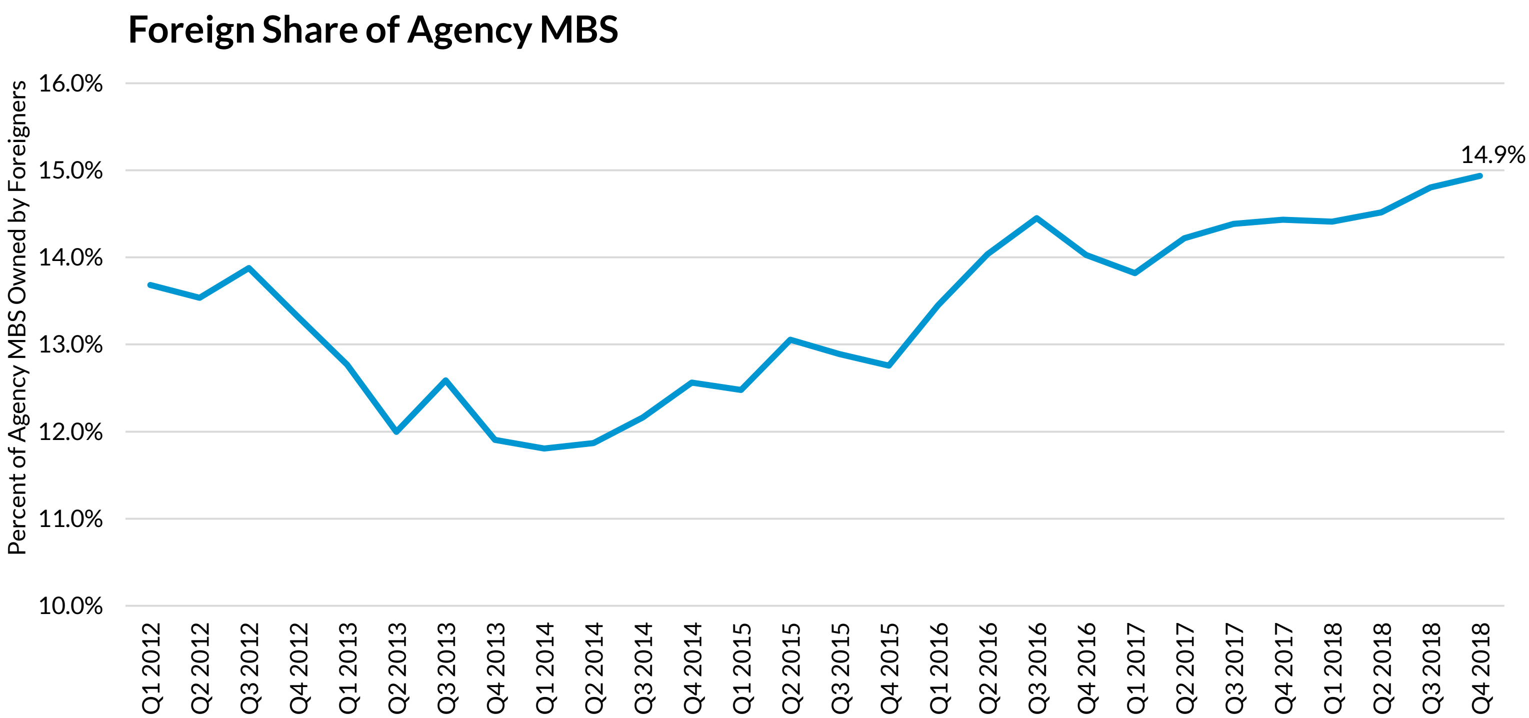
	All Banks & Thrifts ($Billions)						
	Total	Agency MBS PT	GSE PT	GNMA PT	Agency CMO	Private MBS PT	Private CMO
2000	$683.90	$392.85	$234.01	$84.26	$198.04	$21.57	$71.43
2001	$810.50	$459.78	$270.59	$109.53	$236.91	$37.62	$76.18
2002	$912.36	$557.43	$376.11	$101.46	$244.98	$20.08	$89.88
2003	$982.08	$619.02	$461.72	$75.11	$236.81	$19.40	$106.86
2004	$1,113.89	$724.61	$572.40	$49.33	$208.18	$20.55	$160.55
2005	$1,139.68	$708.64	$566.81	$35.92	$190.70	$29.09	$211.25
2006	$1,207.09	$742.28	$628.52	$31.13	$179.21	$42.32	$243.28
2007	$1,236.00	$678.24	$559.75	$31.58	$174.27	$26.26	$357.24
2008	$1,299.76	$820.12	$638.78	$100.36	$207.66	$12.93	$259.04
2009	$1,345.74	$854.40	$629.19	$155.00	$271.17	$7.53	$212.64
2010	$1,433.38	$847.13	$600.80	$163.13	$397.30	$7.34	$181.61
2011	$1,566.88	$917.10	$627.37	$214.81	$478.82	$3.28	$167.70
2012	$1,578.86	$953.76	$707.87	$242.54	$469.27	$17.16	$138.67
2013	$1,506.60	$933.73	$705.97	$231.93	$432.60	$26.11	$114.15
2014	$1,539.32	$964.16	$733.71	$230.45	$449.90	$20.33	$104.94
2015	$1,643.56	$1,115.40	$823.10	$292.30	$445.39	$11.14	$71.63
1Q16	$1,660.58	$1,133.29	$833.25	$300.04	$448.63	$10.27	$68.39
2Q 16	$1,684.33	$1,169.67	$867.64	$302.03	$440.25	$9.11	$65.29
3Q16	$1,732.36	$1,227.52	$924.81	$302.71	$435.77	$7.90	$61.17
4Q16	$1,736.93	$1,254.13	$930.67	$323.46	$419.80	$7.40	$55.60
1Q17	$1,762.38	$1,280.63	$950.72	$329.91	$419.34	$7.03	$55.39
2Q17	$1,798.66	$1,320.59	$985.12	$335.47	$417.89	$6.38	$53.79
3Q17	$1,838.93	$1,364.75	$1,012.89	$351.86	$418.08	$5.65	$50.45
4Q17	$1,844.15	$1,378.53	$1,010.83	$367.70	$413.97	$4.63	$47.01
1Q18	$1,809.98	$1,352.28	$991.57	$360.71	$412.37	$3.92	$41.37
2Q18	$1,806.58	$1,345.80	$976.92	$368.88	$414.41	$7.45	$38.92
3Q18	$1,794.39	$1,339.72	$966.52	$373.21	$416.20	$2.42	$36.04
4Q18	$1,814.97	$1,361.00	$980.56	$380.43	$419.59	$2.69	$34.69

	Top Bank & Thrift Residential MBS Investors	Total ($MM)	GSE PT ($MM)	GNMA PT ($MM)	Agency REMIC ($MM)	Non-Agency ($MM)	Market Share
1	Bank of America Corporation	$315,763	$185,917	$118,080	$11,650	$116	17.4%
2	Wells Fargo & Company	$238,434	$166,422	$65,471	$3,781	$2,760	13.1%
3	JP Morgan Chase & Co.	$93,937	$61,690	$23,431	$296	$8,520	5.2%
4	U S. Bancorp.	$79,863	$48,123	$12,299	$19,441	$0	4.4%
5	Charles Schwab Bank	$79,492	$38,334	$15,571	$25,587	$1	4.4%
6	Capital One Financial Corporation	$66,307	$52,145	$4,230	$7,272	$2,660	3.7%
7	Citigroup Inc.	$65,827	$28,208	$14,551	$22,121	$947	3.6%
8	Bank of New York Mellon Corp.	$51,632	$30,689	$1,723	$17,794	$1,426	2.8%
9	PNC Bank, National Association	$46,819	$37,955	$3,736	$2,764	$2,365	2.6%
10	Branch Banking and Trust Company	$37,433	$12,083	$15,350	$7,397	$2,603	2.1%
11	State Street Bank and Trust Company	$36,720	$12,175	$5,865	$18,175	$505	2.0%
12	E*TRADE Bank	$23,817	$10,707	$7,298	$5,812	$0	1.3%
13	HSBC Banks USA, National Association	$23,627	$7,173	$6,314	$10,138	$3	1.3%
14	KeyBank National Association	$23,311	$1,682	$898	$20,731	$0	1.3%
15	SunTrust Bank	$23,161	$10,942	$3,657	$8,561	$0	1.3%
16	Morgan Stanley	$22,797	$11,612	$11,185	$0	$0	1.3%
17	Ally Bank	$20,098	$11,126	$3,341	$3,079	$2,552	1.1%
18	The Northern Trust Company	$17,468	$10,356	$4,365	$2,745	$2	1.0%
19	MUFG Union Bank	$16,899	$5,323	$3,925	$6,787	$865	0.9%
20	Regions Bank	$16,247	$2,409	$4,593	$9,245	$0	0.9%
	Total Top 20	**$1,299,653**	**$745,069**	**$325,884**	**$203,376**	**$25,325**	**71.7%**

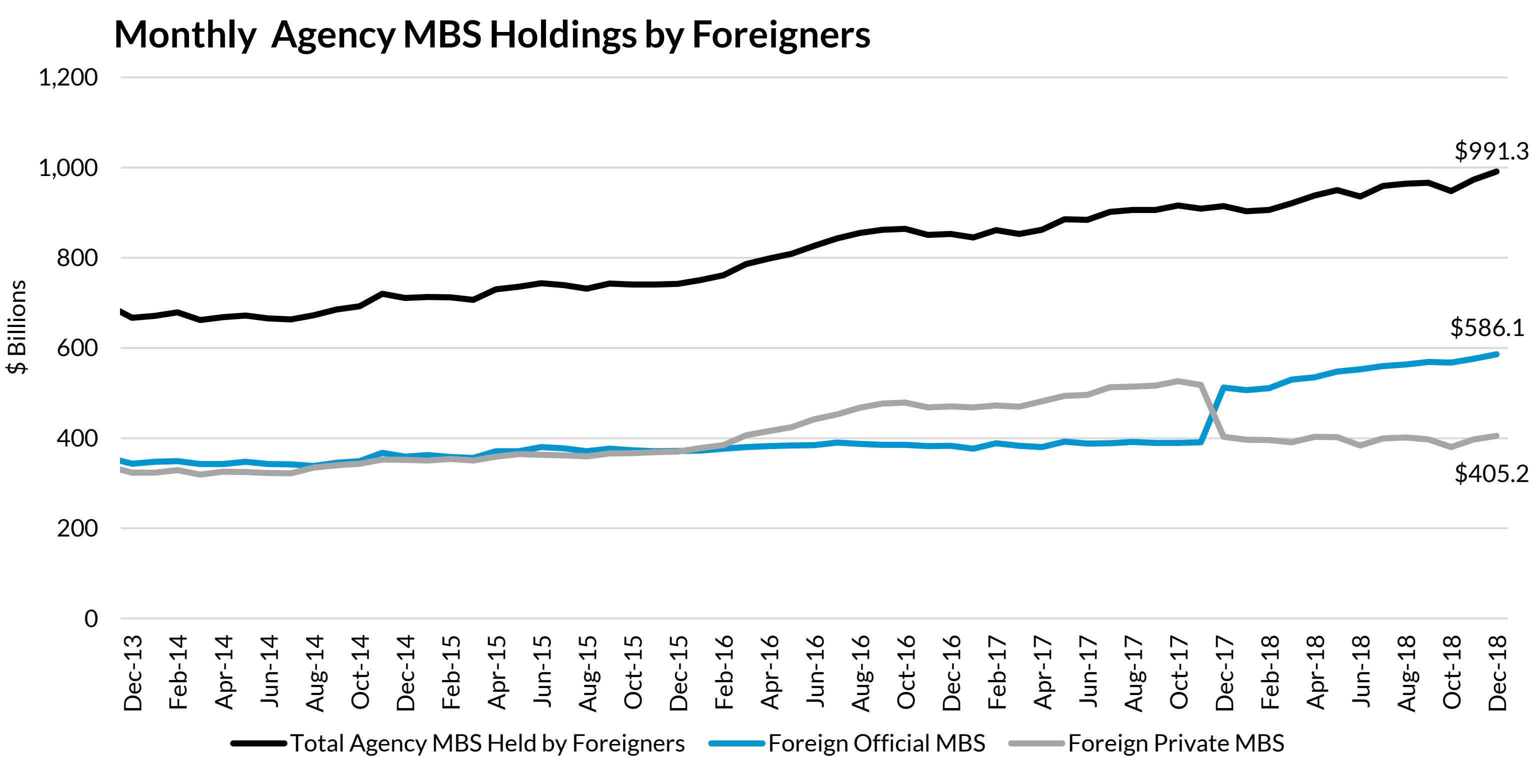
Sources: *Inside Mortgage Finance and Urban Institute.* ***Note:*** *Data as of Q4 2018.*

MBS Ownership

Foreign investors held 14.9 percent of agency MBS in Q4 2018, up from a low of 11.8 percent in Q1 2014. For the month of December 2018, this represents $991.3 billion in Agency MBS; $405.2 billion held by foreign private institutions and $586.1 billion held by foreign official investors.



***Sources**: SIFMA and Treasury International Capital (TIC). **Note**: Data as of Q32018.*



***Sources**: Treasury International Capital (TIC) and Urban Institute. **Note**: Data as of December 2018. In December 2017, there was a data correction that moved about $120 billion from privately held U.S. agency bonds to officially held U.S. agency bonds; this resulted in a series break at December 2017 in the split between the portion held by foreign private and the portion held by foreign official.*

MBS Ownership

The largest foreign holders of Agency MBS are Taiwan, Japan and China; these three comprise around 70 percent of all foreign holdings. Since December 2017, the three increased their holdings by 27.0 billion, 21.7 billion, and 18.2 billion, respectively.

Agency MBS+ Agency Debt

	Level of Holdings ($Millions)*							Change in Holdings ($Millions)*					
Country	Jun-17	Sep-17	Dec-17	Mar-18	Jun-18	Sep-18	Dec-18	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
Taiwan	227,195	229,030	234,234	245,182	249,451	250,639	261,231	1,835	5,204	10,948	4,269	1,188	10,592
China	228,466	244,261	241,067	246,344	248,837	254,511	262,772	15,795	-3,194	5,277	2,493	5,674	8,261
Japan	183,393	177,580	170,702	173,169	180,820	190,203	188,921	-5,813	-6,878	2,467	7,651	9,383	-1,282
Ireland	46,791	47,581	45,467	44,099	44,167	43,944	44,735	790	-2,114	-1,368	68	-223	791
South Korea	44,229	46,648	51,525	49,164	47,662	48,220	48,045	2,419	4,877	-2,361	-1,502	558	-175
Luxembourg	31,289	33,026	37,575	39,336	37,111	38,800	50,079	1,737	4,549	1,761	-2,225	1,689	11,279
Bermuda	32,682	29,016	28,374	29,026	29,760	31,638	31,379	-3,666	-642	652	734	1,878	-259
Cayman Islands	26,767	27,125	28,904	28,055	27,350	27,610	28,004	358	1,779	-849	-705	260	394
Switzerland	17,312	18,675	16,794	13,063	11,813	11,908	10,827	1,363	-1,881	-3,731	-1,250	95	-1,081
Netherlands	12,365	13,162	12,751	12,139	12,754	12,874	12,671	797	-411	-612	615	120	-203
Rest of World	129,723	124,357	125,465	124,266	122,885	129,082	129,085	-5,366	1,108	-1,199	-1,381	6,197	3
Total	980,212	990,461	992,858	1003843	1012610	1,039,429	1,067,749	10,249	2,397	10,985	8,767	26,819	28,320

Agency MBS Only (Estimates)

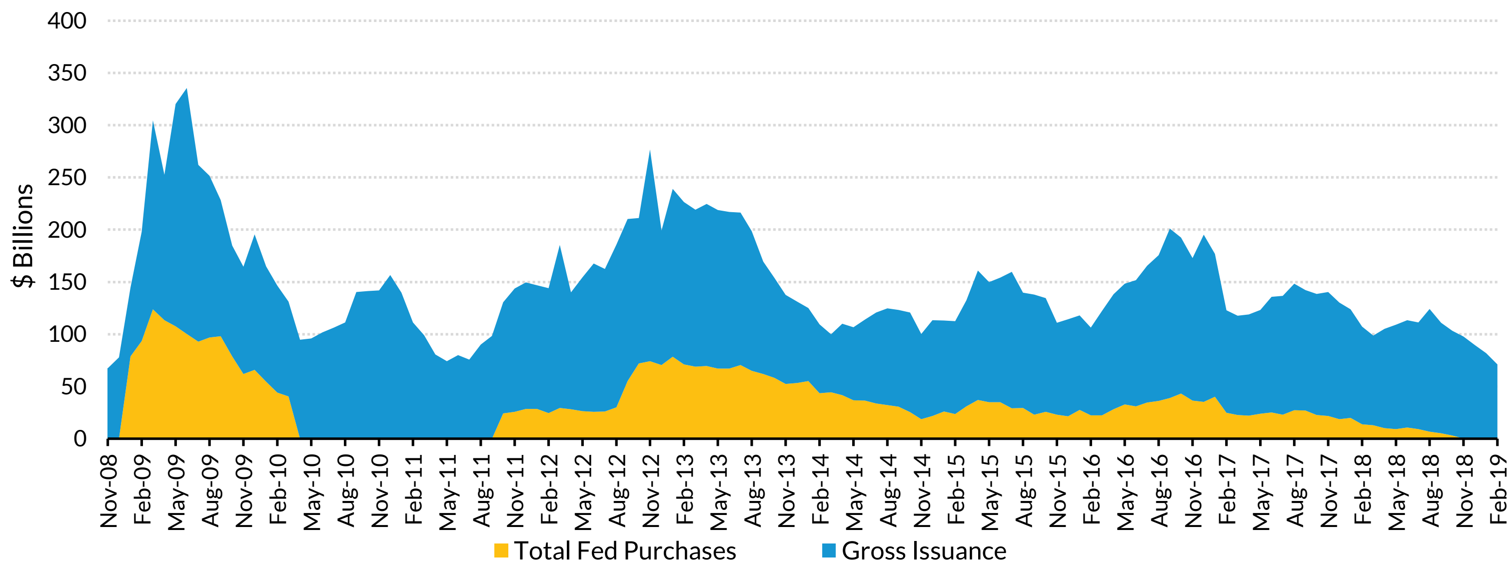
	Level of Holdings ($Millions)*							Change in Holdings ($Millions)*					
Country	Jun-17	Sep-17	Dec-17	Mar-18	Jun-18	Sep-18	Dec-18	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
Taiwan	227,073	228,914	234,127	245,069	249,349	250,539	261,127	1,841	5,213	10,942	4,280	16,412	10,587
China	221,528	237,689	234,985	239,898	243,028	248,842	256,843	16,161	-2,704	4,914	3,129	13,857	8,001
Japan	177,546	172,042	165,576	167,737	175,924	185,425	183,924	-5,504	-6,465	2,161	8,187	19,849	-1,501
Ireland	33,891	35,362	34,158	32,114	33,365	33,403	33,710	1,471	-1,204	-2,044	1,251	-755	307
South Korea	33,663	36,640	42,262	39,348	38,815	39,586	39,015	2,977	5,623	-2,914	-533	-2,676	-571
Luxembourg	28,314	30,208	34,967	36,572	34,620	36,369	47,537	1,894	4,759	1,605	-1,952	1,402	11,167
Bermuda	24,897	21,642	21,549	21,793	23,241	25,277	24,726	-3,255	-93	244	1,448	3,727	-551
Cayman Islands	23,156	23,705	25,738	24,700	24,326	24,659	24,918	549	2,034	-1,038	-374	-1,079	259
Switzerland	13,867	15,412	13,774	9,862	8,928	9,093	7,883	1,545	-1,638	-3,911	-934	-4,681	-1,210
Netherlands	11,905	12,726	12,348	11,712	12,369	12,498	12,278	821	-379	-636	657	150	-220
Rest of World	94,872	91,345	94,913	91,888	93,703	100,604	99,301	-3,527	3,567	-3,024	1,815	5,692	-1,303
Total	890,712	905,684	914,397	920,694	937,669	966,296	991,261	14,972	8,713	6,297	16,975	51,899	24,965

Sources *:Treasury International Capital (TIC) and Urban Institute.*
Note: **calculated based on June 2017 report with amount asset backed per country. Revised to include Top 10 holders of MBS listed as of June 2017. Monthly data as of December 2018.*

MBS Ownership

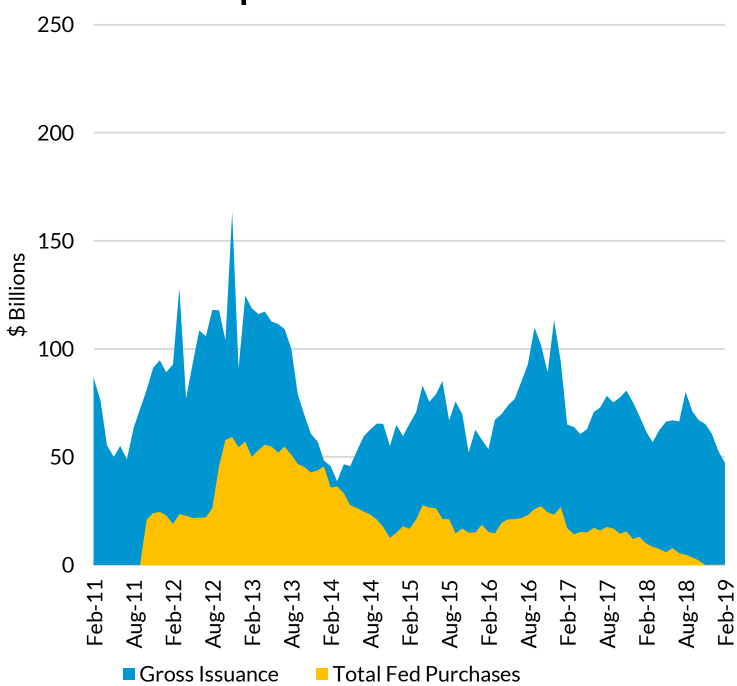
The Federal Reserve is actively winding down its mortgage portfolio, absorbing very little new issuance. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross issuance. In October 2017, the Fed began to taper their mortgage holdings, initially letting securities run off at the rate of $4 billion per month in Q4, 2017; $8 billion per month in Q1, 2018; $12 billion per month in Q2; $16 billion per month in Q3; and $20 billion per month ins Q4, 2018 and thereafter. With the Fed now at its maximum taper, Fed absorption of gross issuance is 0.4 percent.

Total Fed Absorption



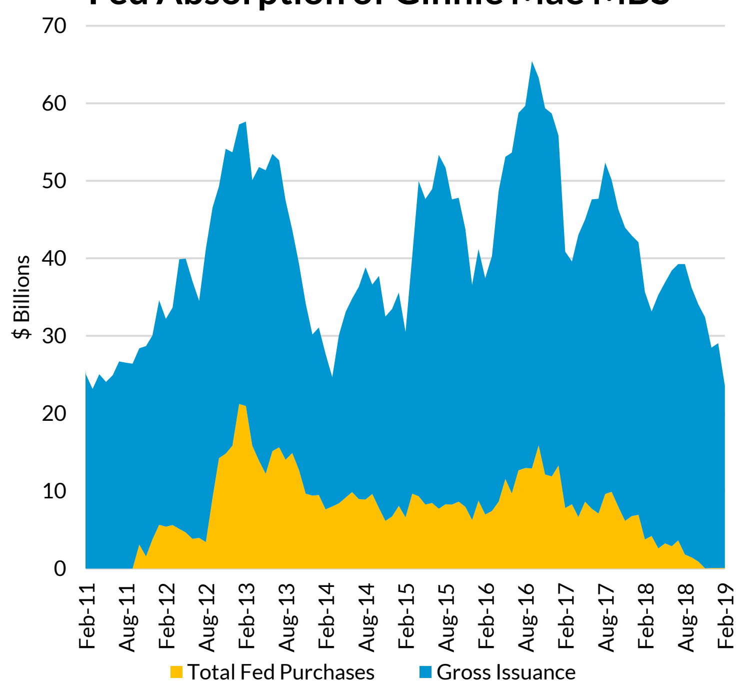
Sources: *eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note:*** *Data as of February 2019.*

Fed Absorption of GSE MBS



Sources: *eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note:*** *Data as of February 2019.*

Fed Absorption of Ginnie Mae MBS



Sources: *eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note***: *Data as of February 2019.*

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Expiration Date: 4/30/2020