Global Markets Analysis Report

A MONTHLY PUBLICATION OF GINNIE MAE'S
OFFICE OF CAPITAL MARKETS

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Ginnie Mae
Our Guaranty Matters

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

CONTENTS

HIGHLIGHTS

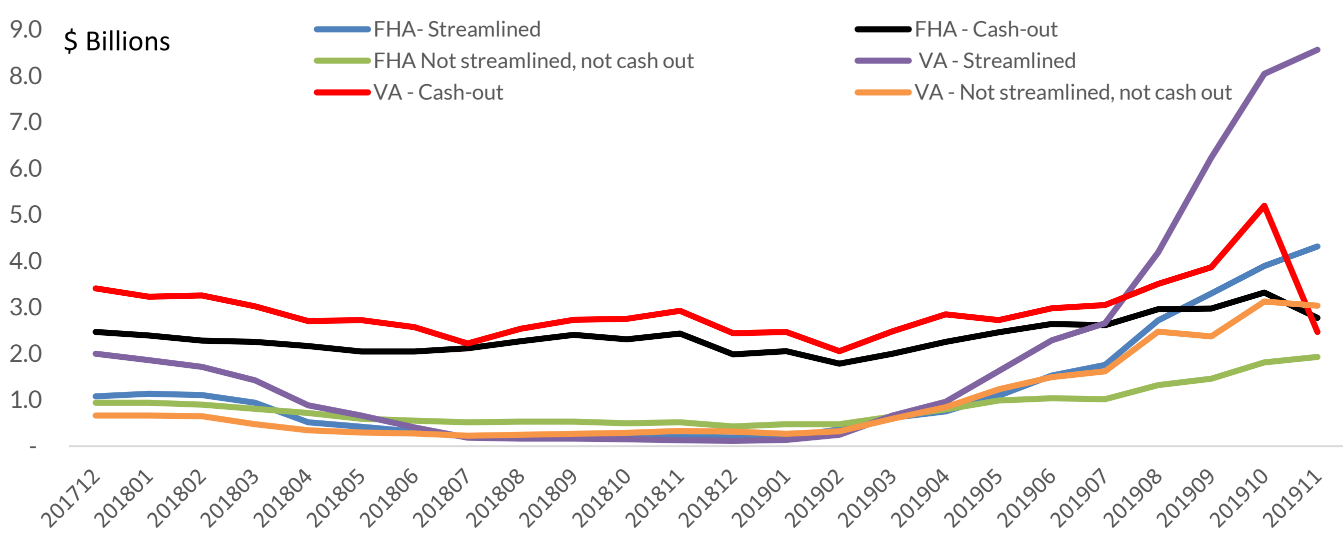
Restrictions on FHA and VA cash-out refinances begin to show expected decline in volumes

In the fall of 2019, the US Department of Housing and Urban Development (HUD) announced a policy change, reducing the maximum loan-to-value (LTV) ratio for FHA-insured cash-out refinance mortgages from 85 percent to 80 percent. This was done to improve borrower equity position and reduce loss severities during the next downturn. This change became effective for FHA loans endorsed Sep 1 2019 or later.

Around the same time, Ginnie Mae announced on August 1st that effective November 1, 2019 MBS pools, VA cash-out refinance loans with LTVs greater than 90 percent would generally be ineligible for Ginnie Mae I Single Issuer and Ginnie Mae II Multiple Issuer Pools. This is the latest in a series of actions by Ginnie Mae to curb abuse of the VA program, where some lenders repeatedly refinance veterans, often to the financial detriment of the borrower.

Now that it has been some time since these changes went into effect, we are able to analyze their early impact on FHA and VA cash-out refinance issuance volumes. Figure 1 below shows monthly Ginnie issuance in TBA eligible Multiple Issuer Pools for three types of FHA and VA refinances – cash-out, streamlined refinance, and not cash-out not streamlined.

Figure 1: Monthly TBA-eligible issuance of FHA and VA refinances, by type



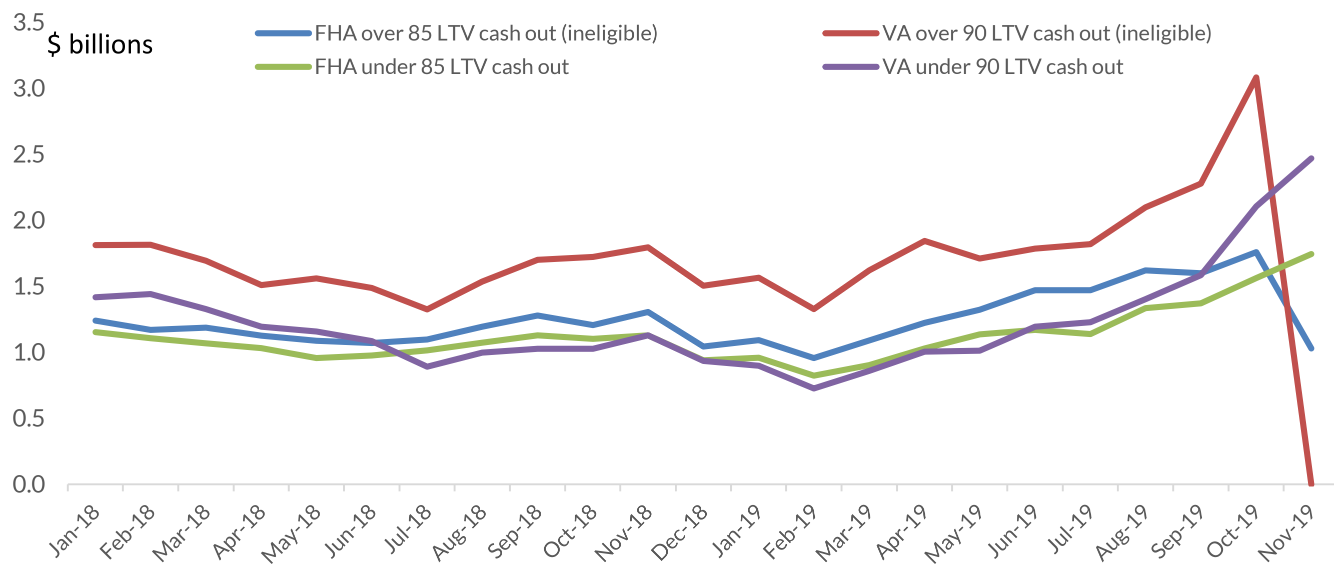
Source: eMBS and Urban Institute

These data show a more than 50 percent decline in VA cash-out issuances (red line) from $5.19 billion in October to $2.47 billion in November 2019 (cash-out volume had increased in Sep and Oct, likely reflecting demand pull-forward in anticipation of the Nov 1 deadline.) Still, the November volume is well below the $3.1 billion per month, on average from Jan to Oct 2019 and $2.8 billion a month, on average in 2018. We also note the 3 percentage point decline in the median LTV of VA refinances from 96.1 percent in Oct to 93.2 percent in November (see page 28.) These data strongly suggest that Ginnie Mae's latest action to curb the abuse of the VA program in the high-LTV cash-out segment is showing early results.

HIGHLIGHTS

FHA's cash-out issuance volume (black line) experienced a decline as well, falling to $2.8 billion in November from $3.2 billion in Oct; this compares to $2.5 billion a month on average from Jan to Oct 2019 and $2.8 billion a month on average in 2018. It may take more time for FHA's new policy to show results because it was endorsement date driven, unlike Ginnie Mae's VA cash-out policy, which was driven by issuance date. In other words, November FHA cash-out issuance volume of $3.2 billion includes above 85 LTV FHA cash-out loans originated before Sep 1.

Figure 2: FHA and VA cash-out issuance based on eligibility under new policy



Source: eMBS and Urban Institute

Figure 2 shows a breakout of FHA and VA cash-out volume by LTV cutoff. About $1 billion of over 85% LTV FHA cash-out loans were securitized in November. As more of these loans get securitized in subsequent months, we would expect issuances of ineligible FHA cash-outs to eventually drop to zero. Lastly, as expected, above 90% LTV VA cash-out issuances equaled zero in November.

A note from Ginnie Mae

Our policy on aberrant prepayment behavior surveillance has been institutionalized and is uniformly applied across all coupons and Issuers.

Ginnie Mae remains vigilant in its review of individual Issuer prepayment performance. Each month, each Issuer is analyzed for significant deviations to the appropriate benchmark. Issuers that continually trip prepayment thresholds will be sanctioned per our policy and current practice.

Our mission is to provide efficient access to the capital markets and eliminate abusive practices that negatively affect the broad range of homeowners that rely on the program.

Ginnie Mae will evaluate the effectiveness of the recently implemented High LTV VA Cash-out policy once there is material volume existing beyond the 6-month refinance lockout threshold.

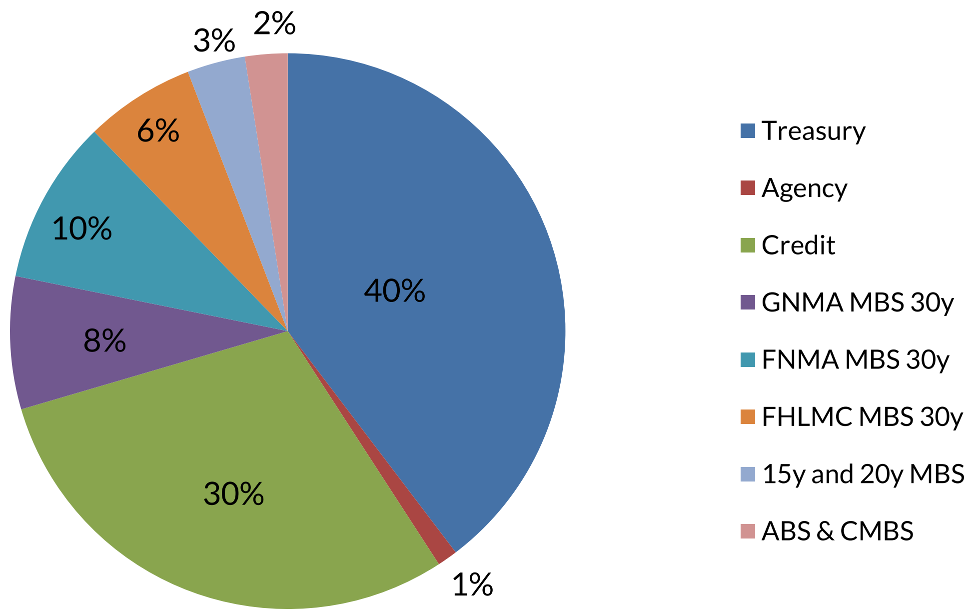
***Highlights this month*:**

- First-time homebuyer shares for Fannie Mae, Freddie Mac and Ginnie Mae have fallen in recent months, with Ginnie Mae exhibiting the smallest decline (page 24).
- Despite Median FICO scores for all agency loans increased considerably over the course of 2019, driven by the higher refinances, which higher FICO borrowers take advantage of with greater frequency (page 30).
- The nonbank originator share for Ginnie Mae loans hit a new historical high of 88.7 percent in November 2019 (page 35).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

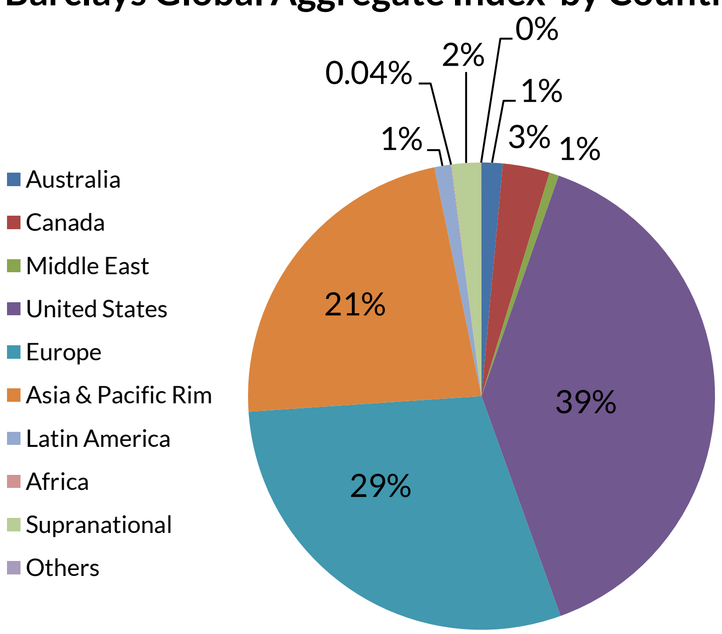
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 27 percent of the Barclays US Aggregate Index- less than either the US Treasury share (40 percent) or the US Credit share (30 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (10 percent), while Ginnie Mae 30-year MBS and 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 (3 percent) of the US MBS share. US securities are the single largest contributor to the Barclays Global Aggregate, accounting for 39 percent of the global total. US MBS comprises 11 percent of the global aggregate.

Barclays US Aggregate Index



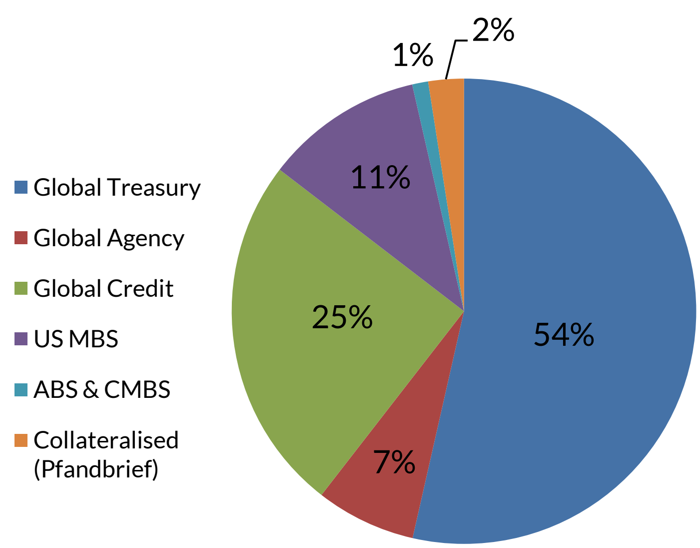
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of December 2019.*
Note*: Numbers in chart may not add to 100 percent due to rounding.*

Barclays Global Aggregate Index by Country



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

Barclays Global Aggregate Index by Sector

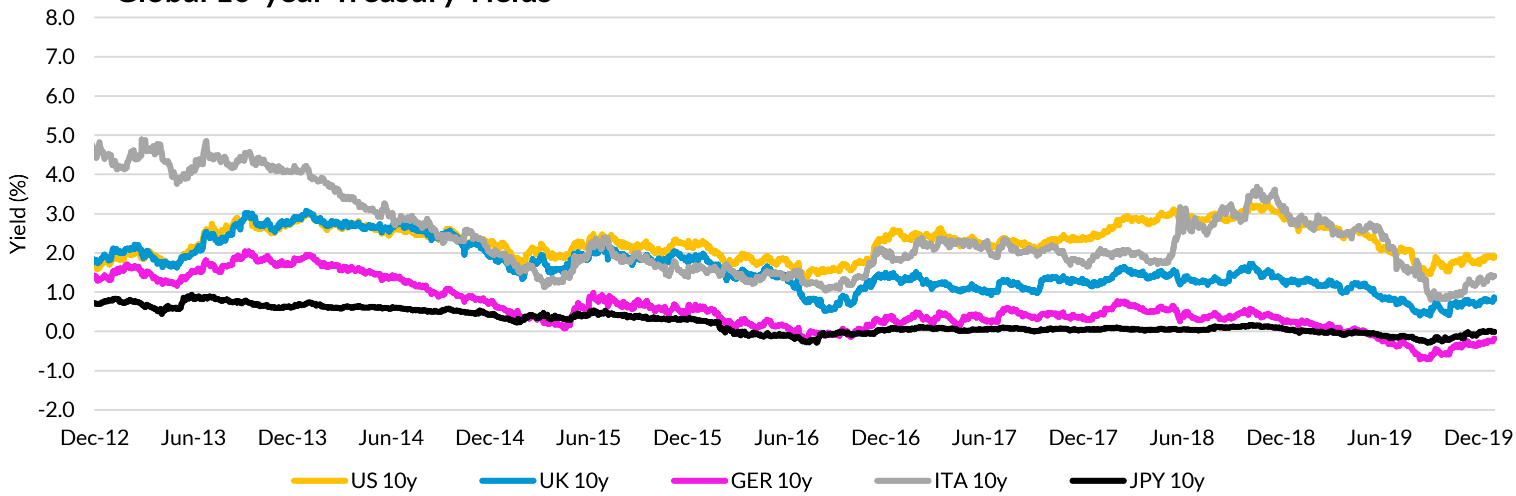


Sources: *Bloomberg and State Street Global Advisors*
Note*: Data as of December 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

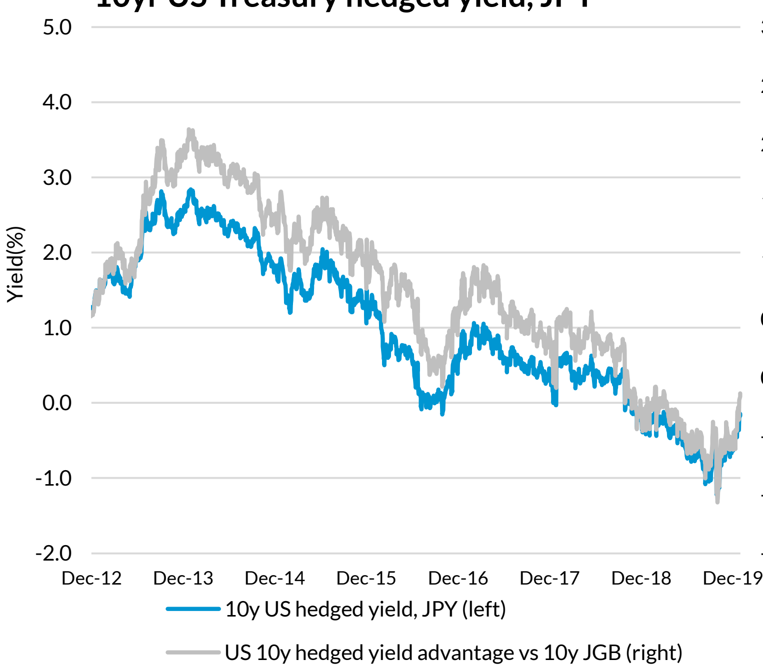
With weakness in recent economic data and worries about tariffs and trade wars, yields on government bonds dropped across the globe over the course of 2019. The yield on the US 10-year treasury increased 14 bps in December to 1.92 percent. Although down 70 bps from the start of 2019, US treasury yields are the highest in the developed world. This is followed by yields on the Italian 10-year note, up 18 basis points in December to 1.41 percent, the UK 10-year bond, up 12 bps to 0.82 percent, German 10 year, up 17 bps to -0.19 percent, and the Japanese 10 year government bond, which rose by 6 basis points to -0.01 percent over the course of December. At the end of December, the hedged yield differential between the 10-year Treasury and the 10-year JGB stood at -13 bps, an increase of 42 bps since November. The hedged yield differential between the 10-year Treasury and the 10-year Bund stands at -18 bps, an increase of 20 bps since the end of November.

Global 10-year Treasury Yields



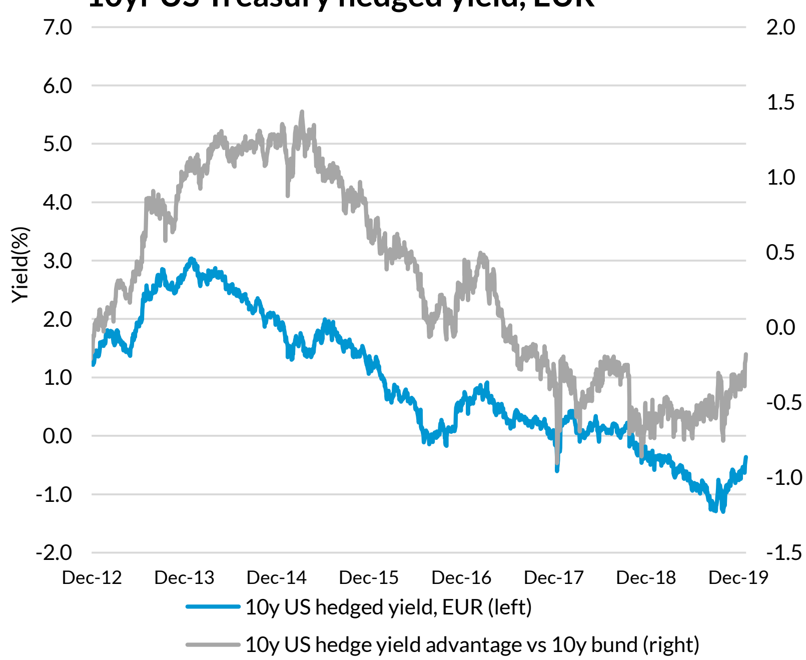
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of December 2019.*

10yr US Treasury hedged yield, JPY



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

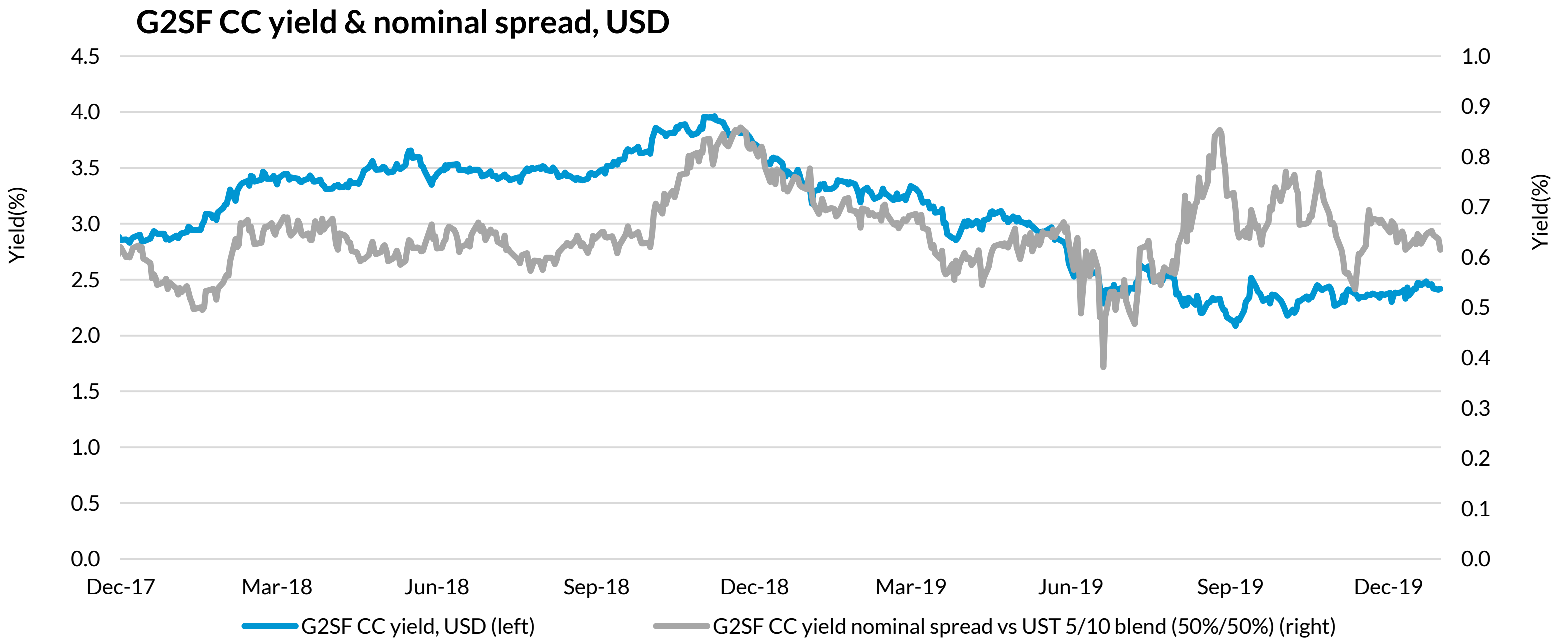
10yr US Treasury hedged yield, EUR



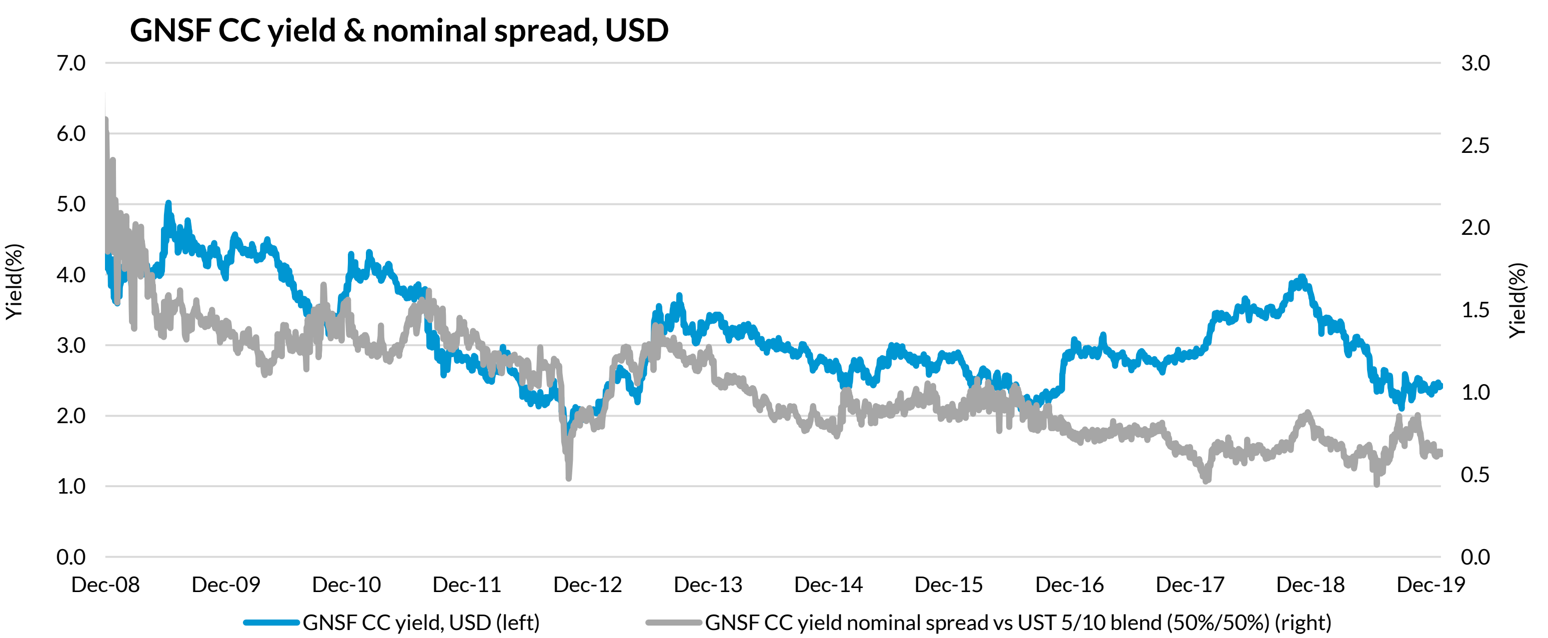
Sources: *Bloomberg and State Street Global Advisors*
Note*: Data as of December 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

Nominal yields rose in December 2019, with both GNMA II and GNMA I yields increasing 6 bps to 2.45% and 2.44% respectively. Current coupon Ginnie Mae securities outyield their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 61 bps on the G2SF and 62 bps on the GNSF, a tightening of 5 and 4 bps respectively since last month.



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

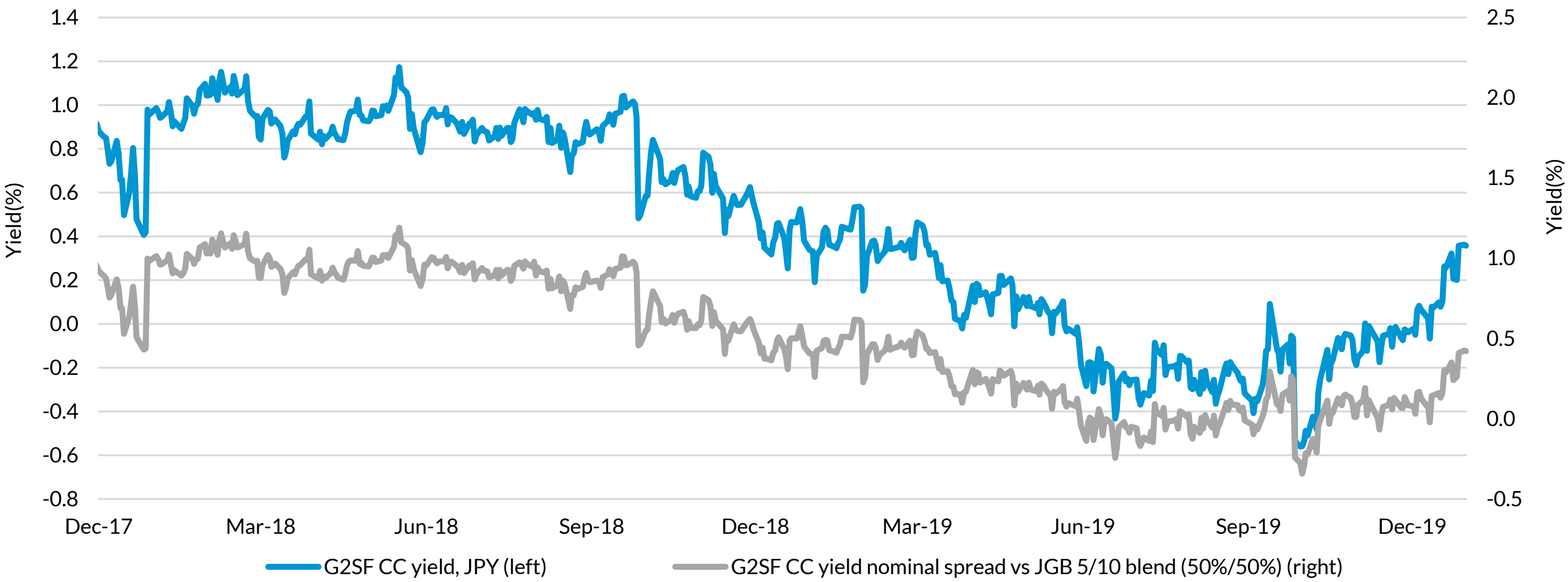


Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of December 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

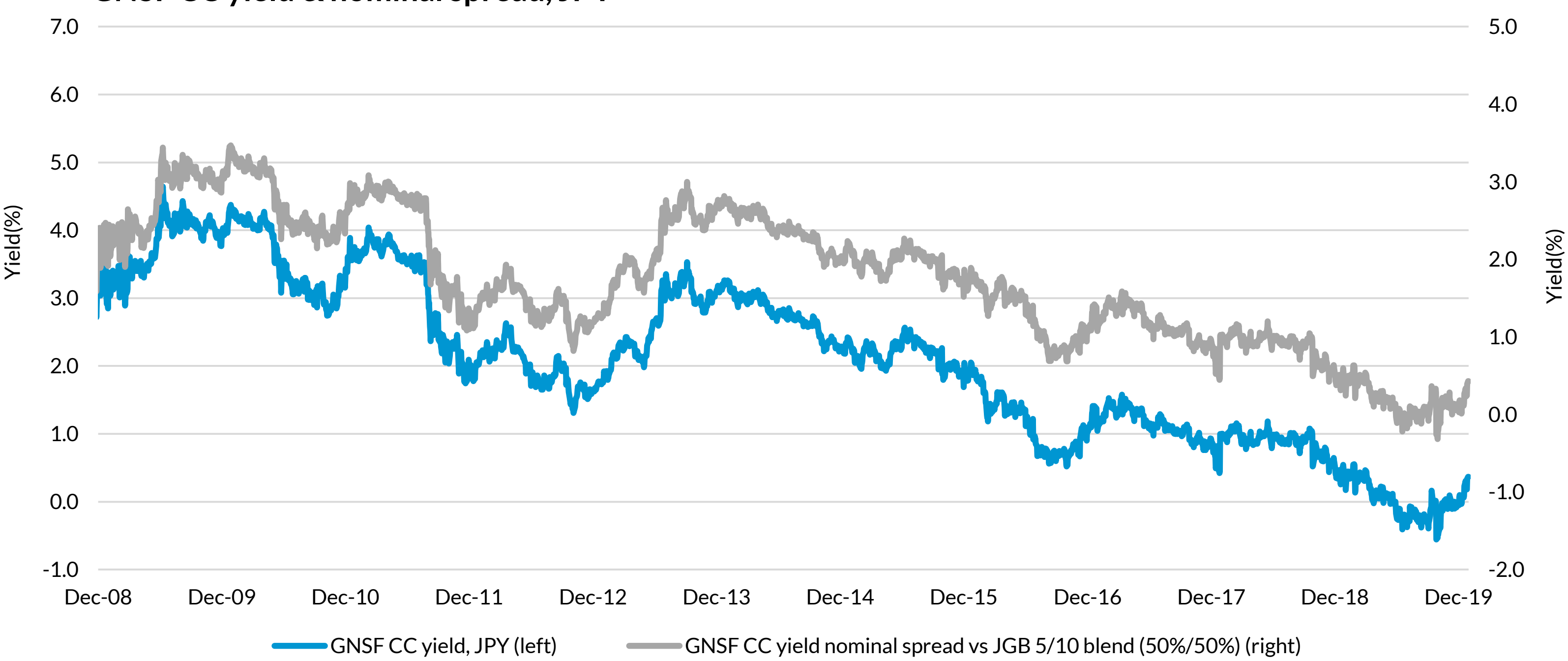
If Ginnie Mae securities are hedged into Japanese Yen, they look favorable on a yield basis versus the JGB 5/10 blend. More precisely, G2SF and GNSF hedged into Japanese yen have a yield of 42 and 43 bps, respectively, versus the JGB 5/10 blend. This represents a 34 bp increase for the G2SF and a 35 bp increase for the GNSF since the end of November.

G2SF CC yield & nominal spread, JPY



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

GNSF CC yield & nominal spread, JPY

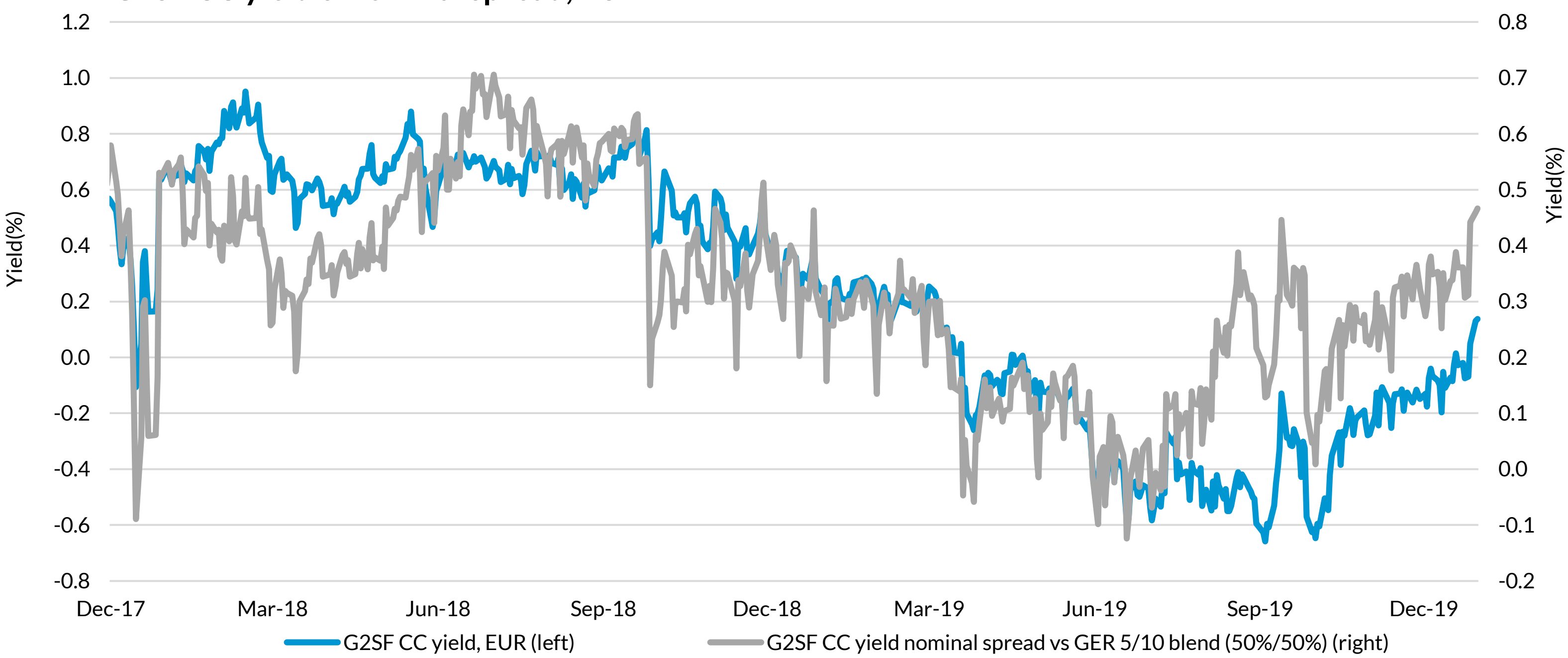


***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of December 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

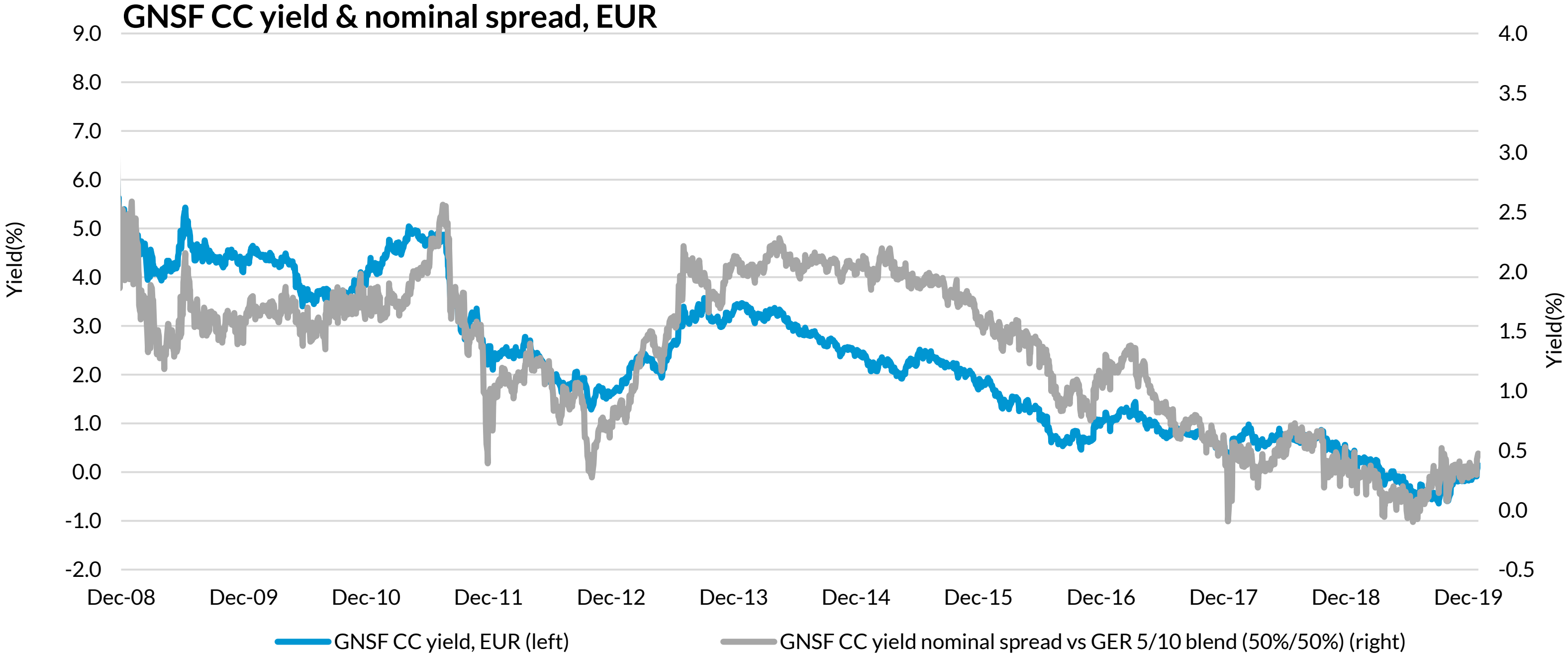
If Ginnie Mae securities are hedged into Euros, they look favorable on a yield basis versus the German 5/10 Blend. The figures below show that at the end of December, the current coupon G2SF and GNSF hedged into euros have a 47 bps higher yield than the average of the German 5/10. This represents a 14 bps increase for the G2SF and a 15 bps increase for the GNSF since the end of November.

G2SF CC yield & nominal spread, EUR



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

GNSF CC yield & nominal spread, EUR

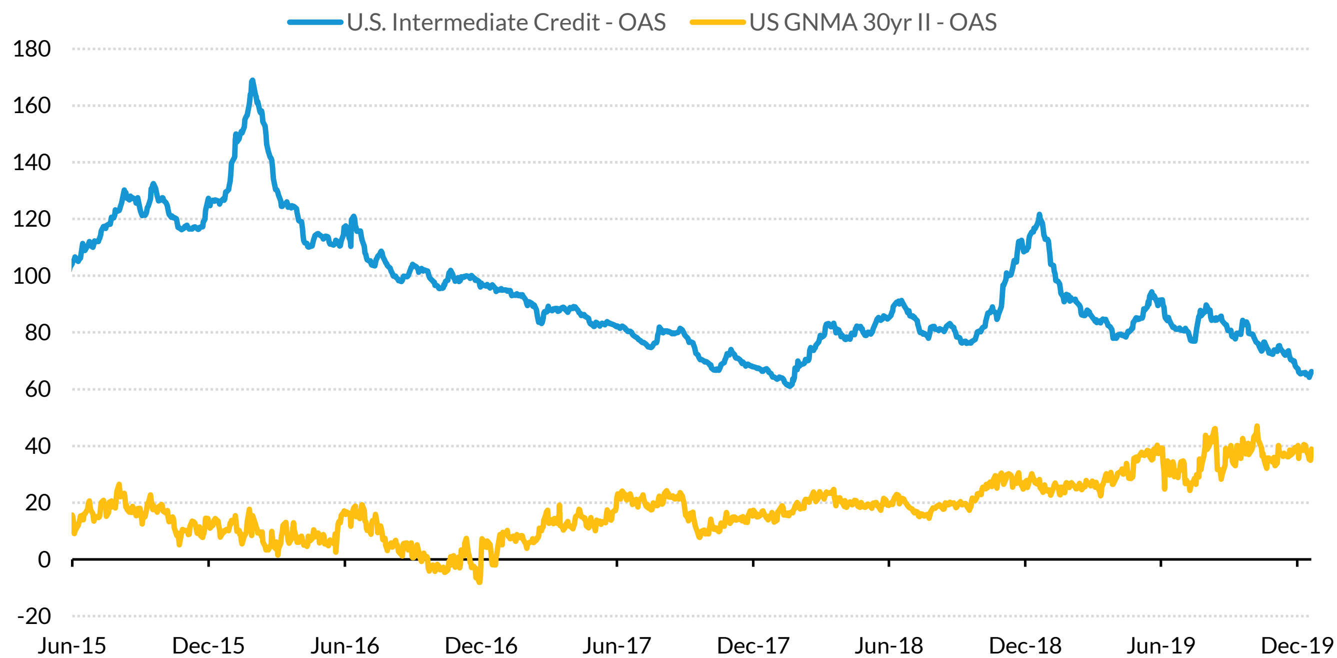


***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of December 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

After touching a peak of nearly 170 basis points in early 2016, the spread between US Intermediate Credit and GNMA II 30 year MBS has tightened steadily. Yield on intermediate credit has fallen while GNMA II yields are higher. While intermediate credit still has a higher option adjusted spread, by 39 bps at the end of December, this spread does not adjust for corporate credit risk. By contrast, Ginnie Mae's explicit US full faith and credit guaranty frees the MBS from credit risk. In the event of an economic downturn, we would expect the spread to widen (Ginnie Mae securities to outperform) as investor concern about corporate credit risk moves front and center.

G2 30 MBS versus Intermediate Credit



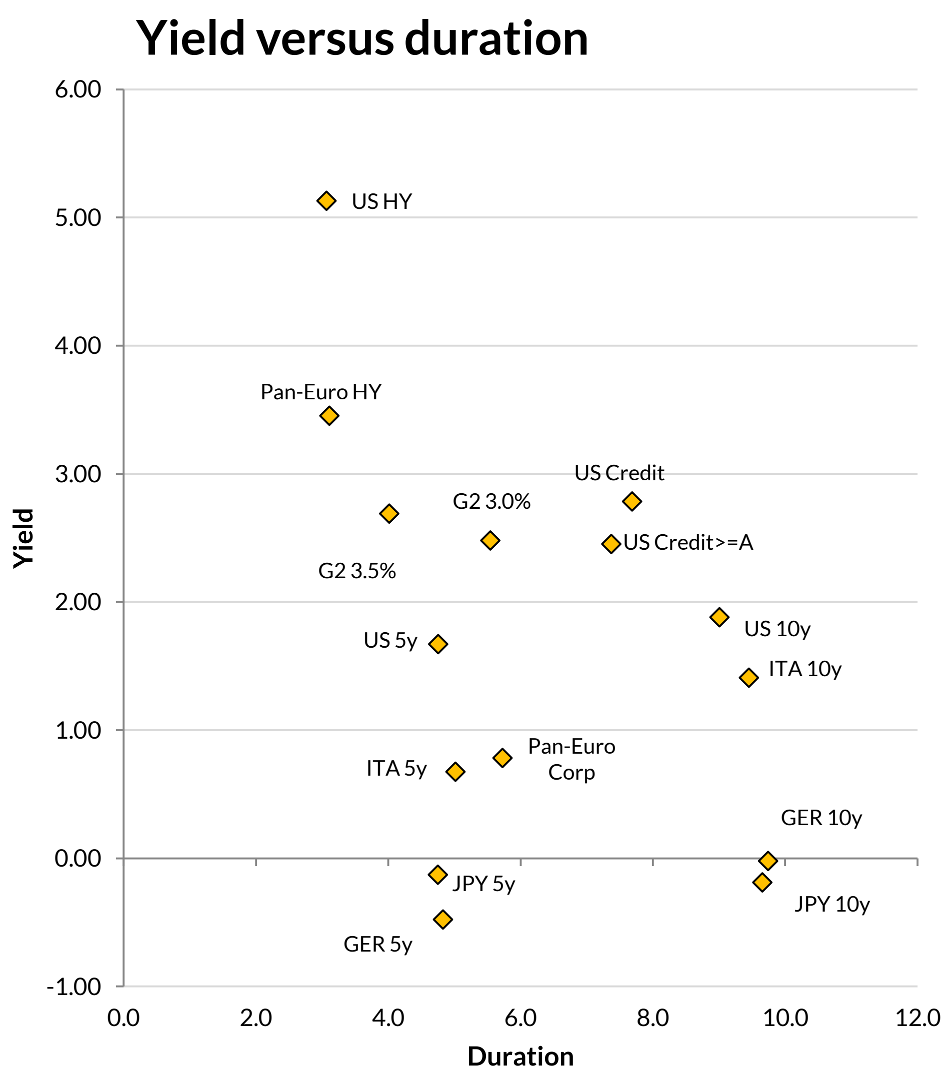
***Sources:** State Street Global Advisors. **Note:** Data as of December 2019.*

G2 30 MBS and Intermediate Credit OAS

***Sources:** State Street Global Advisors. **Note:** Data as of December 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 asset class with significantly more yields are the US and Pan-Euro high yield indices. Duration, a measure of sensitivity to interest rate changes, does not fully capture the volatility of the high yield asset classes, as there is a large credit component.



Security	Duration	Yield
US 5y	4.8	1.67
US 10y	9.0	1.88
GNMA II 3.0%	5.5	2.48
GNMA II 3.5%	4.0	2.69
JPY 5y	4.8	-0.13
JPY 10y	9.7	-0.02
GER 5y	4.8	-0.48
GER 10y	9.7	-0.19
ITA 5y	5.0	0.68
ITA 10y	9.5	1.41
US credit	7.7	2.79
US credit >= A	7.4	2.45
US HY	3.1	5.13
Pan-Euro Corp	5.7	0.78
Pan-Euro HY	3.1	3.45

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

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The average return on the Ginnie Mae index over the past decade is equal to the US Treasury index. However, the standard deviation of the Ginnie Mae index is the lowest of any sector, as it has the least price volatility over a 1, 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	0.48	0.56	1.14	0.65	1.13	0.97
3 year	0.24	0.28	0.49	0.23	0.52	0.39
5 year	0.19	0.20	0.38	0.21	0.51	0.40
10 year	0.27	0.26	0.46	0.40	0.62	0.67

	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	0.31	0.40	0.98	0.70	0.96	1.02
3 year	0.10	0.14	0.35	0.29	0.39	0.45
5 year	0.11	0.11	0.30	0.26	0.42	0.45
10 year	0.22	0.22	0.41	0.42	0.58	0.69

	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	0.50	1.31	1.18	0.73	1.41	1.10
3 year	0.61	1.00	1.06	0.68	1.18	1.03
5 year	0.57	1.06	1.17	0.97	1.52	1.34
10 year	0.65	1.02	1.18	1.14	1.68	1.68

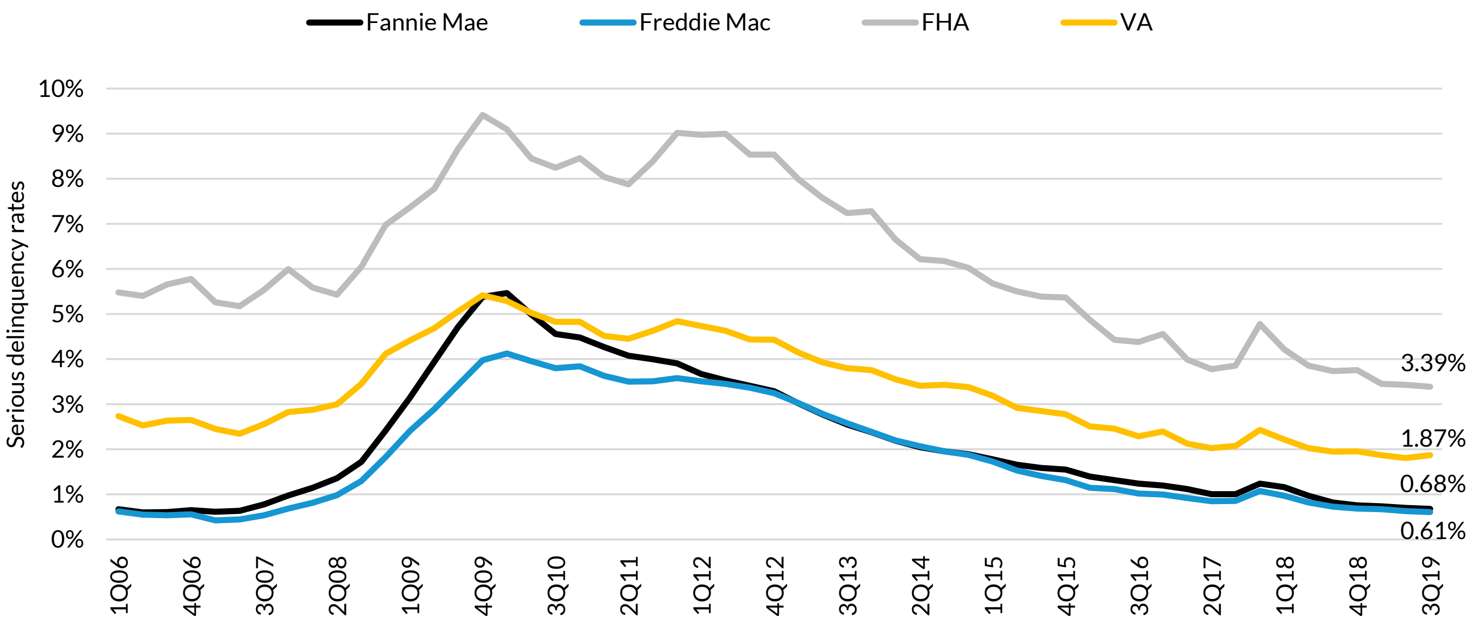
	Sharpe Ratio					
Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield	Pan Euro High Yield*
1 year	0.62	0.30	0.83	0.97	0.68	0.93
3 year	0.17	0.14	0.33	0.42	0.33	0.44
5 year	0.19	0.11	0.25	0.27	0.28	0.33
10 year	0.34	0.21	0.35	0.37	0.34	0.41

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

State of the US Housing Market

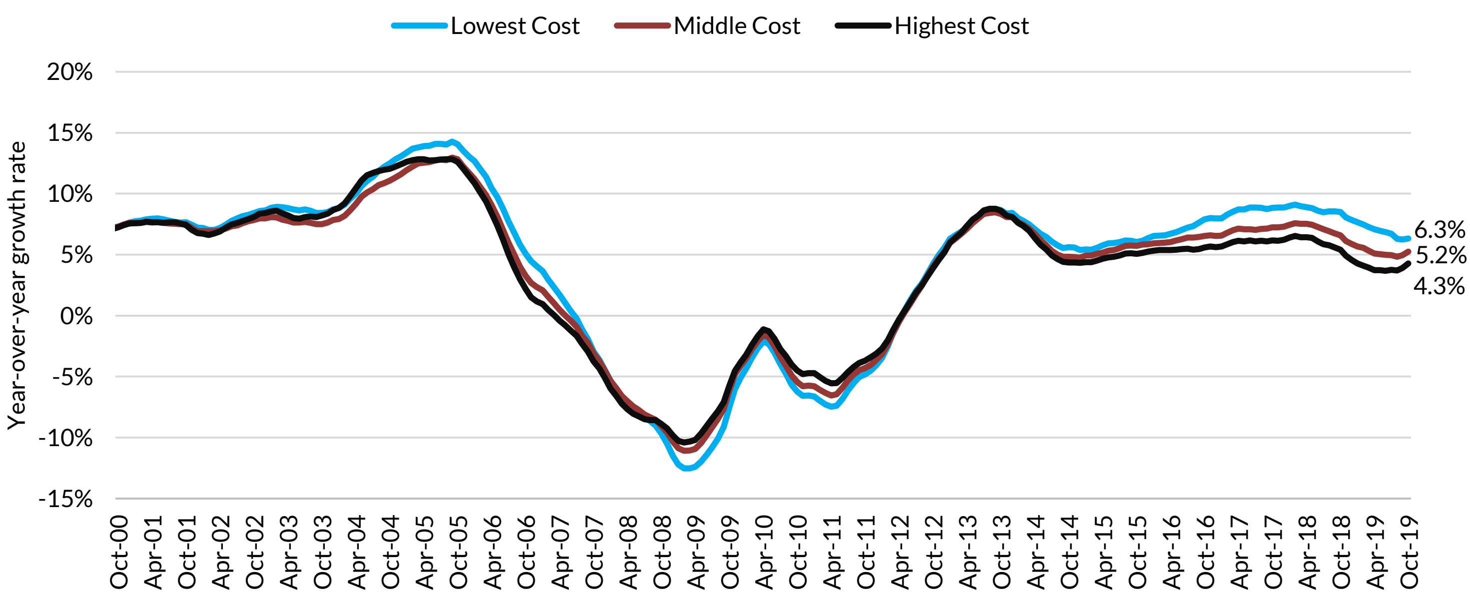
Serious delinquency rates for single-family GSE loans and FHA loans continued to decline in Q3 2019, while the rate grew slightly for VA loans. GSE delinquencies remain slightly higher relative to 2006-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are well below 2006-2007 levels. The bottom chart shows nationwide house prices for the bottom, middle and the top quintiles by price. House prices have risen most at the lower end of the market where Ginnie Mae plays a major role. Despite the slower rate of appreciation in 2019, prices at the lower end of the market rose by 6.3 percent for 12 months ended October 2019, much higher than the 4.3 percent for the top end of the market.

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 Q3 2019.*

National Year-Over-Year HPI Growth



Sources: *Black Knight, Zillow, and Urban Institute.* ***Note:*** *Data as of October 2019.*

State of the US Housing Market

Nationally, nominal home prices have increased by 54.8 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 15.4 percent. The picture is very different across states, with many states well in excess of the prior peak, while a few states remain 9 percent or more below peak levels: Connecticut (12.9% below), Nevada(9.8% below), Maryland (9.3% below), and Florida (9.2% below).

	HPI Changes				
State	**2000 to Peak**	**Peak to Trough**	**Trough to Current**	**YOY**	**Current HPI % Above Peak**
National	75.4%	-25.5%	54.8%	4.2%	15.4%
Alabama	43.9%	-15.3%	33.0%	6.7%	12.6%
Alaska	69.6%	-3.1%	23.5%	3.1%	19.7%
Arizona	110.1%	-48.0%	84.1%	6.6%	-4.2%
Arkansas	41.6%	-10.4%	25.6%	3.0%	12.6%
California	155.1%	-43.3%	90.1%	2.8%	7.7%
Colorado	40.3%	-12.8%	80.0%	4.3%	56.9%
Connecticut	92.4%	-24.6%	15.6%	2.3%	-12.9%
Delaware	94.9%	-23.9%	30.1%	3.4%	-1.0%
District of Columbia	175.5%	-13.6%	54.7%	2.0%	33.6%
Florida	128.9%	-47.0%	71.4%	3.5%	-9.2%
Georgia	38.2%	-32.0%	66.8%	5.2%	13.5%
Hawaii	162.9%	-22.4%	51.1%	2.6%	17.3%
Idaho	71.6%	-28.6%	88.0%	11.1%	34.2%
Illinois	61.6%	-34.5%	39.2%	2.0%	-8.9%
Indiana	21.1%	-7.9%	39.4%	7.2%	28.5%
Iowa	28.3%	-4.9%	29.2%	4.7%	22.9%
Kansas	34.7%	-9.2%	43.2%	5.7%	30.0%
Kentucky	29.6%	-7.8%	31.4%	4.1%	21.2%
Louisiana	48.9%	-5.1%	23.7%	2.7%	17.4%
Maine	82.1%	-12.5%	38.8%	5.0%	21.5%
Maryland	129.3%	-28.6%	27.1%	2.1%	-9.3%
Massachusetts	92.5%	-22.8%	56.4%	4.4%	20.7%
Michigan	23.9%	-39.5%	77.2%	4.2%	7.2%
Minnesota	66.4%	-27.7%	56.3%	4.5%	12.9%
Mississippi	41.1%	-13.7%	27.4%	2.7%	10.0%
Missouri	42.7%	-14.9%	37.8%	7.0%	17.2%
Montana	81.7%	-11.1%	51.9%	6.4%	34.9%
Nebraska	26.6%	-6.6%	42.8%	4.8%	33.3%
Nevada	126.9%	-59.2%	121.0%	2.4%	-9.8%
New Hampshire	90.8%	-23.6%	43.3%	5.7%	9.5%
New Jersey	117.8%	-27.9%	28.6%	3.1%	-7.2%
New Mexico	67.1%	-16.2%	24.1%	5.3%	4.0%
New York	98.4%	-15.1%	43.0%	3.9%	21.4%
North Carolina	40.7%	-15.7%	37.6%	5.4%	16.0%
North Dakota	54.0%	-3.8%	57.2%	3.6%	51.3%
Ohio	21.1%	-18.4%	43.0%	9.1%	16.7%
Oklahoma	37.5%	-2.4%	20.6%	4.0%	17.7%
Oregon	82.4%	-28.0%	79.3%	4.7%	29.0%
Pennsylvania	70.1%	-11.6%	25.6%	3.9%	11.0%
Rhode Island	130.9%	-34.5%	54.7%	6.3%	1.3%
South Carolina	44.7%	-19.2%	36.1%	4.5%	10.0%
South Dakota	45.0%	-3.9%	48.3%	5.8%	42.5%
Tennessee	35.2%	-11.9%	45.6%	5.7%	28.3%
Texas	33.3%	-5.7%	51.8%	3.5%	43.1%
Utah	54.7%	-21.9%	76.0%	6.9%	37.4%
Vermont	83.5%	-7.5%	35.5%	6.8%	25.4%
Virginia	99.5%	-22.7%	27.5%	4.0%	-1.5%
Washington	85.4%	-28.7%	86.9%	5.7%	33.3%
West Virginia	42.9%	-6.5%	25.4%	5.2%	17.3%
Wisconsin	44.6%	-16.4%	37.8%	5.1%	15.3%
Wyoming	77.4%	-5.7%	30.8%	5.7%	23.3%

Sources: *Black Knight and Urban Institute.* ***Note:*** *HPI data as of October 2019. 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 10/2019, the latest HPI data period.*

State of the US Housing Market

Ginnie Mae MBS constitute 28.8 percent of outstanding agency issuance by loan balance and 32.9 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 14.7 percent in the District of Columbia and as high as 49.7 percent in Alaska. In general, the Ginnie Mae share is higher in states with lower home prices.

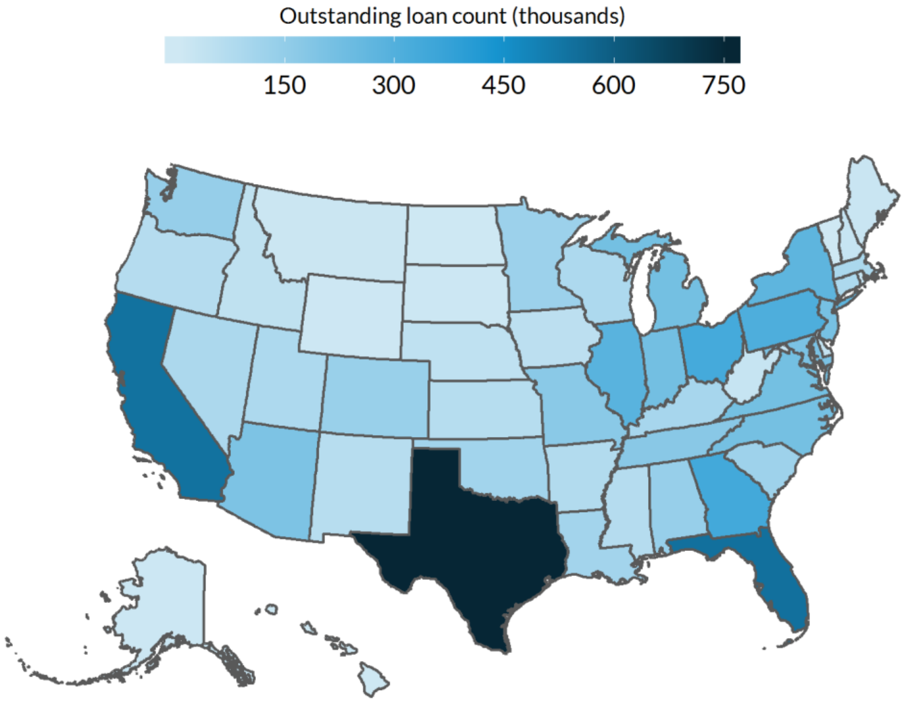
State	Agency Issuance (past 1 year)				Agency Outstanding			
	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)
National	32.9%	1,937,842	233.7	251.6	28.8%	11,417,308	163.3	189.9
Alabama	44.5%	35,744	177.1	198.6	43.3%	237,303	128.0	153.0
Alaska	52.5%	5,273	295.3	263.6	49.7%	38,765	231.1	200.3
Arizona	32.8%	67,671	233.0	237.2	28.8%	320,871	164.6	181.0
Arkansas	42.8%	19,778	152.3	178.9	43.0%	139,572	110.5	138.4
California	27.4%	168,014	374.1	364.3	19.1%	792,054	264.9	270.2
Colorado	32.4%	57,510	315.3	304.6	24.6%	239,578	218.4	228.9
Connecticut	31.7%	16,046	223.3	240.3	28.5%	109,740	181.9	189.1
Delaware	38.6%	8,337	227.1	238.5	35.0%	51,869	179.3	184.8
District of Columbia	17.8%	1,506	449.6	398.1	14.7%	10,128	298.5	305.6
Florida	40.5%	172,401	225.6	222.4	33.9%	835,636	166.1	173.0
Georgia	40.4%	88,678	200.6	226.6	37.0%	517,896	143.1	171.5
Hawaii	43.5%	6,692	523.4	416.5	28.3%	31,483	381.7	317.4
Idaho	32.6%	15,612	231.5	228.9	29.2%	80,054	154.9	170.8
Illinois	25.2%	57,154	188.2	215.2	23.5%	375,051	140.2	161.2
Indiana	36.3%	49,153	155.9	173.3	35.8%	309,982	110.8	127.6
Iowa	25.8%	13,101	157.0	177.7	24.4%	87,720	113.2	132.3
Kansas	35.2%	15,546	166.8	190.9	33.9%	106,679	119.5	140.0
Kentucky	38.9%	27,210	161.5	181.0	37.4%	169,127	121.0	133.9
Louisiana	43.2%	28,937	179.4	205.0	40.7%	188,425	136.7	159.6
Maine	34.0%	6,938	197.5	217.2	30.6%	41,001	151.8	162.0
Maryland	43.4%	49,836	299.9	288.5	37.5%	305,389	230.2	220.2
Massachusetts	22.7%	23,705	314.0	313.3	18.0%	125,104	235.5	231.0
Michigan	24.0%	47,673	160.0	186.6	23.8%	312,004	113.1	136.2
Minnesota	23.6%	28,268	215.6	229.4	22.2%	192,916	155.6	172.6
Mississippi	51.1%	17,469	163.5	183.2	49.1%	115,632	120.0	142.6
Missouri	34.0%	41,888	165.3	188.8	33.3%	267,413	120.2	140.1
Montana	30.1%	6,032	233.9	238.2	27.6%	37,077	169.2	179.2
Nebraska	32.7%	10,575	180.6	184.6	31.2%	74,542	121.9	138.8
Nevada	37.9%	31,609	272.7	253.4	32.2%	143,850	187.8	194.7
New Hampshire	31.5%	8,157	253.1	243.2	27.3%	45,375	192.6	183.2
New Jersey	28.8%	40,962	268.2	288.3	25.9%	250,771	209.4	220.3
New Mexico	42.3%	13,908	193.7	203.4	41.1%	98,743	140.7	154.0
New York	24.3%	43,062	259.5	292.7	24.2%	338,827	186.6	216.6
North Carolina	35.2%	71,350	198.0	222.8	32.2%	432,770	140.9	167.8
North Dakota	29.5%	2,772	224.8	221.0	24.8%	16,888	166.6	168.0
Ohio	33.8%	65,813	155.2	170.4	34.2%	457,160	112.0	127.7
Oklahoma	45.3%	26,534	163.9	184.1	46.4%	197,346	119.1	141.2
Oregon	28.8%	25,756	281.3	278.9	21.8%	128,369	198.8	210.0
Pennsylvania	31.5%	57,951	177.4	209.0	31.1%	420,507	135.7	159.4
Rhode Island	37.8%	6,652	247.6	240.1	32.1%	37,138	187.8	184.2
South Carolina	40.3%	42,372	200.1	210.0	35.8%	227,878	146.9	162.2
South Dakota	37.0%	5,391	190.5	199.3	34.0%	31,122	142.6	151.2
Tennessee	39.8%	51,045	201.5	219.4	37.6%	299,344	138.7	166.6
Texas	34.8%	165,053	213.7	230.5	34.1%	1,086,859	143.0	177.0
Utah	26.9%	27,165	271.2	278.3	24.7%	129,415	190.8	212.1
Vermont	24.9%	2,081	200.3	213.8	19.4%	12,873	163.8	160.1
Virginia	43.8%	72,708	291.2	288.9	39.0%	452,767	219.6	218.6
Washington	31.3%	55,375	316.9	318.4	25.1%	274,670	218.2	233.1
West Virginia	50.3%	8,826	164.5	166.4	44.9%	54,851	125.8	127.6
Wisconsin	21.5%	21,951	182.4	194.0	19.4%	139,599	133.0	142.6
Wyoming	41.5%	4,602	227.7	231.6	38.3%	27,175	176.8	177.8

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

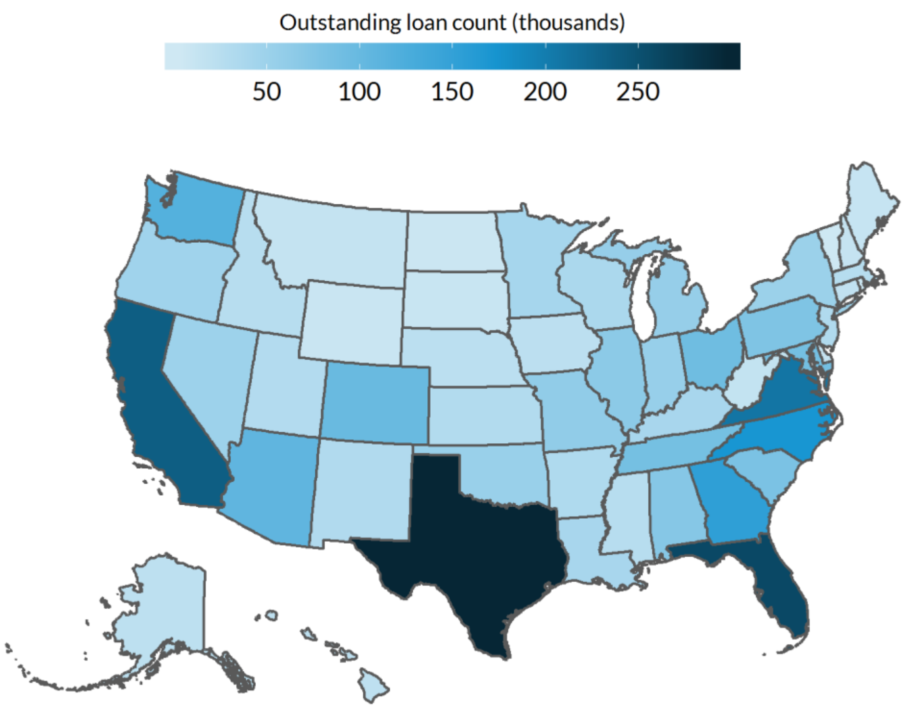
FHA and VA Outstanding Loan Count

Texas , Florida, and California are the top 3 states for FHA and VA lending as measured by the number of loans outstanding. As of November 2019, TX has 750,000 million FHA and 300,000 VA loans outstanding, FL had 540,000 FHA and 260,000 VA loans outstanding, and CA had 540,000 FHA and 230,000 VA loans outstanding. Virginia ranks 4th for number of VA loans outstanding and 13th for number of FHA loans outstanding.

FHA Outstanding Loan Count by State



VA Outstanding Loan Count by State

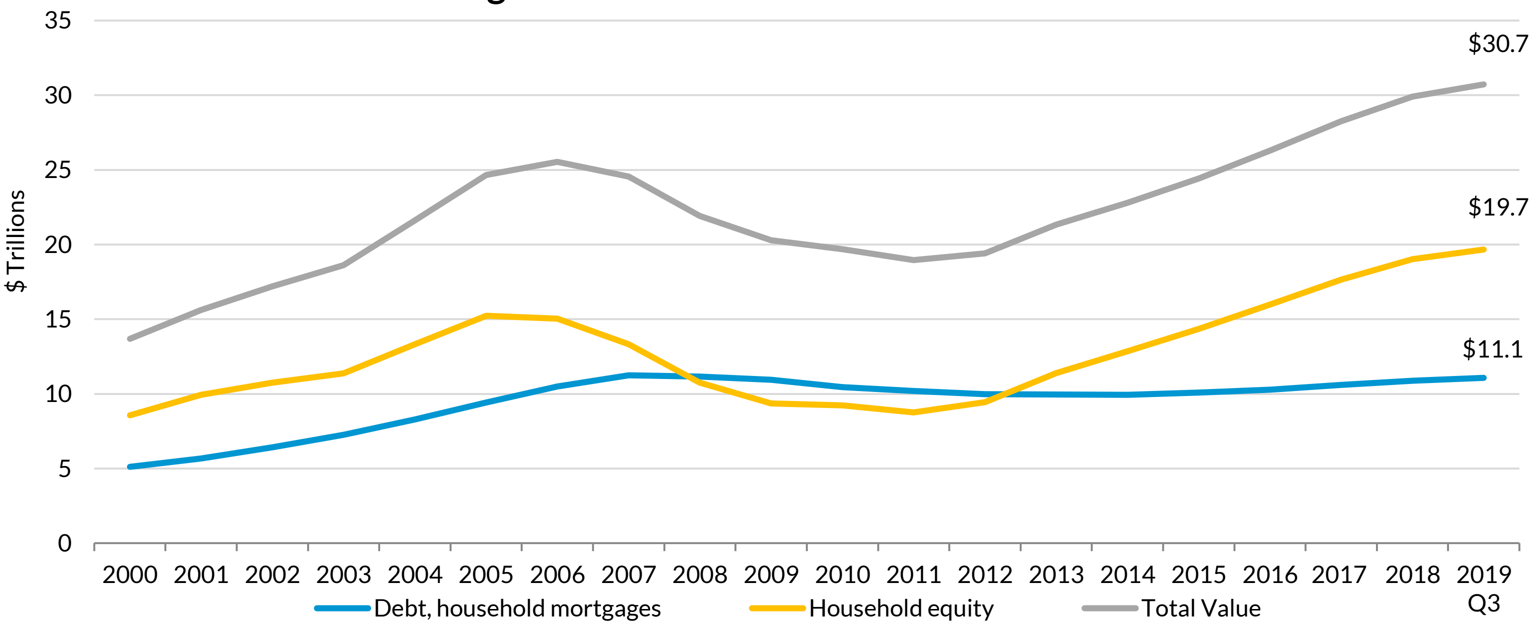


***Sources:** eMBS and Urban Institute.* ***Note:** Ginnie Mae outstanding share are based on loan balance as of November 2019.*

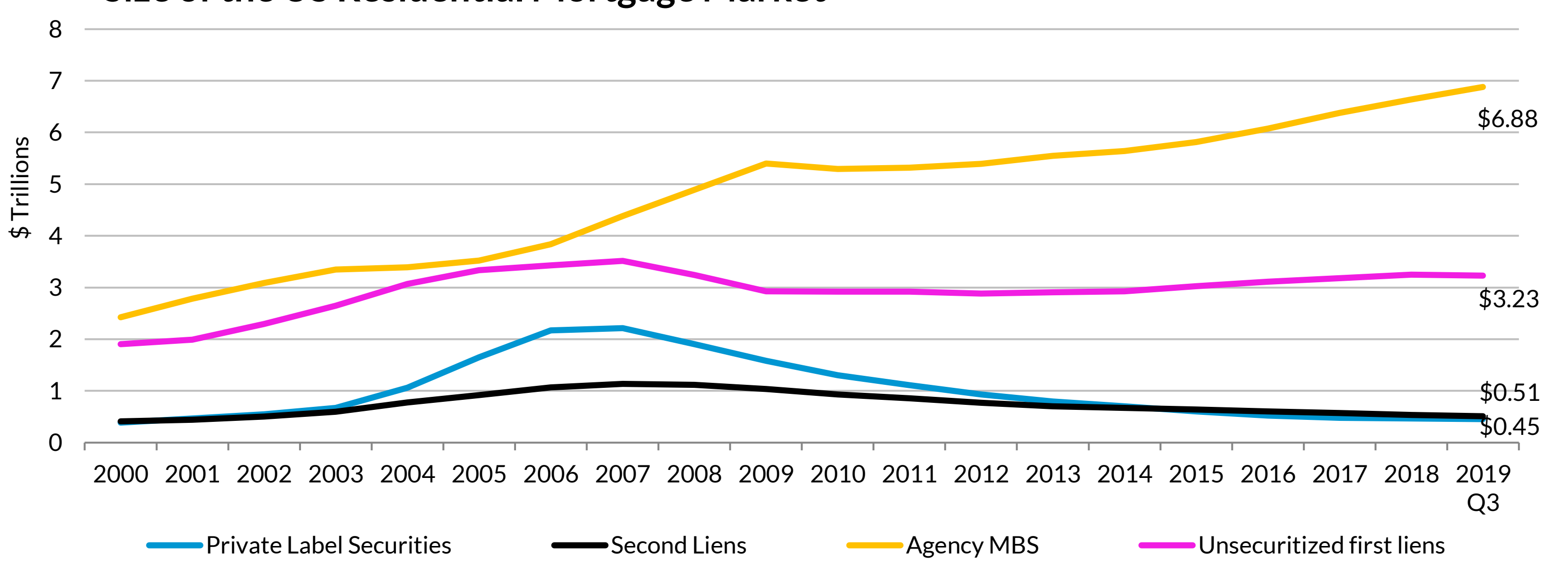
State of the US Housing Market

The Federal Reserve's Flow of Funds report has indicated a gradually increasing total value of the housing market driven by growing household equity since 2012, and Q3 2019 was no different. Total mortgage debt outstanding and household equity were up slightly from Q2 2019 to $11.1 and $19.7 trillion in Q3 2019, bringing the total value of the housing market to $30.7 trillion. The market is now 20.3 percent higher than the pre-crisis peak in 2006. Agency MBS account for 62.21 percent of the total mortgage debt outstanding, private-label securities make up 4.1 percent, and unsecuritized first liens make up 29.2 percent. Second liens comprise the remaining 4.6 percent of the total.

Value of the US Housing Market



Size of the US Residential Mortgage Market

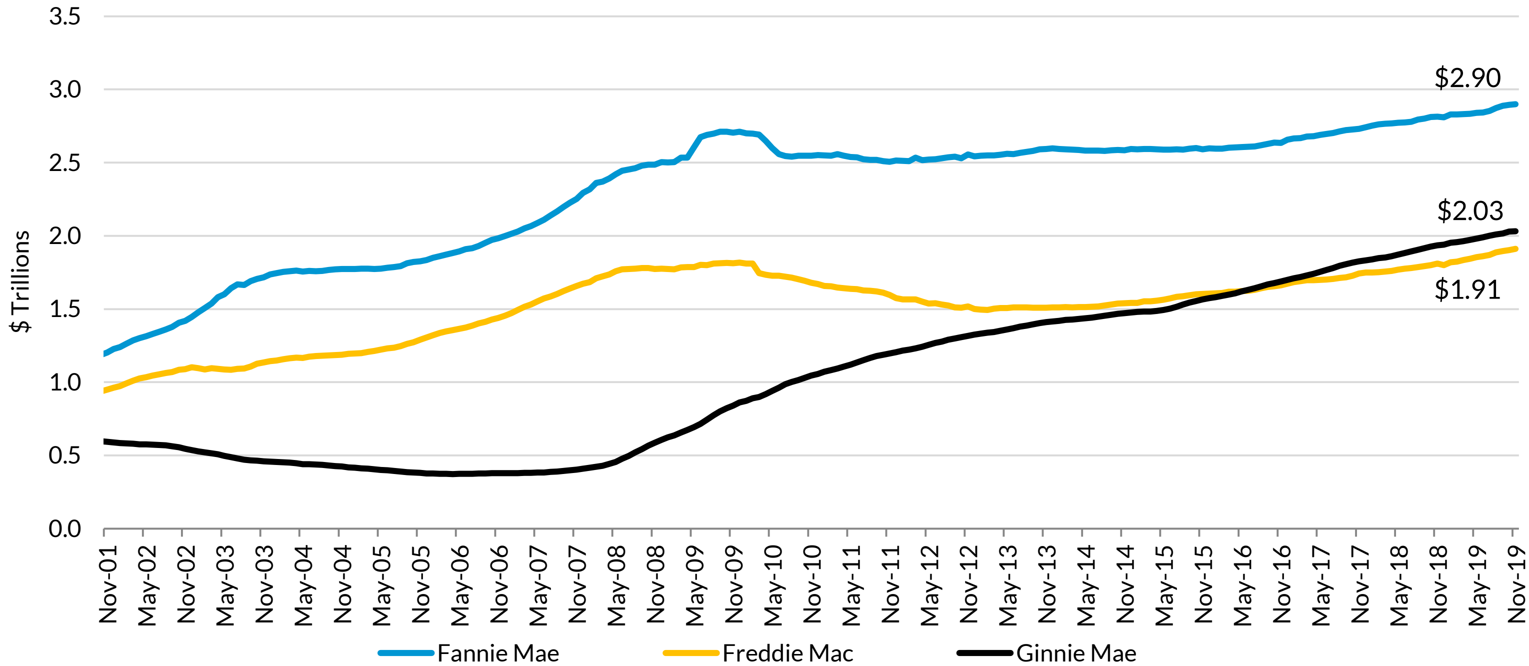


Sources: *Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.*
Note: *Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions.*

State of the US Housing Market

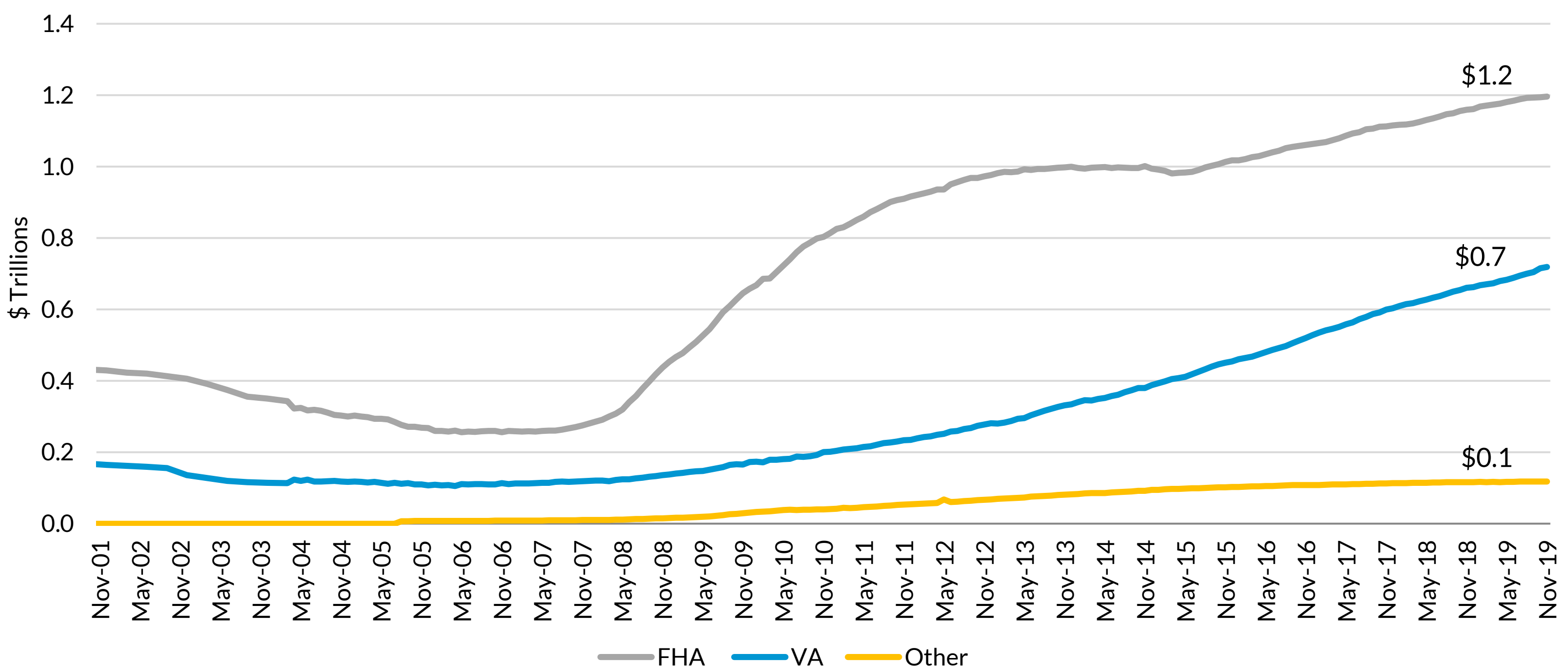
As of November 2019, outstanding securities in the agency market totaled $6.84 trillion: 42.4 percent Fannie Mae, 27.9 percent Freddie Mac, and 29.7 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. FHA comprises 58.8 percent of total Ginnie Mae MBS outstanding, while VA comprises 35.4 percent.

Outstanding Agency Mortgage-Backed Securities



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

Outstanding Ginnie Mae Mortgage-Backed Securities

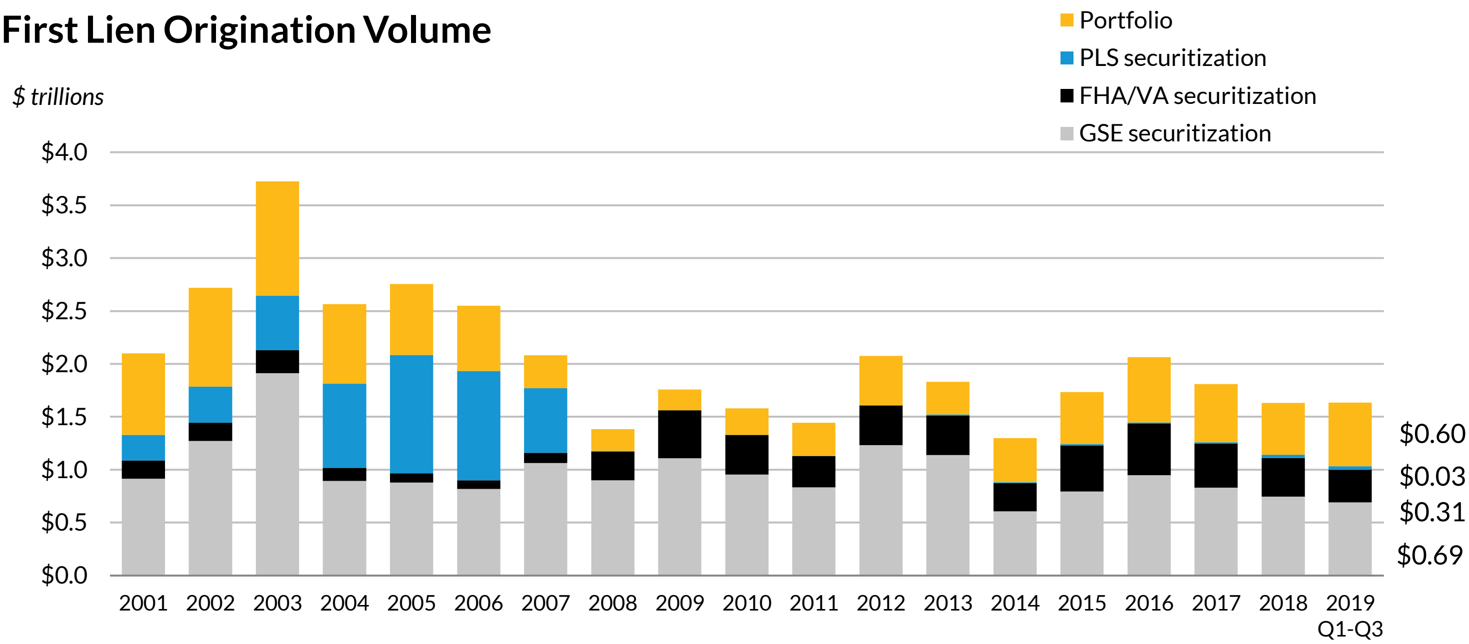


Sources: *eMBS and Urban Institute.* **Note:** *Data as of November 2019.*

State of the US Housing Market

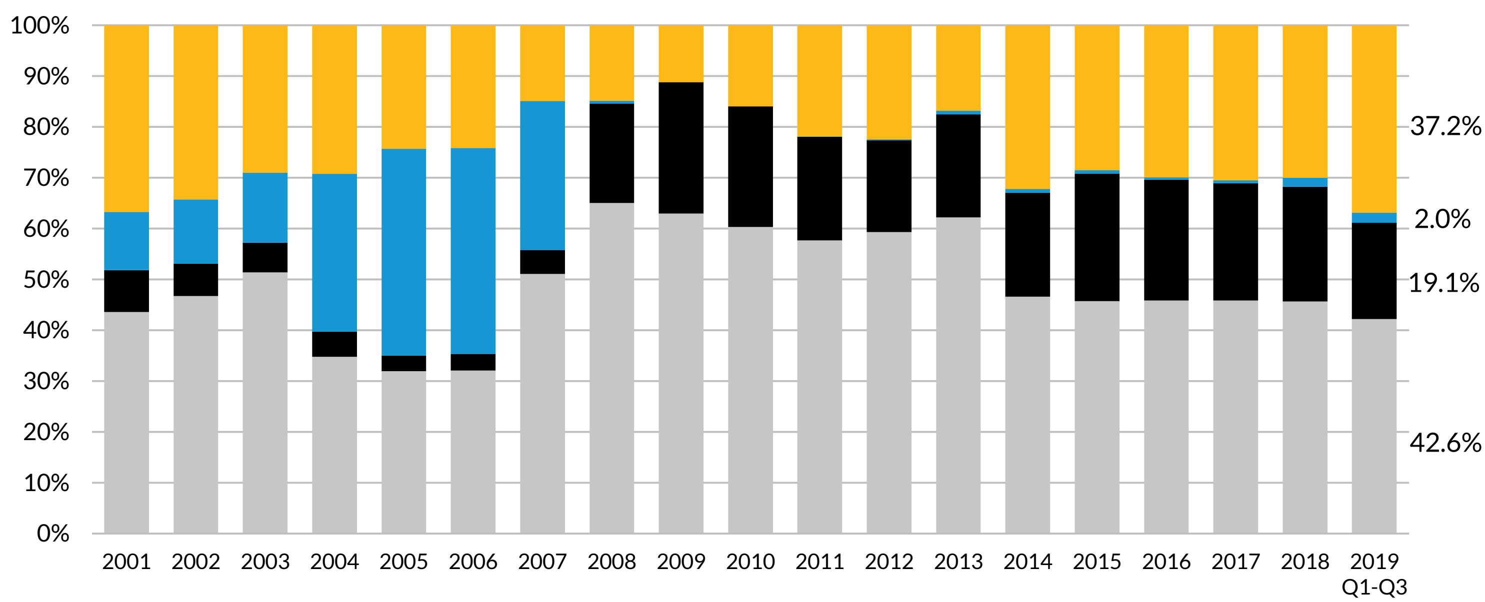
In the first three quarters of 2019, first lien originations totaled $1.62 trillion, up from $1.26 trillion at the same point in 2018. The share of portfolio originations was 37.2 percent through Q3 2019, up significantly from 30.9 percent in the same period of 2018. The GSE share was down at 42.6 percent, compared to 45.1 percent in the first three quarters of 2018. The FHA/VA share fell slightly, at 19.1 percent compared to 22.1 percent in the same period last year. Private-label securitization at 2.0 percent maintained the same share as one year ago, but remains a fraction of its share in the pre-bubble years.

First Lien Origination Volume



Sources: *Inside Mortgage Finance and Urban Institute.* ***Note:*** *Data as of Q3 2019.*

First Lien Origination Share



Sources: *Inside Mortgage Finance and Urban Institute.* ***Note:*** *Data as of Q3 2019.*

US Agency Market, Originations

Agency gross issuance was $1.38 trillion in the first eleven months of 2019, up 25.1 percent compared to the same period in 2018. Ginnie Mae gross issuance was up by 22.5 percent and GSE gross issuance was up by 26.4 percent. Within the Ginnie Mae market, FHA was up by 16.6 percent and VA origination was up by 34.1 percent. While origination volumes were lower in January and February, a favorable rate environment has led to an increase in issuance year-over-year.

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	$535.3	$392.7	$928.0	$455.9	$1,383.9
2019 YTD % Change YOY	20.6%	35.3%	26.4%	22.5%	25.1%
2019 Ann.	$584.0	$428.4	$1,012.3	$497.3	$1,509.7

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	$241.0	$200.3	$14.5	$455.9
2019 YTD % Change YOY	16.6%	34.1%	-9.4%	22.5%
2019 Ann.	$263.0	$218.6	$15.8	$497.3

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 October 2019.*

US Agency Market, Originations

Agency net issuance totaled $294.3 billion in the first eleven months of 2019, up 23.3 percent compared to the same period in 2018. Ginnie Mae net issuance was $92.2 billion, comprising 31.3 percent of total agency net issuance. Ginnie Mae net issuance was down 11.2 percent compared to the same period in 2018, while GSE net issuance was up 49.8 percent over the same period. Ginnie Mae net issuance in the first ten months of 2019 was comprised of 57.3 percent VA and 36.5 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	$53.5	$11.8	$65.3	$89.6	$154.9
2014	-$4.0	$30.0	$26.0	$61.6	$87.7
2015	$3.5	$65.0	$68.4	$97.3	$172.5
2016	$60.5	$66.8	$127.4	$126.1	$261.6
2017	$83.7	$77.0	$160.7	$132.3	$293.0
2018	$68.6	$49.2	$117.8	$108.1	$225.9
2019 YTD	$90.6	$111.4	$202.0	$92.2	$294.3
2019 YTD % Change YOY	22.9%	82.2%	49.8%	-11.2%	23.3%
2019 Ann.	$98.9	$121.5	$220.4	$100.6	$321.0

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	$33.7	$52.9	$1.6	$92.2
2019 YTD % Change YOY	-23.4%	-6.8%	-50.4%	-11.2%
2019 Ann.	$36.7	$57.7	$1.7	$100.6

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 November 2019.*

US Agency Market, Originations

Agency gross issuance moves inversely to interest rates, generally declining as interest rates rise, increasing when interest rates fall, but the seasonal trend is also very strong. This table allows for a comparison with the same month in previous years. In 2019, January and February were lower than 2018, March was about the same, while April through November have been much higher, benefitting from the decline in interest rates. The November 2019 gross agency issuance of $173.1 billion is well above the November 2018 level of $97.6 billion.

Monthly Agency Issuance

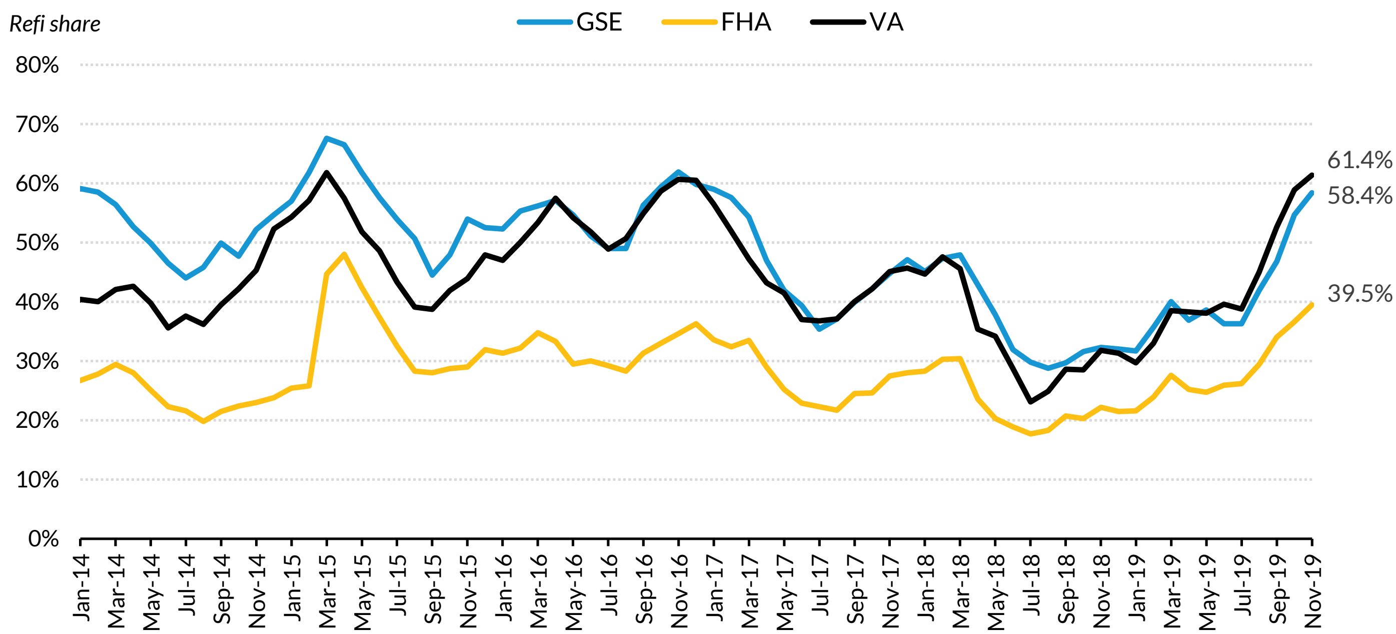
	Gross Issuance				Net Issuance			
Date	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-17	$55.6	$38.5	$42.6	$136.6	$8.5	$10.7	$10.3	$29.5
Feb-17	$37.6	$27.4	$33.1	$98.1	$2.5	$6.5	$9.4	$18.5
Mar-17	$39.5	$24.4	$31.3	$95.2	$9.7	$6.2	$9.7	$25.6
Apr-17	$39.3	$21.2	$36.4	$97.0	$3.3	$0.4	$11.7	$15.4
May-17	$40.3	$22.6	$36.4	$99.3	$7.7	$2.7	$13.3	$23.8
Jun-17	$45.7	$25.1	$39.9	$110.7	$7.9	$2.4	$13.3	$23.5
Jul-17	$45.3	$27.6	$40.6	$113.5	$5.6	$3.5	$12.3	$21.5
Aug-17	$49.1	$29.3	$42.8	$121.1	$12.0	$6.7	$15.4	$34.1
Sep-17	$47.3	$27.9	$40.2	$115.5	$7.7	$3.8	$10.6	$22.0
Oct-17	$42.9	$34.6	$38.4	$115.9	$5.5	$12.5	$11.0	$28.9
Nov-17	$43.5	$37.2	$37.8	$118.5	$3.9	$13.6	$8.3	$25.8
Dec-17	$45.3	$30.0	$36.2	$111.5	$9.2	$8.1	$7.0	$24.4
Jan-18	$47.4	$21.4	$35.2	$104.0	$12.1	$0.2	$7.7	$20.0
Feb-18	$40.3	$21.5	$31.9	$93.7	$8.3	$2.2	$7.1	$17.6
Mar-18	$35.6	$21.3	$29.0	$85.9	$4.9	$3.0	$6.3	$14.1
Apr-18	$36.3	$26.2	$32.7	$95.2	$1.7	$6.0	$8.8	$16.5
May-18	$38.9	$27.5	$33.7	$100.1	$5.1	$7.2	$10.5	$22.8
Jun-18	$38.2	$28.8	$35.6	$102.5	$2.5	$6.8	$10.3	$19.6
Jul-18	$40.3	$26.2	$35.6	$102.1	$4.2	$3.7	$10.4	$18.3
Aug-18	$50.4	$29.9	$37.5	$117.8	$15.8	$7.9	$12.5	$36.1
Sep-18	$41.8	$30.1	$34.8	$106.6	$5.9	$6.2	$9.0	$21.1
Oct-18	$39.8	$27.4	$33.2	$100.3	$9.7	$7.1	$11.4	$28.2
Nov-18	$35.1	$30.1	$32.4	$97.6	$3.6	$11.0	$9.8	$24.4
Dec-18	$36.9	$23.9	$28.4	$89.1	-$5.1	-$12.0	$4.3	-$12.7
Jan-19	$33.3	$19.2	$29.0	$81.6	$19.1	$20.8	$13.2	$53.1
Feb-19	$27.3	$19.9	$23.5	$70.7	$1.4	$3.4	$4.6	$9.3
Mar-19	$29.6	$27.3	$26.6	$83.5	$1.8	$10.3	$5.6	$17.6
Apr-19	$33.1	$30.8	$32.9	$96.8	$1.3	$10.8	$8.3	$20.4
May-19	$44.5	$34.3	$38.8	$117.6	$6.7	$9.8	$9.4	$26.0
Jun-19	$44.6	$34.0	$43.3	$121.9	$1.9	$5.9	$9.0	$16.8
Jul-19	$51.7	$36.9	$45.9	$134.5	$10.9	$10.1	$11.0	$32.0
Aug-19	$71.1	$50.4	$51.2	$172.6	$20.8	$17.1	$8.7	$46.6
Sep-19	$67.1	$43.0	$52.0	$162.1	$14.1	$7.5	$6.5	$28.0
Oct-19	$65.0	$46.2	$58.4	$169.6	$7.4	$7.1	$11.9	$26.5
Nov-19	$68.1	$50.7	$54.3	$173.1	$5.2	$8.6	$4.1	$18.0

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 November 2019.*

US Agency Market, Originations

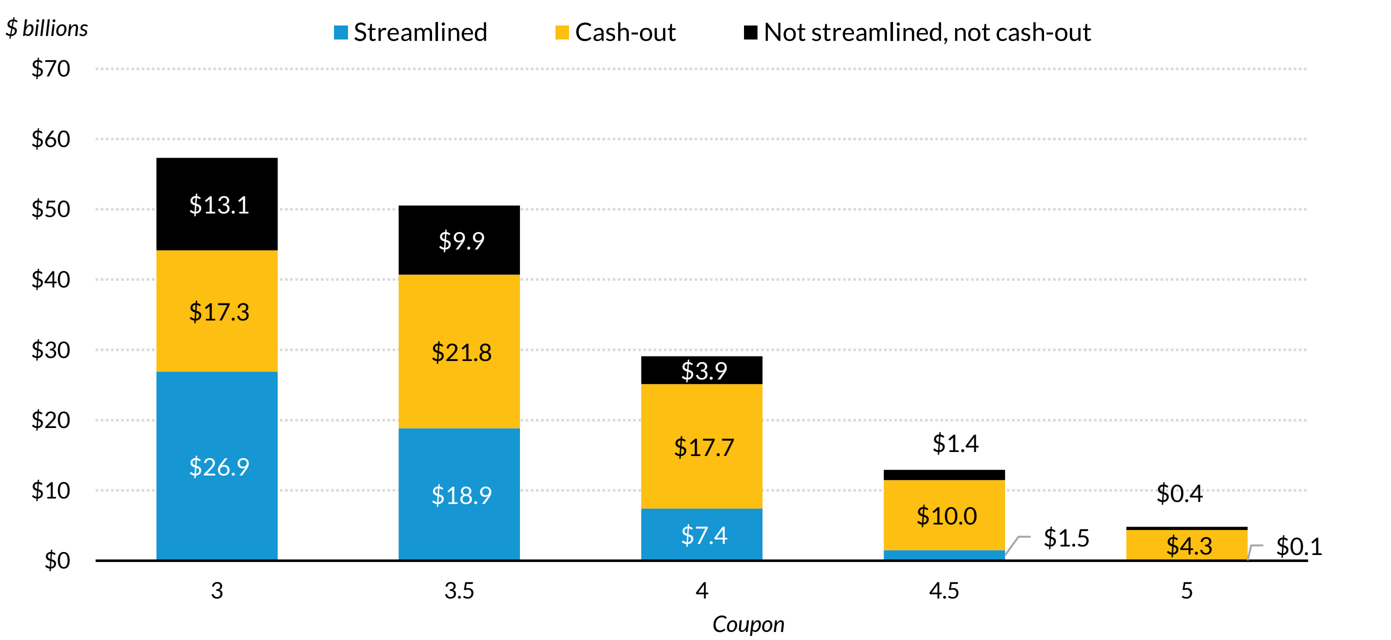
The FHA refinance share stood at 39.5 percent in November 2019, below the 61.4 percent refi share for VA originations and the 58.4 percent share for the GSEs. Refinances as a share of all originations have grown in 2019 as interest rates have fallen. The bottom section, focusing exclusively on Ginnie Mae, shows that streamlined refinances are more common in lower coupon pools. By contrast, cash out refinances are relatively more important for higher coupon borrowers; as these borrowers are usually more credit constrained.

Percent Refi at Issuance



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

Ginnie Mae Refinance Issuance by Type: 2019 YTD

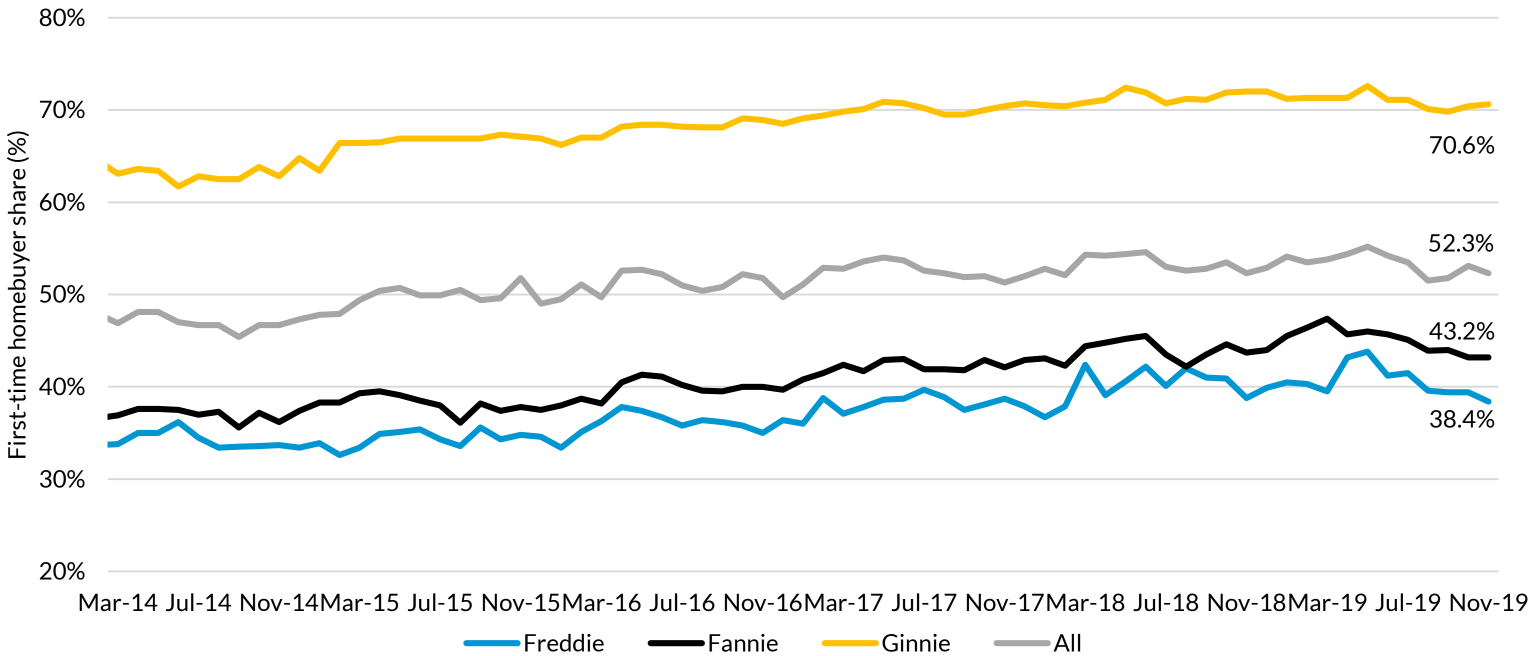


Sources: *eMBS and Urban Institute.*
Note: *Based on at-issuance balance. Data as of November 2019.*

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 70.6 percent in November 2019, down slightly from its historical high in May. 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 43.2 percent and 38.4 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in November 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, a similar DTI, and pay a slightly higher rate.

First Time Homebuyer Share: Purchase Only Loans



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

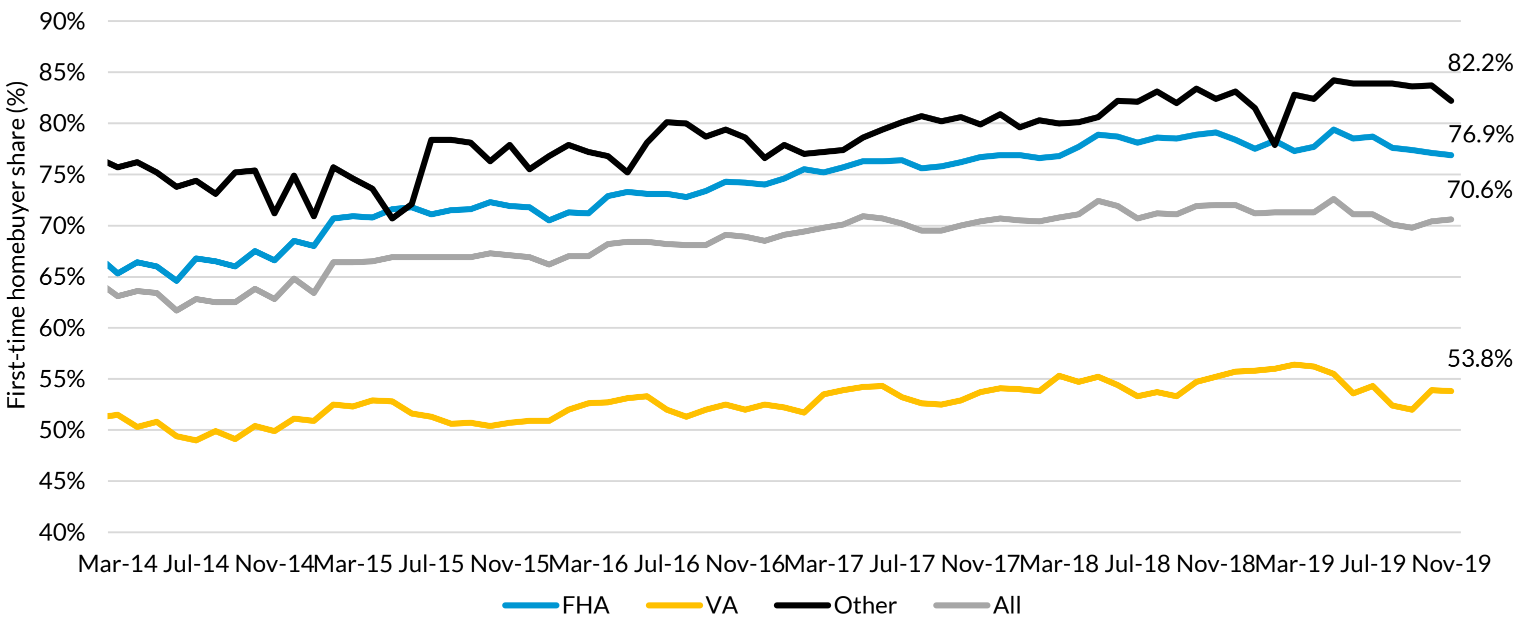
	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	244,379	272,221	250,126	274,010	221,673	265,865	233,871	271,019
Credit Score	742.6	756.2	744.1	756.6	680.0	699.9	710.8	740.4
LTV (%)	88.1	79.1	87.0	79.4	96.8	95.3	92.3	83.7
DTI (%)	35.3	36.2	35.2	36.0	41.5	42.5	38.4	37.9
Loan Rate (%)	4.0	3.8	3.9	3.8	3.9	3.7	3.9	3.8

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 November 2019.*

Credit Box

Within the Ginnie Mae purchase market, 76.9 percent of FHA loans, 53.8 percent of VA loans and 82.2 percent of other loans represent financing for first-time home buyers in November 2019. The bottom table shows that based on mortgages originated in November 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, similar DTI and pay a higher rate.

First Time Homebuyer Share: Ginnie Mae Breakdown



Sources: *eMBS and Urban Institute.* **Note**: *Includes only purchase loans. Data as of November 2019.*

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	219,003	234,486	261,652	310,754	155,324	170,886	221,673	265,865
Credit Score	671.0	673.4	699.6	727.6	696.5	703.2	680.0	699.9
LTV (%)	95.5	93.8	99.8	96.4	99.1	99.1	96.8	95.3
DTI (%)	42.9	44.0	40.4	41.8	34.7	35.3	41.5	42.5
Loan Rate (%)	4.0	3.9	3.7	3.6	3.8	3.8	3.9	3.7

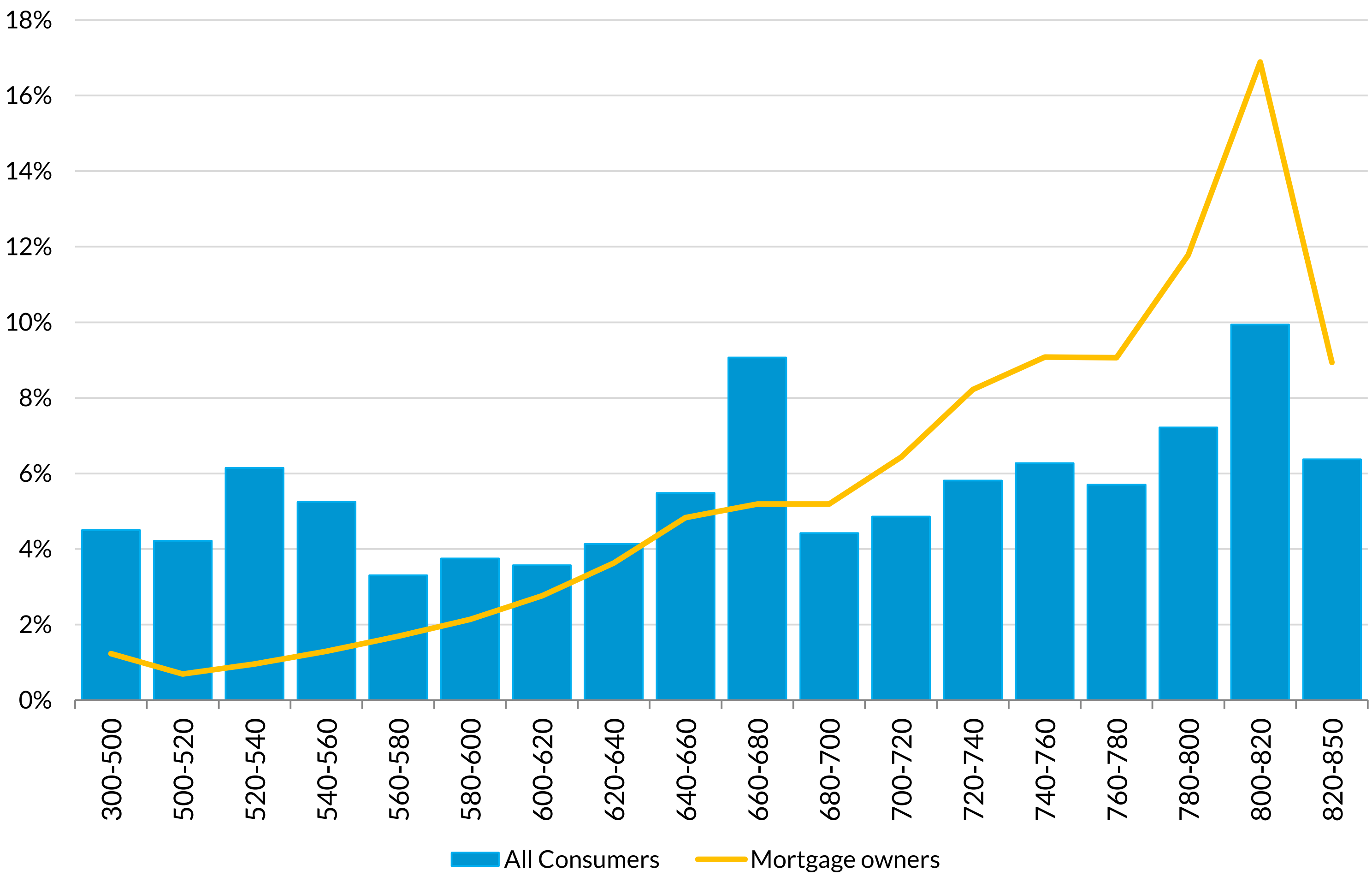
Sources: *eMBS and Urban Institute.* **Note**: *Data as of November 2019. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed 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.*

November 2019 Credit Box at a Glance

In November 2019, the median Ginnie Mae FICO score was 682 versus 760 for Fannie Mae and 759 for Freddie Mac. Note that the FICO score for the 10th percentile was 622 for Ginnie Mae, versus 690 for both Fannie Mae and Freddie Mac. Within the Ginnie Mae market, FHA loans have a median FICO score of 666, VA loans have a median FICO score of 717 and other loans have a median FICO score of 695.

Purchase FICO

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	289,590	644	683	734	777	798	727
Fannie	100,852	689	722	759	787	802	751
Freddie	78,731	691	724	760	788	802	753
Ginnie	110,007	622	645	677	724	770	686

Refi FICO

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	332,450	660	702	748	781	799	738
Fannie	146,199	691	723	760	786	802	752
Freddie	105,857	689	723	759	785	801	751
Ginnie	80,394	622	651	690	740	781	694

All FICO

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	622,040	651	693	742	779	799	733
Fannie	247,051	690	723	760	787	802	752
Freddie	184,588	690	723	759	786	801	752
Ginnie	190,401	622	647	682	731	775	689

Purchase FICO: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	110,007	622	645	677	724	770	686
FHA	68,025	617	639	666	700	739	672
VA	31,973	631	662	713	766	794	713
Other	10,009	639	660	694	733	767	698

Refi FICO: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	80,394	622	651	690	740	781	694
FHA	37,005	611	639	667	699	735	669
VA	42,929	637	673	719	766	793	715
Other	460	643	664	700	743	779	704

All FICO: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	190,401	622	647	682	731	775	689
FHA	105,030	615	639	666	700	738	671
VA	74,902	633	668	717	766	793	714
Other	10,469	639	660	695	734	767	698

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 November 2019.*

November 2019 Credit Box at a Glance

In November 2019, the median loan-to-value ratio (LTV) was 96.5 percent for Ginnie Mae, 77 percent for Fannie Mae and 79 percent for Freddie Mac. The 90th percentile was 101.0 percent for Ginnie Mae, and 95 percent for both Freddie and Fannie. Within the Ginnie Mae market, the median LTV was 96.5 for FHA, 99.0 for VA and 100.9 for other programs.

Purchase LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	289,972	72.0	80.0	95.0	96.5	100.0	87.6
Fannie	100,946	64.0	79.0	84.0	95.0	97.0	82.5
Freddie	78,791	63.0	79.0	80.0	95.0	95.0	81.8
Ginnie	110,235	92.6	96.5	96.5	100.0	101.0	96.4
Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	342,104	50.0	64.0	75.0	85.3	95.9	73.6
Fannie	146,204	46.0	59.0	71.0	80.0	85.0	67.9
Freddie	105,867	47.0	60.0	73.0	80.0	85.0	69.0
Ginnie	90,033	73.0	82.3	90.2	98.0	100.0	88.4
All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	632,076	56.0	71.0	80.0	95.0	97.3	80.0
Fannie	247,150	50.0	64.0	77.0	85.0	95.0	73.8
Freddie	184,658	51.0	67.0	79.0	85.0	95.0	74.4
Ginnie	200,268	80.3	89.9	96.5	98.9	101.0	92.8

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	110,235	92.6	96.5	96.5	100.0	101.0	96.4
FHA	68,144	92.4	96.5	96.5	96.5	96.5	95.1
VA	32,036	91.1	100.0	100.0	102.2	103.1	98.2
Other	10,055	95.1	99.0	100.9	101.0	101.0	99.1
Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	90,033	73.0	82.3	90.2	98.0	100.0	88.4
FHA	41,628	73.2	81.4	86.5	96.7	98.2	86.7
VA	47,882	72.9	83.9	93.2	99.6	101.0	89.8
Other	523	81.7	92.8	99.2	101.0	102.4	94.8
All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	200,268	80.3	89.9	96.5	98.9	101.0	92.8
FHA	109,772	81.4	89.2	96.5	96.5	97.0	91.9
VA	79,918	77.8	89.2	99.0	100.0	102.2	93.2
Other	10,578	94.5	98.9	100.9	101.0	101.0	98.9

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 November 2019.*

November 2019 Credit Box at a Glance

In November 2019, the median Ginnie Mae debt-to-income ratio (DTI) was 41.9 percent, considerably higher than the 36.0 percent median DTI for both Freddie Mac and Fannie Mae. The 90th percentile for Ginnie Mae was 54.1 percent, also much higher than the 47.0 and 46.0 percent DTI for Fannie Mae and Freddie Mac, respectively. Within the Ginnie Mae market, the median FHA DTI ratio was 43.9 percent, versus 39.7 percent for VA and 35.7 percent for other lending programs.

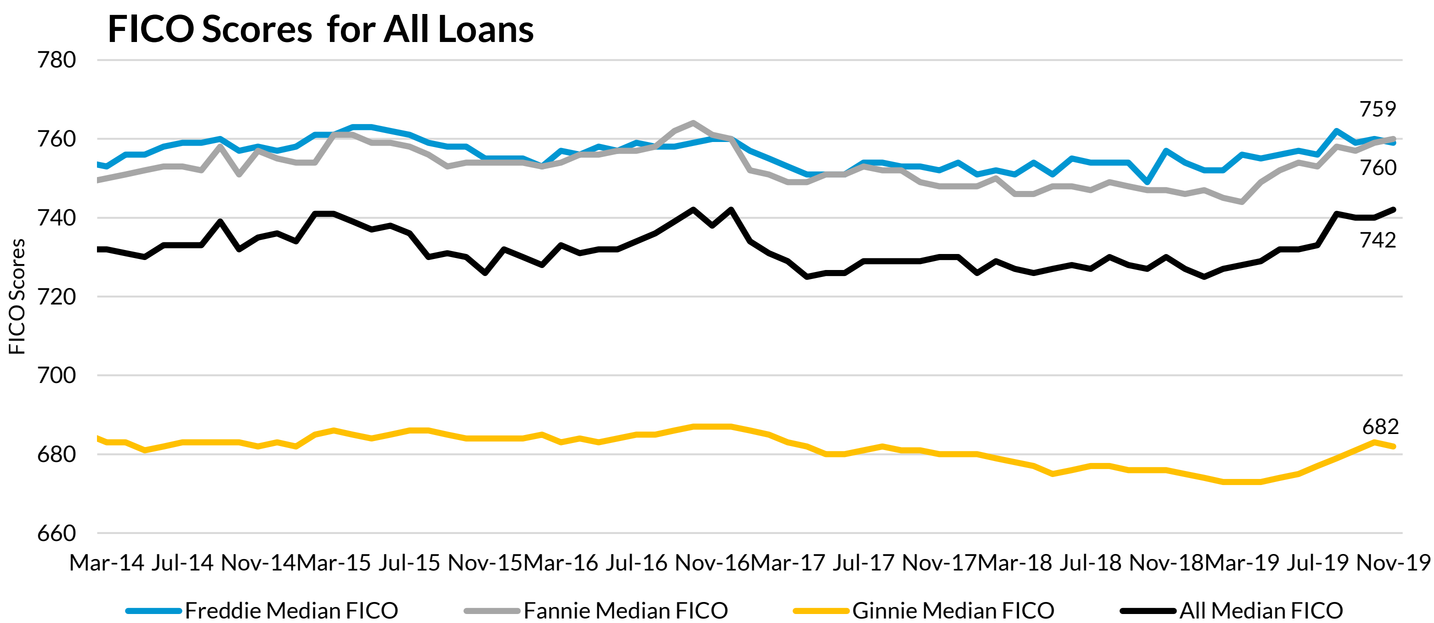
Purchase DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	289,580	24.0	31.0	39.0	45.0	49.9	37.9
Fannie	100,941	22.0	29.0	37.0	43.0	47.0	35.6
Freddie	78,787	22.0	29.0	37.0	43.0	47.0	35.5
Ginnie	109,852	28.6	35.3	42.5	49.1	54.2	41.8
Refi DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	296,750	21.0	28.0	36.0	43.0	47.2	34.9
Fannie	146,150	21.0	27.0	35.0	42.0	46.0	34.1
Freddie	105,861	21.0	27.0	35.0	42.0	46.0	34.3
Ginnie	44,739	22.6	31.5	40.0	48.2	54.0	39.0
All DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	586,330	22.0	29.0	37.0	44.0	49.0	36.4
Fannie	247,091	21.0	28.0	36.0	43.0	47.0	34.7
Freddie	184,648	21.0	28.0	36.0	43.0	46.0	34.8
Ginnie	154,591	27.1	34.0	41.9	48.9	54.1	41.0

Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	109,852	28.6	35.3	42.5	49.1	54.2	41.8
FHA	68,119	30.4	37.2	44.1	50.2	54.6	43.1
VA	31,716	27.1	34.0	41.6	48.5	54.1	41.0
Other	10,017	25.4	30.3	35.9	40.0	42.9	34.8
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	44,739	22.6	31.5	40.0	48.2	54.0	39.0
FHA	24,635	28.0	34.7	43.1	49.9	54.7	41.9
VA	19,716	17.8	27.3	35.4	45.0	52.1	35.7
Other	388	14.8	20.9	29.1	35.9	40.6	28.7
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	154,591	27.1	34.0	41.9	48.9	54.1	41.0
FHA	92,754	29.8	36.6	43.9	50.1	54.7	42.8
VA	51,432	23.2	31.6	39.7	47.4	53.5	39.0
Other	10,405	24.9	30.0	35.7	39.9	42.8	34.6

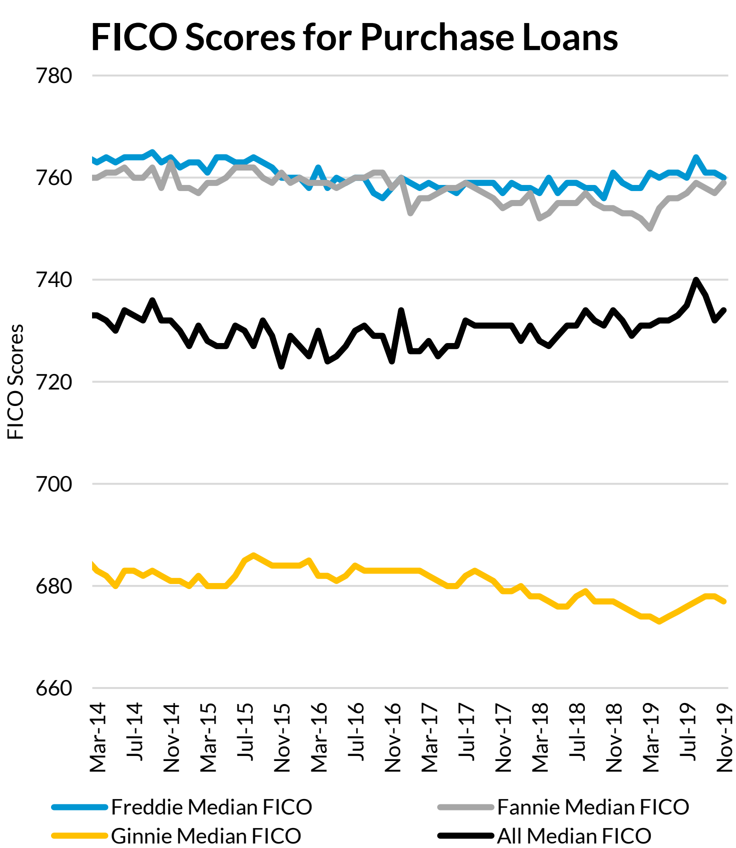
Sources: *eMBS and Urban Institute.* **Note**: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of November 2019.*

Credit Box: Historical

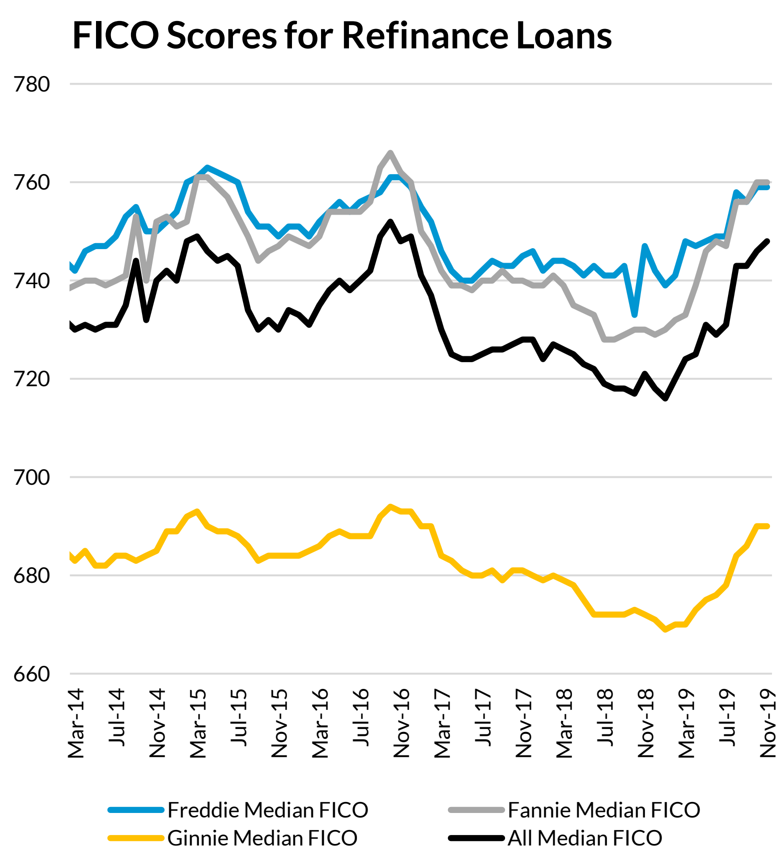
The median FICO score for all agency loans originated in November 2019 was 742, up considerably since the start of 2019, owing to the refinance wave, which higher FICO borrowers take advantage of with greater frequency. The figures show that the median FICO score for Ginnie Mae borrowers has always been considerably lower than for GSE borrowers. Since early 2019, the median FICO scores for Fannie, Freddie and Ginnie borrowers have moved up for both purchase and refinance loans. The difference between Ginnie Mae and GSE borrower FICOs is slightly wider for purchase loans than for refi loans.



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



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

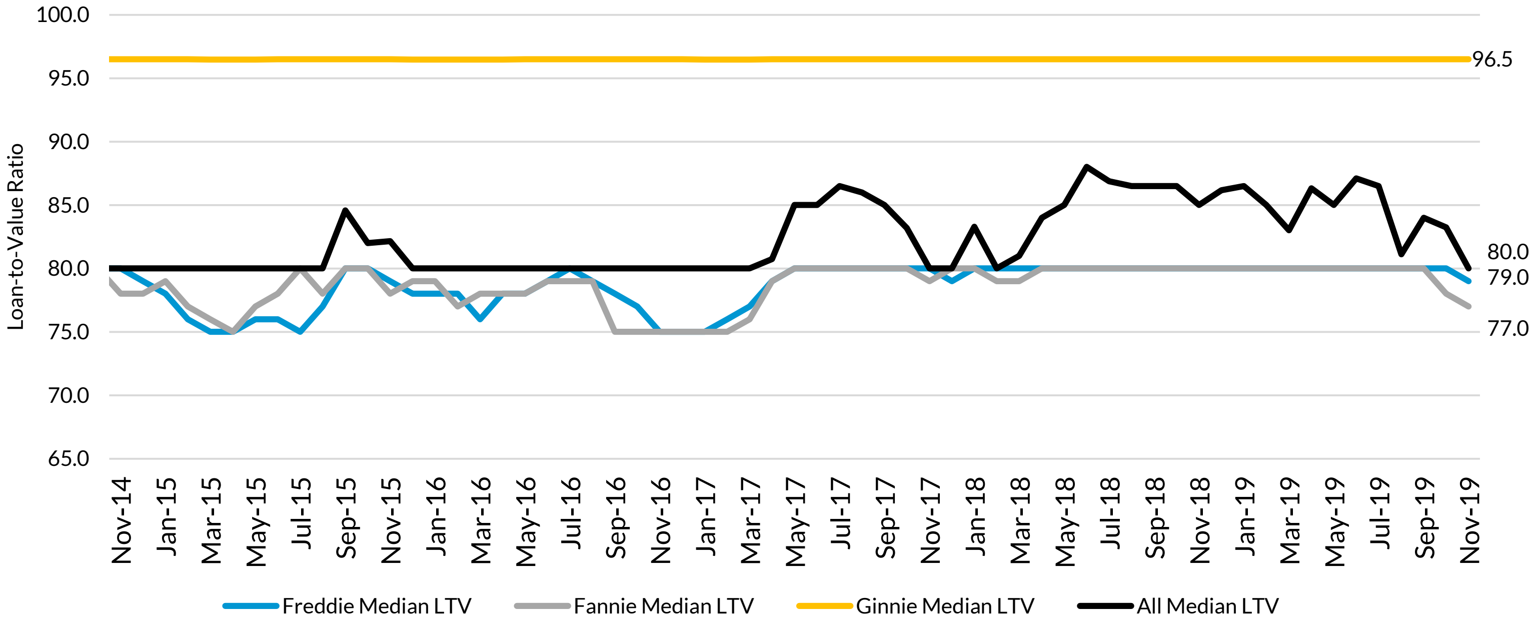


Sources: *eMBS and Urban Institute.* **Note:** *Data as of November 2019.*

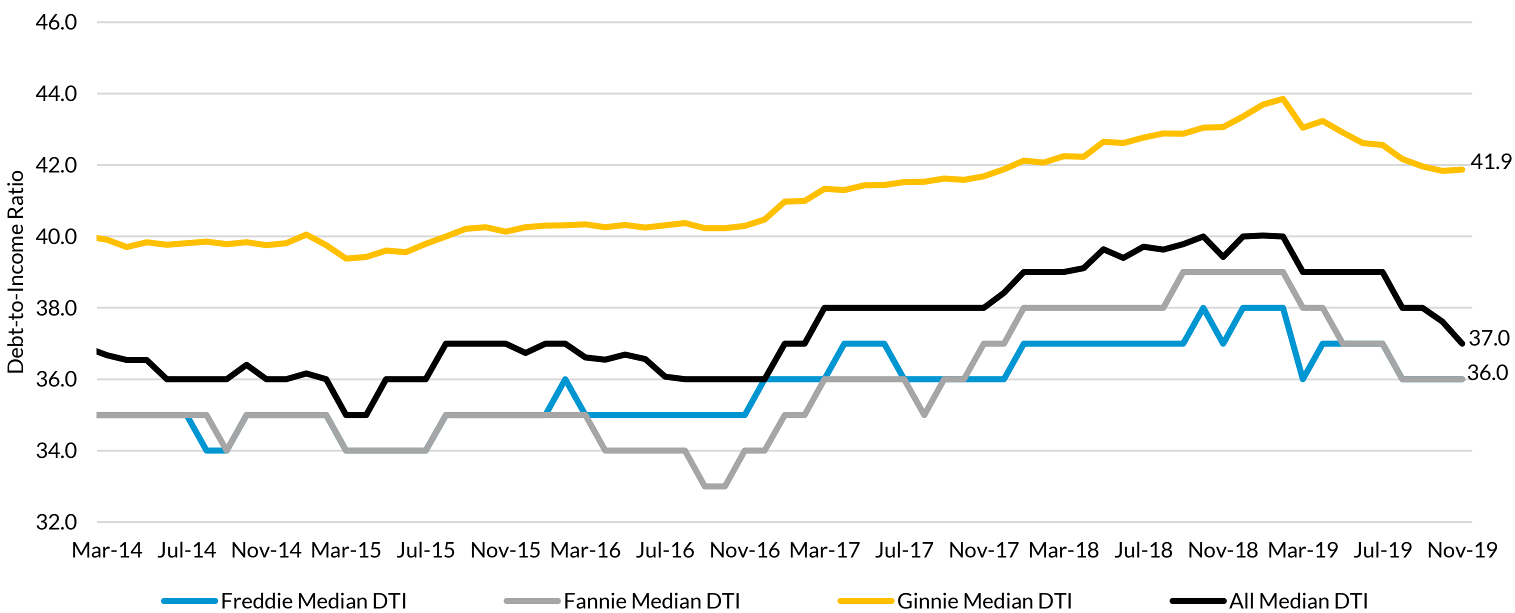
Credit Box: Historical

Median LTVs for Ginnie Mae loans have historically been at 96.5 percent, much higher than the 77–80 LTVs for the GSEs. Median debt-to-income ratios for Ginnie Mae loans have historically been in the low 40s, considerably higher than for the GSEs. DTIs increased in the 2017-2018 period 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. All three agencies have witnessed measurable declines in DTI, beginning in early 2019, driven by lower interest rates.

LTV Ratio for All Loans



DTI Ratio for All Loans

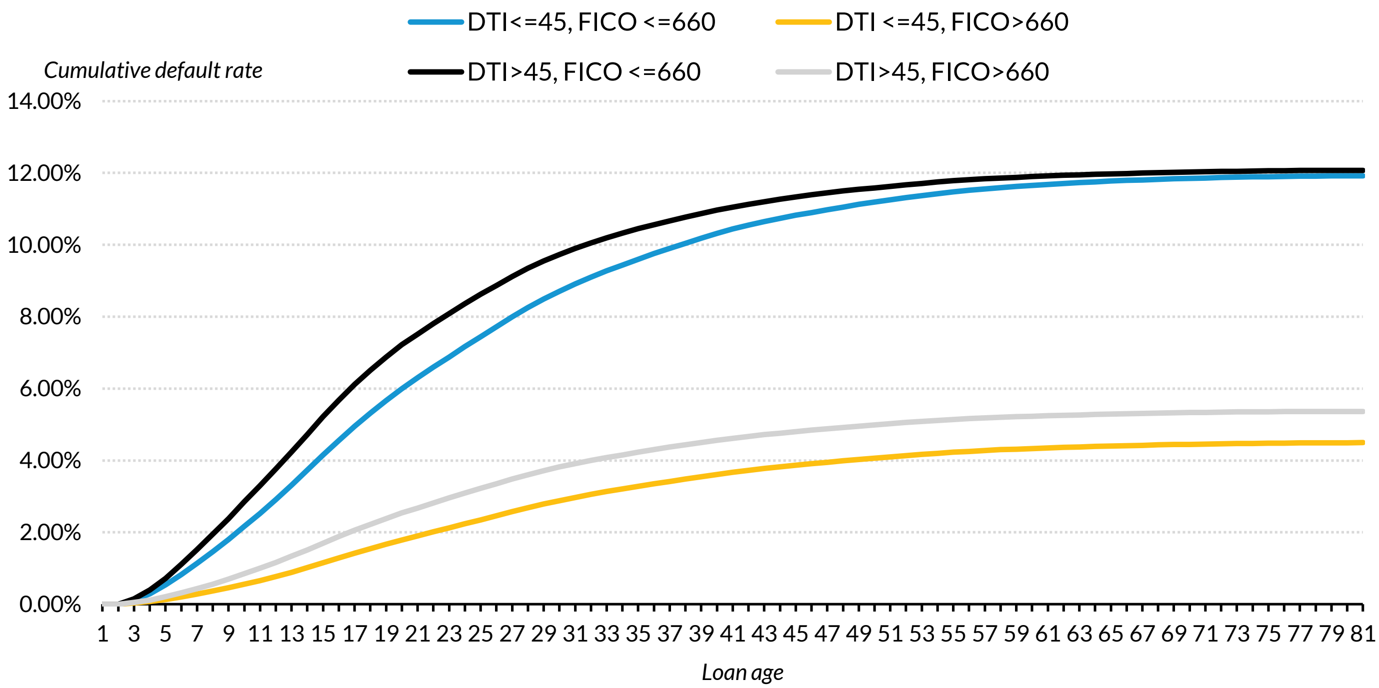


Sources: *eMBS and Urban Institute.* **Note:** *In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium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

Credit Box: Historical

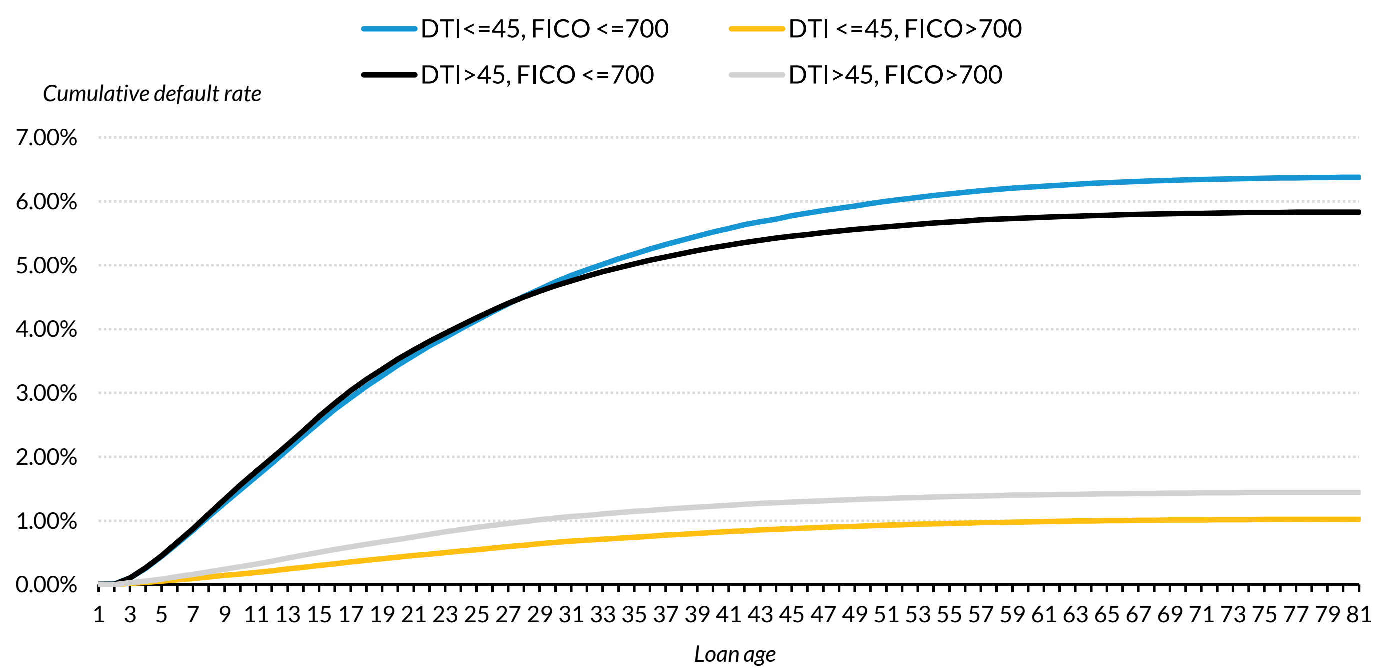
DTI is a much weaker predictor of performance than FICO score. The top chart shows FHA borrowers with higher DTIs do default more than those with lower DTIs, but the differences are modest, as evidenced by the fact that the black line is very close to the blue line and the grey line is not that much above the yellow line. By contrast, FICO makes a much larger difference, as can be seen by comparing the blue line to the yellow line or the black line to the gray line. And low DTI/low FICO borrowers default much less than high DTI/high FICO borrowers, as can be seen by comparing the blue line to the gray line. The bottom chart, for VA borrower illustrates the same point; DTI is a much weaker predictor of loan performance than credit score.

FHA Cumulative Default Rate by DTI and FICO



Sources: *eMBS and Urban Institute*. **Note:** Defaults = 180 days delinquent. *Data as of November 2019.*

VA Cumulative Default Rate by DTI and FICO

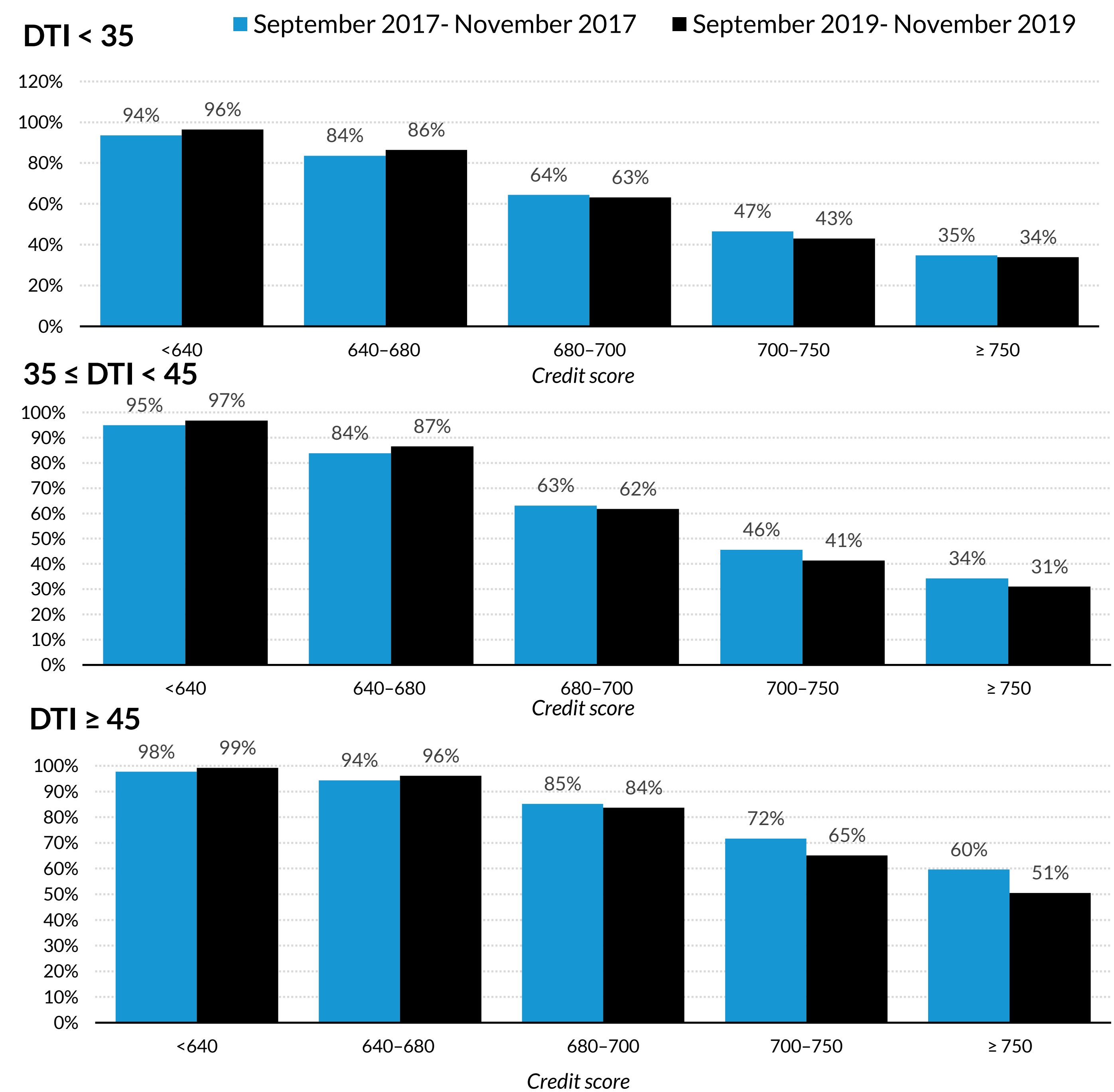


Sources: *eMBS and Urban Institute*. **Note:** Defaults = 180 days delinquent. *Data as of November 2019.*

Credit Box: Historical

This table shows Ginnie Mae's share of agency high-LTV lending by DTI and FICO. In each DTI bucket, Ginnie Mae's share is more concentrated in lower FICO scores than in higher FICO scores. In September 2019-November 2019, Ginnie Mae accounted for 96 percent of agency issuance for DTIs under 35 and FICOs below 640, compared to just 34 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. In September 2019– November 2019, 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 84 percent; it was 62-63 percent for the same FICO in the lower DTI buckets. Comparing this period to 2 years earlier, it is clear the GSEs have marginally 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 67.1 percent of its issuances in the September 2019-November 2019 period having LTVs of 95 or above, compared to 15.6 percent for the GSEs. The GSEs have decreased their high-LTV lending share from 17.5 percent in September 2017–November 2017. Ginnie Mae's high-LTV lending is down just slightly over the same period from 69.0 percent. As home prices 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
September 2017- November 2017	69.0%	17.5%	33.8%
September 2019- November 2019	67.1%	15.6%	29.9%

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

September 2017-November 2017

	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.9%	5.5%	3.2%	8.0%	9.9%	29.5%
35 –45	5.1%	9.7%	5.2%	12.0%	10.3%	42.3%
≥ 45	3.9%	8.0%	3.9%	7.5%	5.0%	28.3%
All	11.8%	23.2%	12.3%	27.5%	25.2%	100.0%

September 2019-November 2019

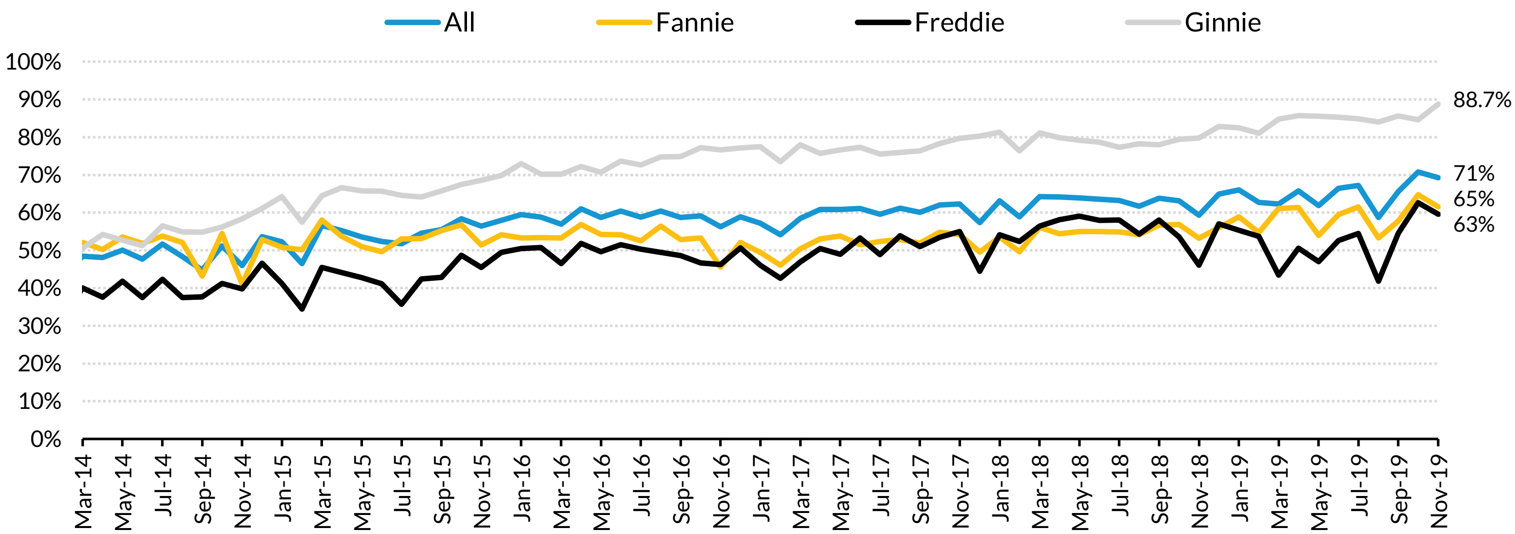
	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.9%	4.9%	2.8%	7.8%	10.8%	29.1%
35 –45	4.9%	8.5%	4.6%	11.7%	10.7%	40.4%
≥ 45	4.4%	7.9%	3.9%	8.2%	6.1%	30.5%
All	12.2%	21.2%	11.3%	27.7%	27.6%	100.0%

Sources: *eMBS and Urban Institute.*

Nonbank Originators

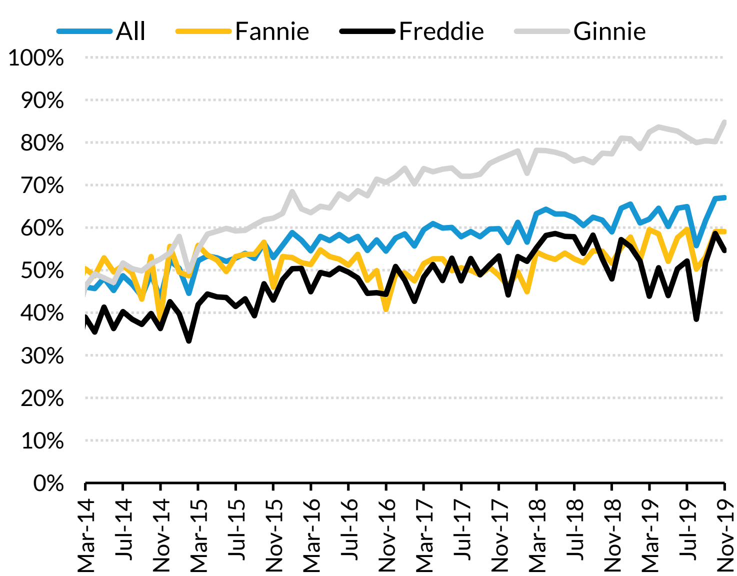
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, rising to 89 percent in November 2019, a record high. Freddie and Fannie's nonbank shares both shrank in November, to 65 and 63 percent respectively (note that these numbers can be volatile on a month-to-month basis). Ginnie Mae, Fannie Mae and Freddie Mac all have higher nonbank origination shares for refi activity than for purchase activity. Freddie Mac's nonbank share is the lowest among the three agencies for both purchase and refinance loans.

Nonbank Origination Share: All Loans

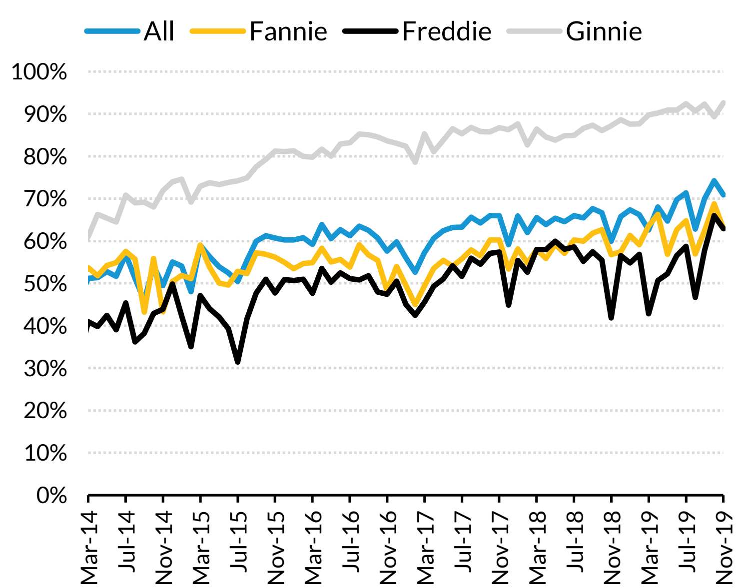


Sources: *eMBS and Urban Institute*
Note: *Data as of November 2019.*

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

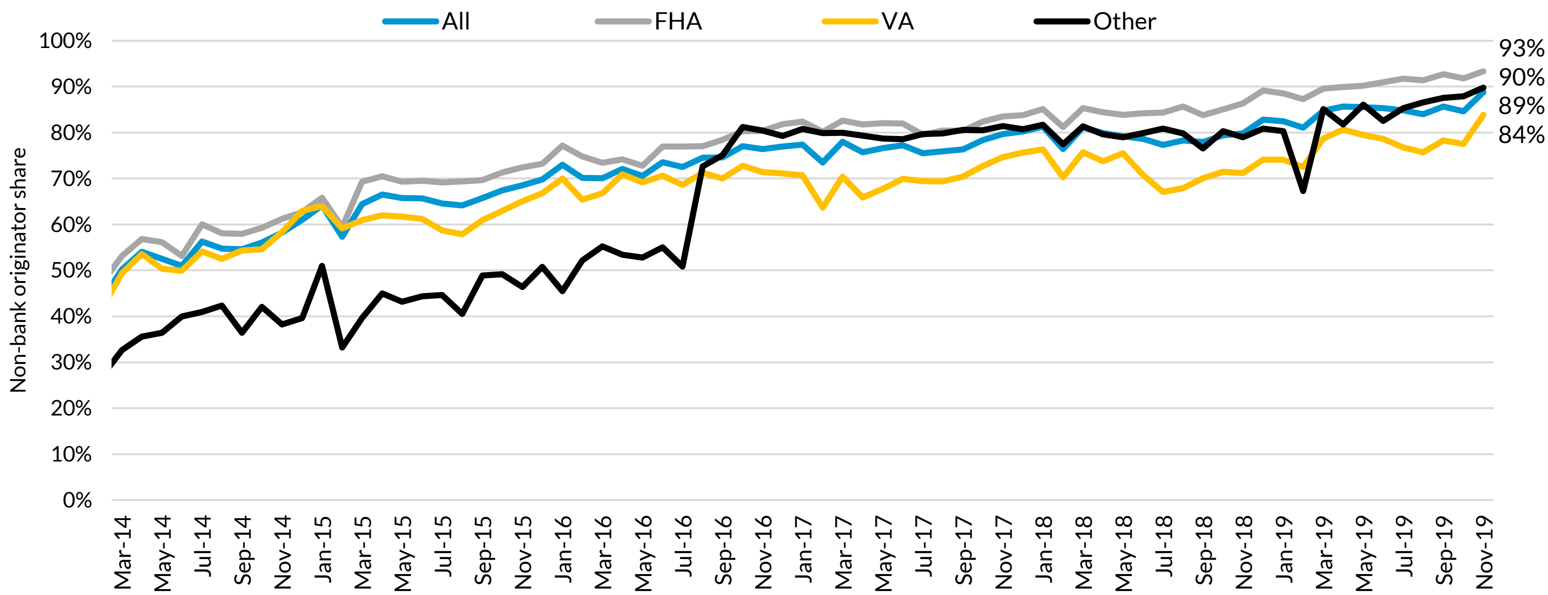


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of November 2019.*

Ginnie Mae Nonbank Originators

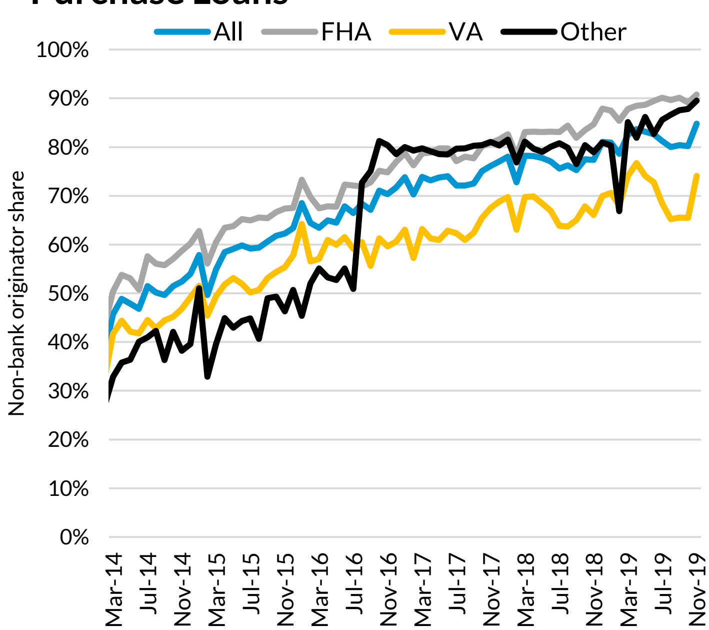
In November 2019, Ginnie Mae's nonbank share grew to 89 percent. The nonbank originator share for FHA rose to 93 percent in November, a new high. The nonbank originator share for VA was higher than last month at 84 percent, and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, increased to 89 percent.

Ginnie Mae Nonbank Originator Share: All Loans

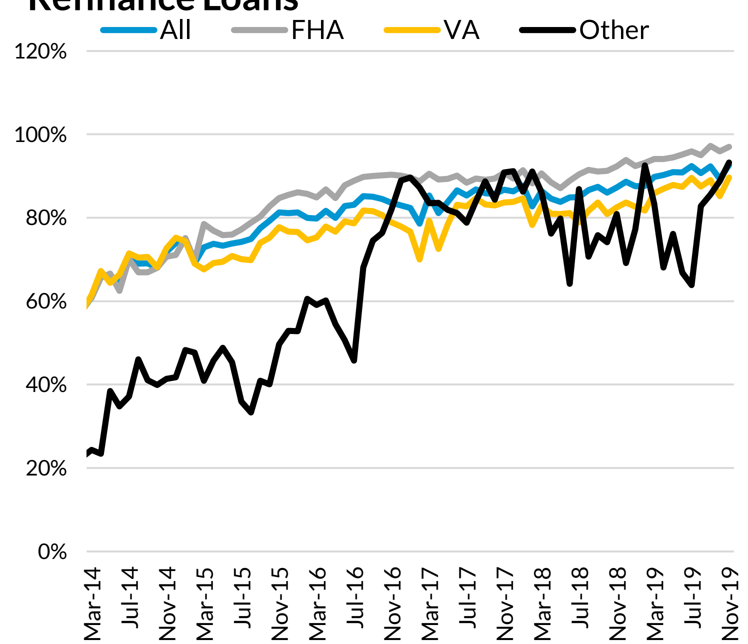


Sources: *eMBS and Urban Institute*
Note: *Data as of November 2019.*

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

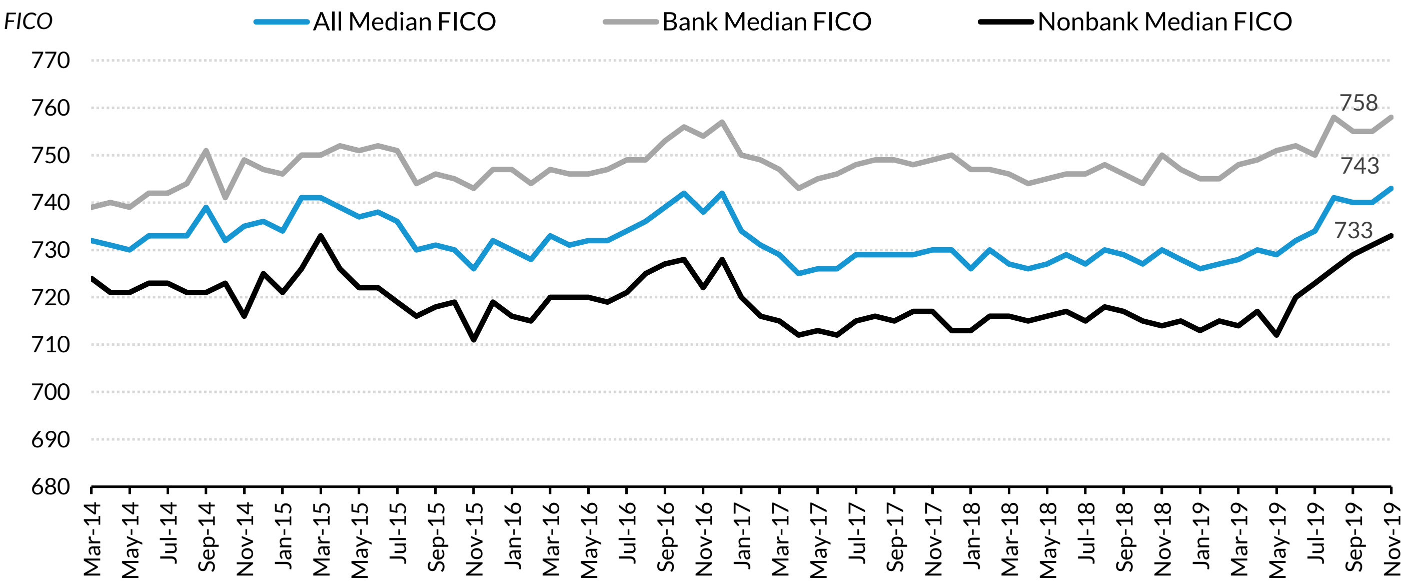


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of November 2019.*

Nonbank Credit Box

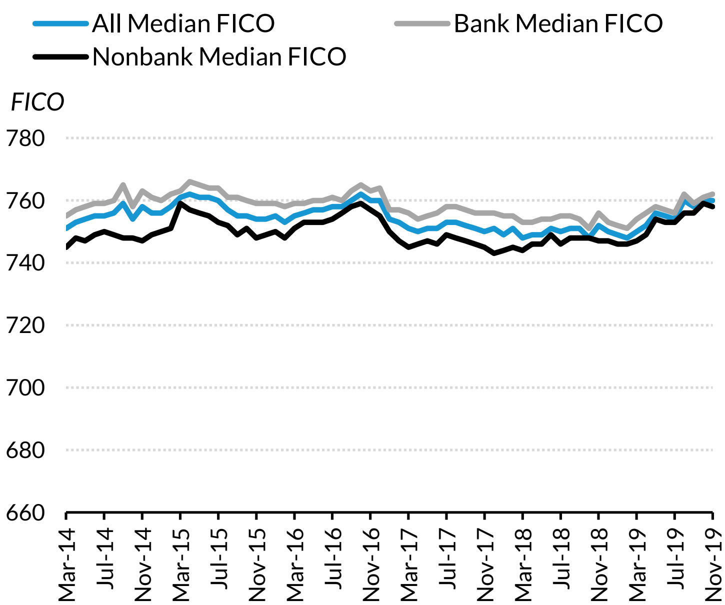
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have increased since 2014. In contrast, within the Ginnie Mae space, FICO scores for bank originations are measurably higher since 2014 while nonbank FICOs have remained flat. This largely reflects the sharp cut-back in FHA lending by many banks.

Agency FICO: Bank vs. Nonbank



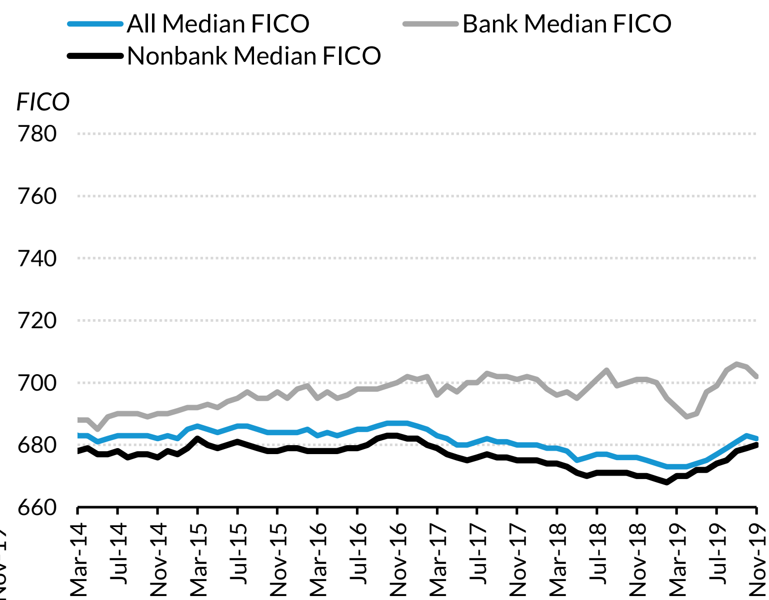
Sources: *eMBS and Urban Institute.* **Note:** *Data as of November 2019.*

GSE FICO: Bank vs. Nonbank



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

Ginnie Mae FICO: Bank vs. Nonbank

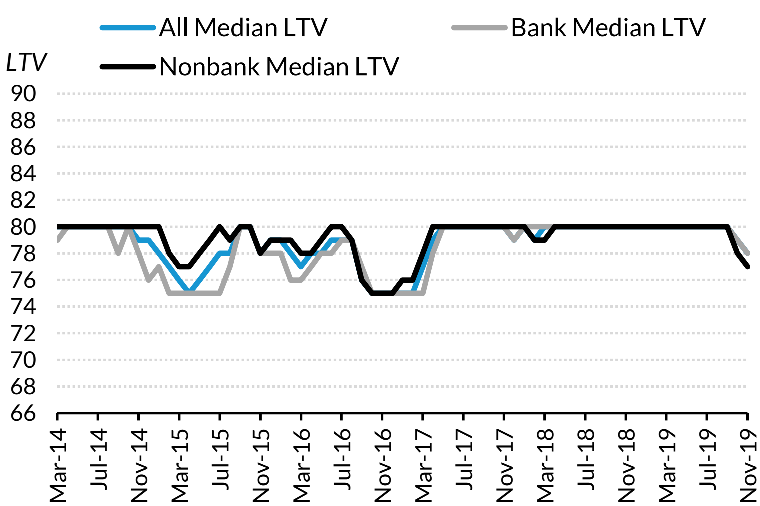


Sources: *eMBS and Urban Institute.*
Note: *Data as of November 2019.*

Nonbank Credit Box

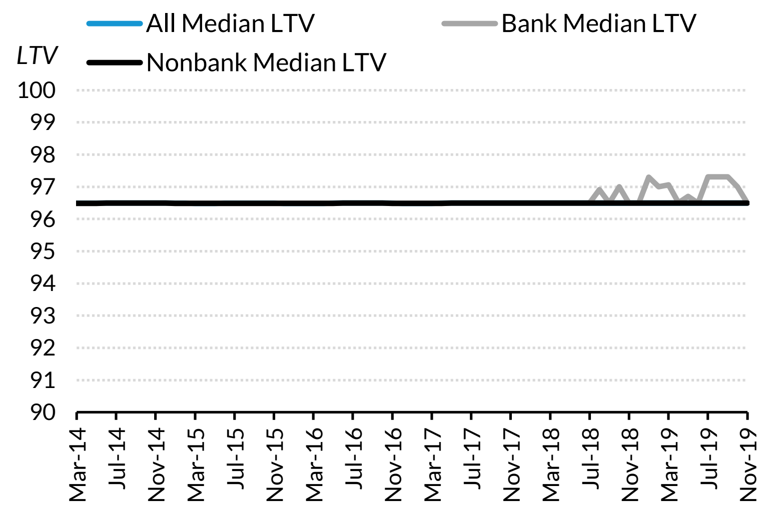
The median LTVs for nonbank and bank originations are comparable, while the median DTI for nonbank loans is higher than for bank loans, indicating that nonbanks are more accommodating in both this and the FICO dimension. Since early 2017, there has been a substantial increase in DTIs, which has mostly reversed over the course of 2019. This is true for both Ginnie Mae and the GSEs, for banks and nonbanks. As interest rates increased, DTIs rose, because borrower payments were driven up relative to incomes. With the fall in interest rates in 2019, DTIs have dropped.

GSE LTV: Bank vs. Nonbank



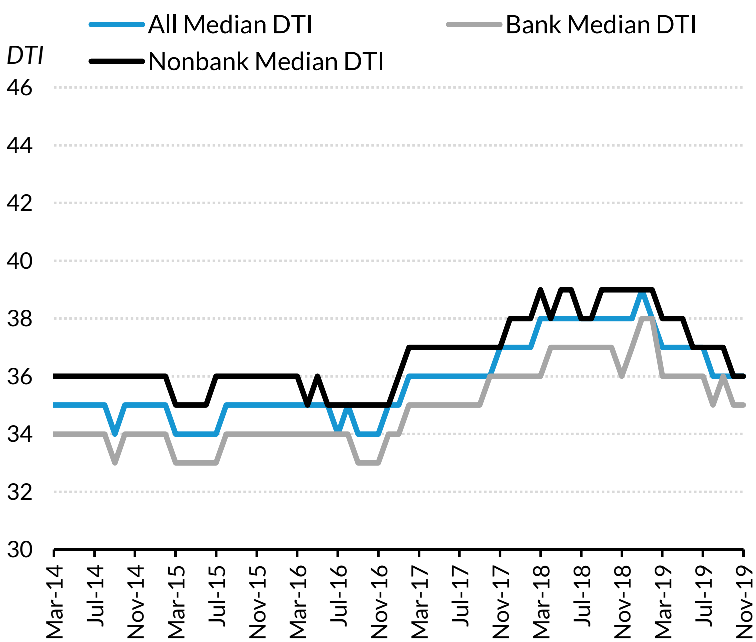
Sources: *eMBS and Urban Institute.* **Note**: *Data as of November 2019.*

Ginnie Mae LTV: Bank vs. Nonbank



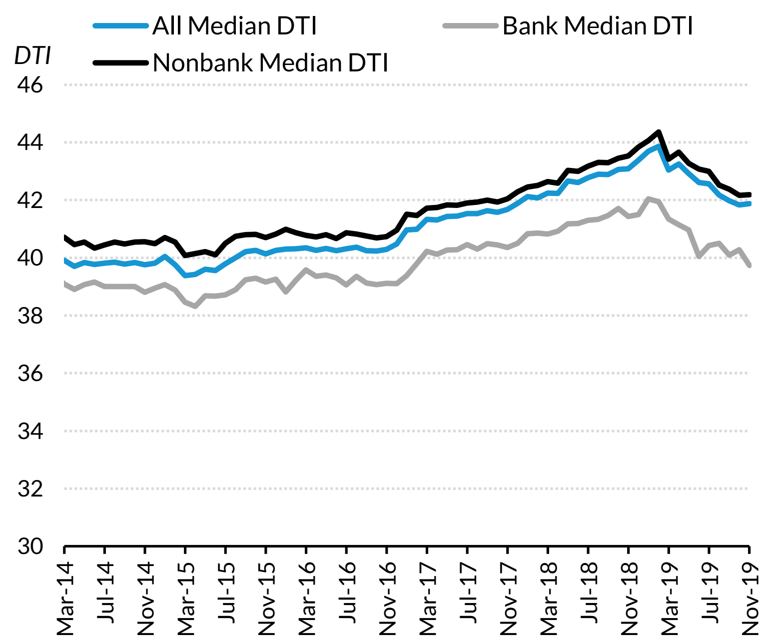
Sources: *eMBS and Urban Institute.* **Note**: *Data as of November 2019.*

GSE DTI: Bank vs. Nonbank



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

Ginnie Mae DTI: Bank vs. Nonbank

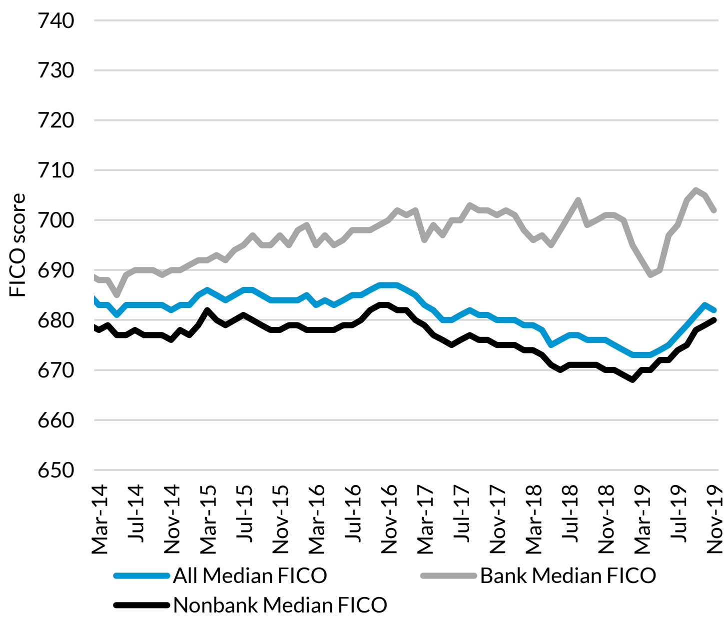


Sources: *eMBS and Urban Institute.* **Note**: *Data as of November 2019.*

Ginnie Mae Nonbank Originators: Credit Box

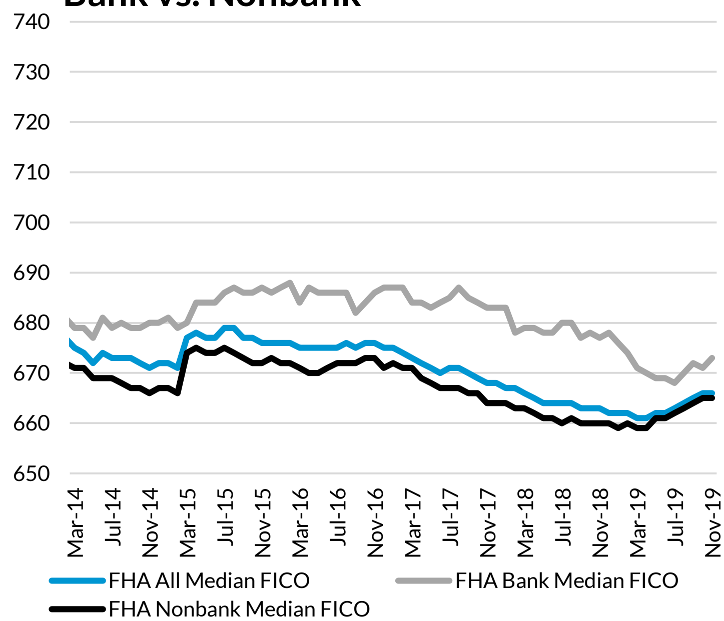
The median FICO score increased for Ginnie Mae nonbank originators and decreased for bank originators in November 2019. This is contrary to the longer term trend in which FICO spreads between banks and non-banks have generally increased since 2013. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



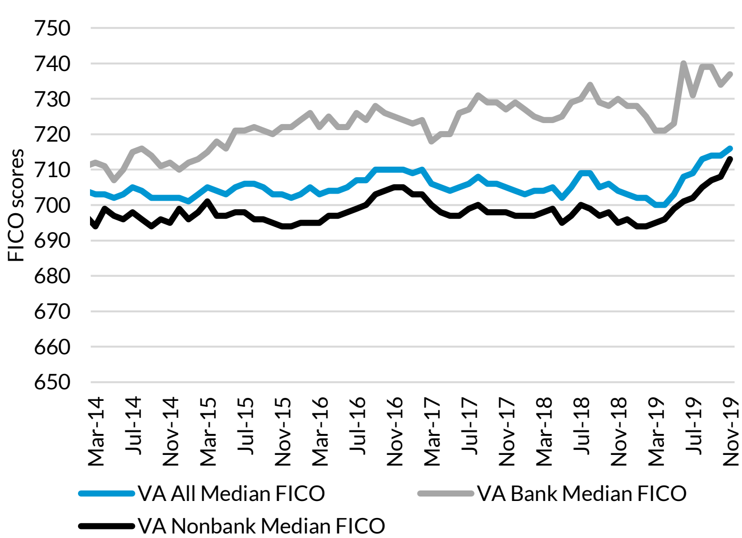
Sources: *eMBS and Urban Institute* **Note:** *Data as of November 2019.*

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



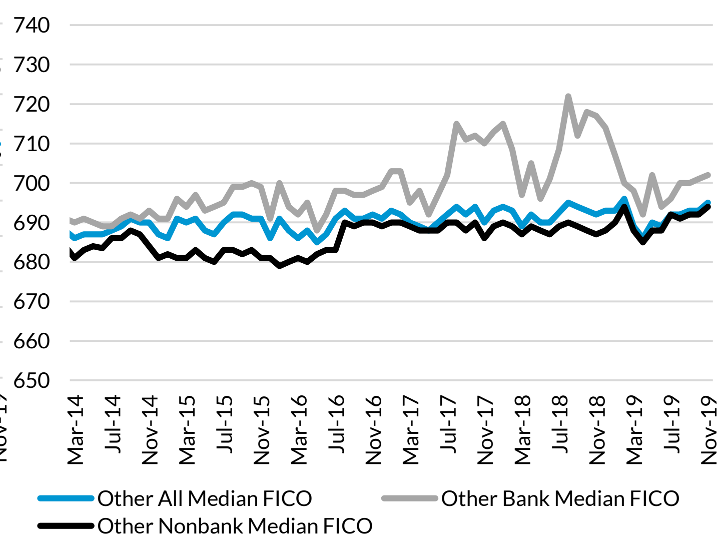
Sources: *eMBS and Urban Institute* **Note:** *Data as of November 2019.*

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



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

Ginnie Mae Other FICO Scores: Bank vs. Nonbank

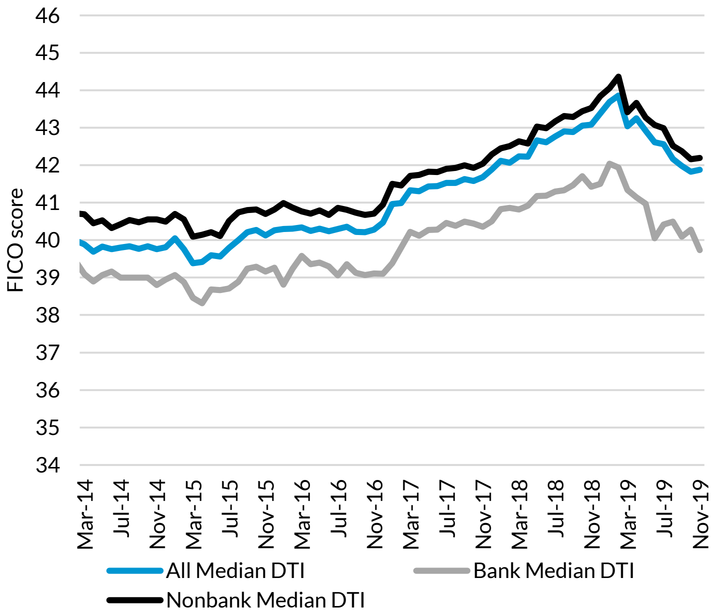


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of November 2019.*

Ginnie Mae Nonbank Originators: Credit Box

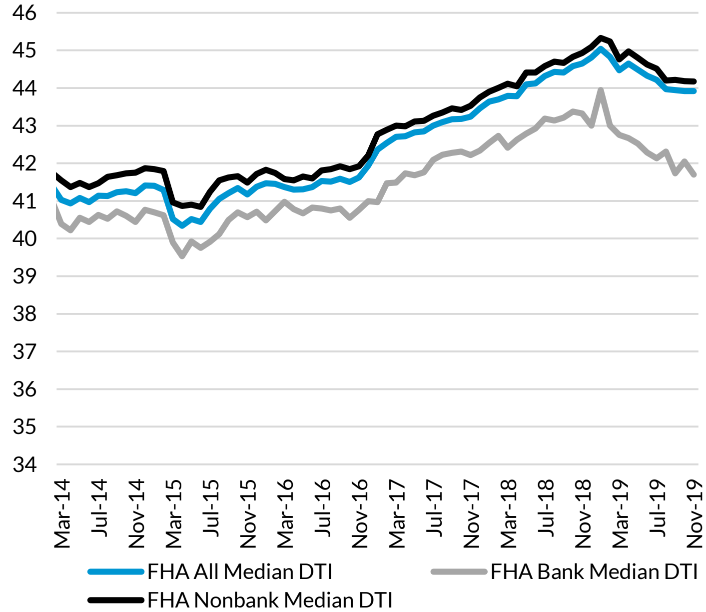
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA borrowers experienced notable increases during 2017 and 2018 for both banks and nonbank originators, while the Other origination DTIs stayed relatively flat. Rising DTIs are expected in a rising rate environment. After peaking in January 2019, Ginnie DTIs have reverted to 2017 levels, as rates have declined.

Ginnie Mae DTI: Bank vs. Nonbank



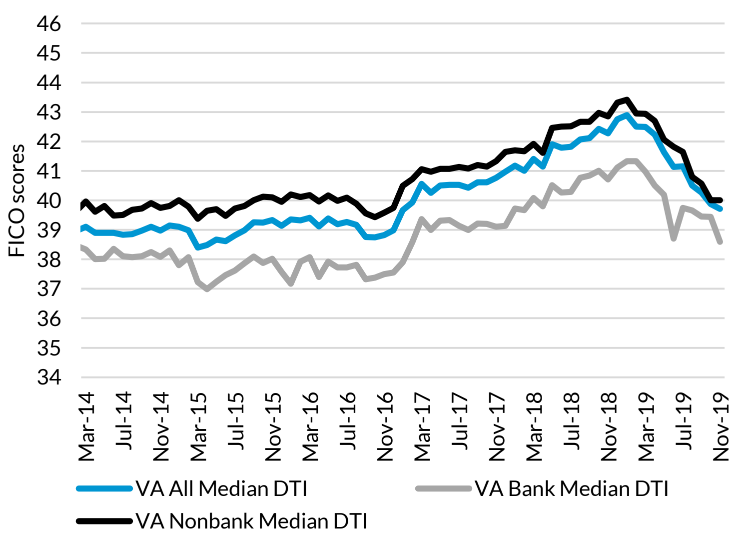
Sources: *eMBS and Urban Institute* **Note:** *Data as of November 2019.*

Ginnie Mae FHA DTI: Bank vs. Nonbank



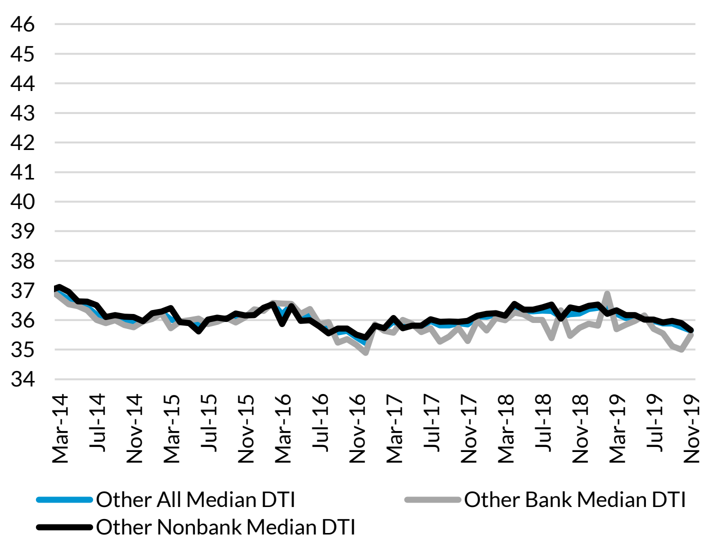
Sources: *eMBS and Urban Institute* **Note:** *Data as of November 2019.*

Ginnie Mae VA DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *Data as of November 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 November 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 November 2019, over half (52.9 percent) of the Ginnie Mae MSRs are owned by the top six firms. The top 30 firms collectively own 85.4 percent. Seventeen of these 30 are non-depositories, the remaining 13 are depository institutions.

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

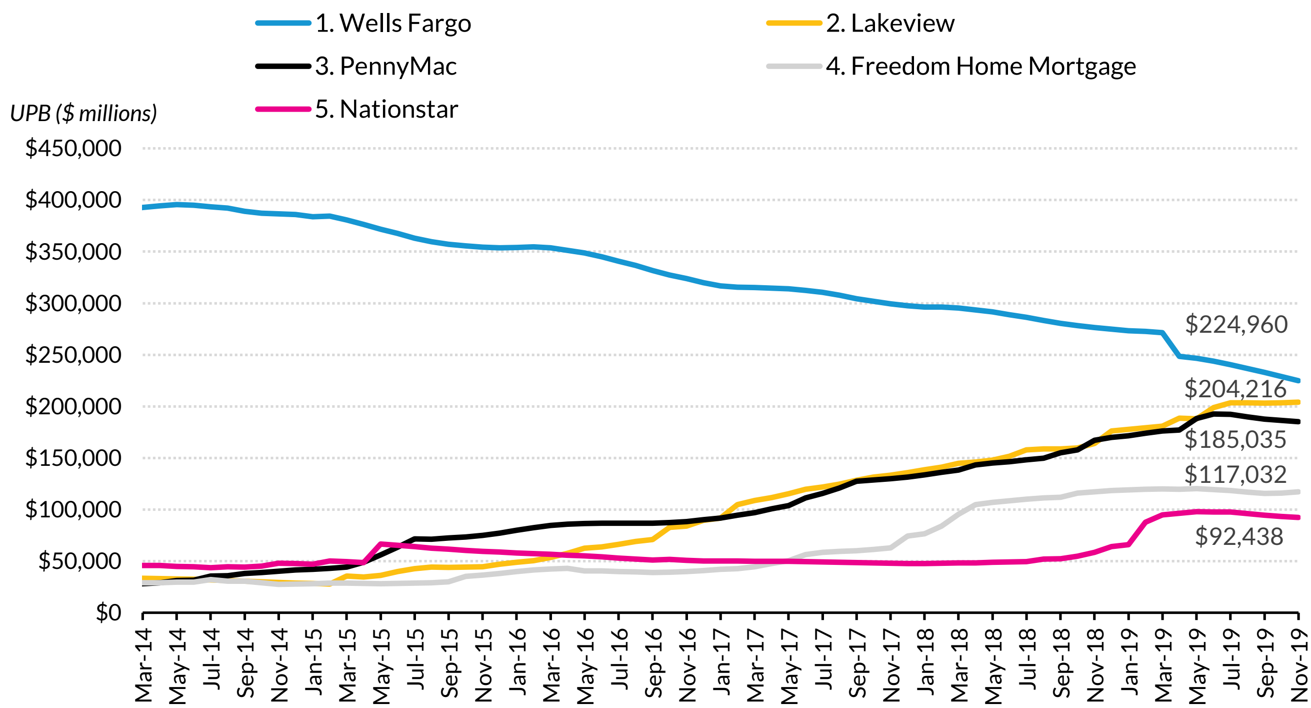
Rank	MSR Holder	UPB ($ millions)	Share	Cumulative Share
1	Wells Fargo	$224,960	13.4%	13.4%
2	Lakeview	$204,216	12.2%	25.6%
3	PennyMac	$185,035	11.0%	36.6%
4	Freedom Home Mortgage	$117,032	7.0%	43.6%
5	Nationstar	$97,684	5.5%	49.1%
6	Quicken Loans	$64,651	3.9%	52.9%
7	US Bank	$58,162	3.5%	56.4%
8	JPMorgan Chase	$41,449	2.5%	58.9%
9	Carrington Home Mortgage	$40,125	2.4%	61.3%
10	USAA Federal Savings Bank	$37,169	2.2%	63.5%
11	Caliber Home Loans	$35,039	2.1%	65.6%
12	Navy Federal Credit Union	$26,543	1.6%	67.1%
13	Newrez	$26,512	1.6%	68.7%
14	Amerihome Mortgage	$25,622	1.5%	70.2%
15	The Money Source	$21,893	1.3%	71.6%
16	Midfirst Bank	$21,094	1.3%	72.8%
17	M&T Bank	$18,911	1.1%	73.9%
18	Roundpoint	$17,812	1.1%	75.0%
19	Ditech Financial	$17,810	1.1%	76.1%
20	Home Point Financial	$17,801	1.1%	77.1%
21	Suntrust	$17,551	1.0%	78.2%
22	Loan Depot	$15,284	0.9%	79.1%
23	Guild Mortgage	$15,249	0.9%	80.0%
24	Branch Banking and Trust	$15,209	0.9%	80.9%
25	PHH Mortgage	$14,051	0.8%	81.7%
26	Flagstar Bank	$13,849	0.8%	82.6%
27	Pingora	$12,934	0.8%	83.3%
28	Citizens Bank	$12,526	0.7%	84.1%
29	Bank of America	$10,987	0.7%	84.7%
30	Fifth Third Bank	$10,952	0.7%	85.4%

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

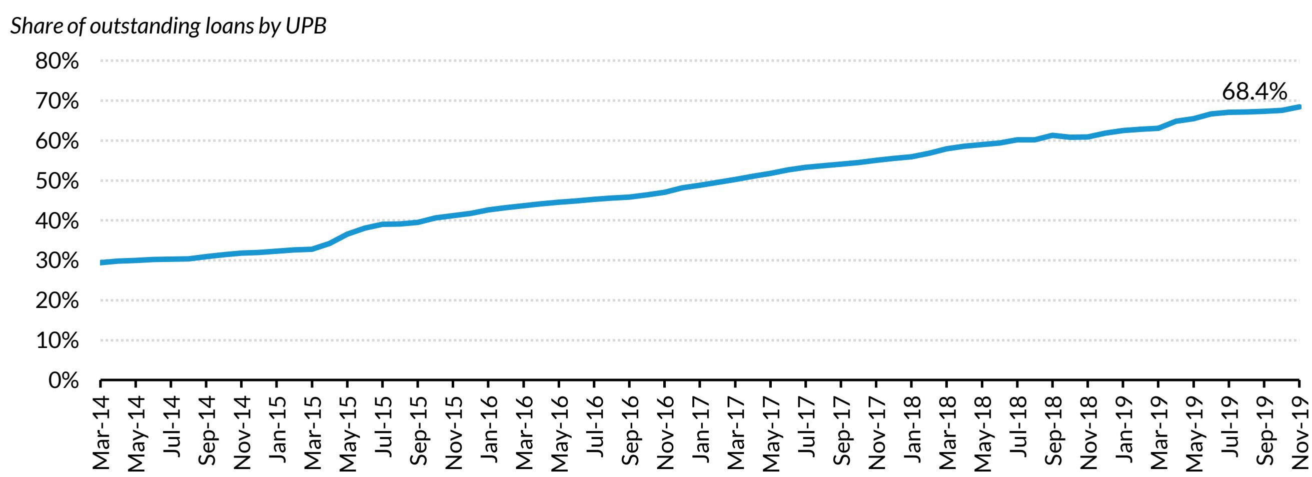
Holders of Ginnie Mae MSRs

The composition of the largest owners of Ginnie Mae MSR has evolved quite a bit over time. In November 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 $225 billion. Lakeview, PennyMac, Freedom Home Mortgage, and Nationstar (all nonbanks) make up the remainder of the top five largest holders of MSRs, owning $204 billion, $185 billion, $117 billion, and $92 billion respectively as of November 2019. As of November 2019, nonbanks collectively owned servicing rights for 68.4 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

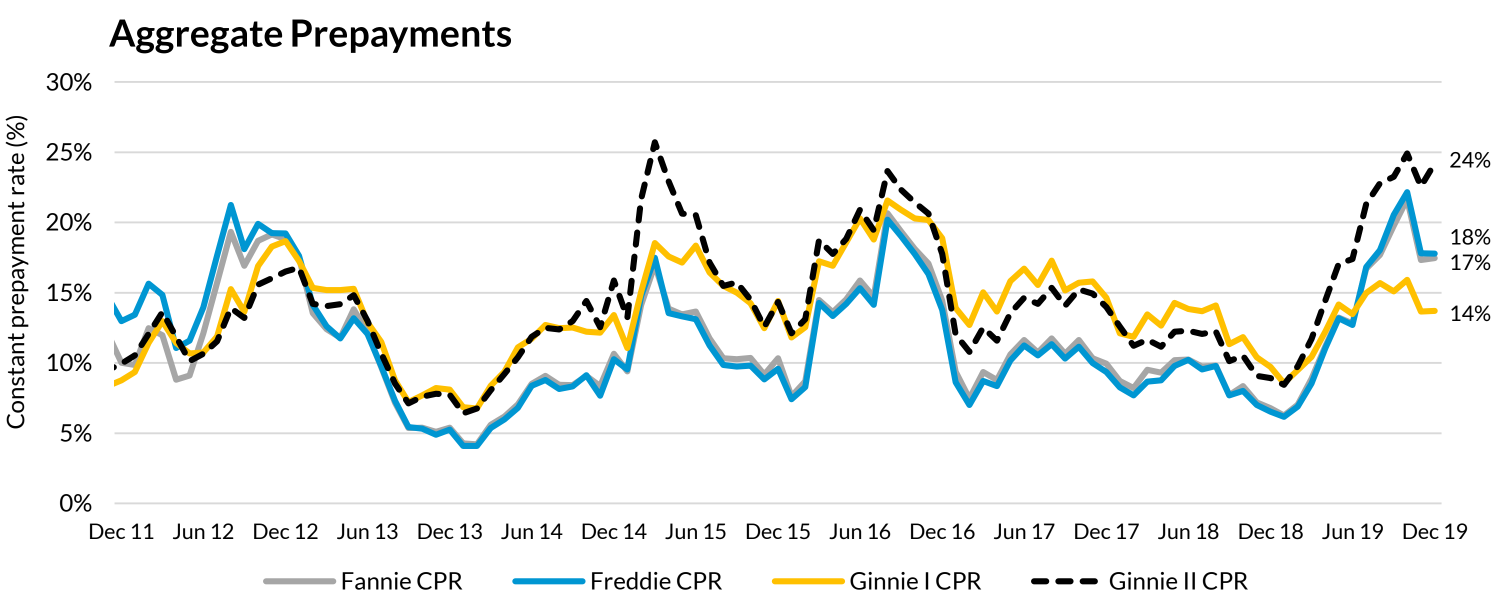


Sources: *eMBS and Urban Institute.* **Note:** *Data as of November 2019.*

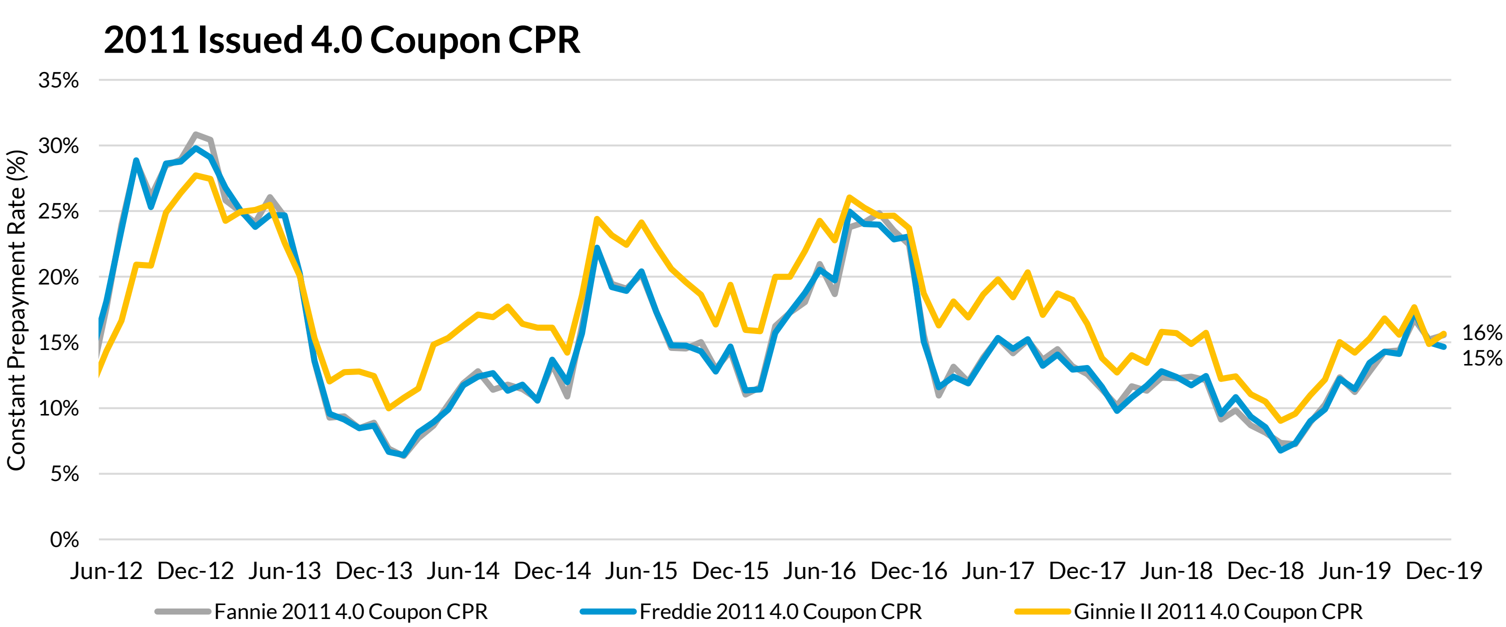
Prepayments

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.

From late 2016 to later 2018, as interest rates increased, the bulk of the mortgage universe found it non-economic to refinance and the prepayment speeds for all agency MBS slowed substantially. The small month-to-month variation in speeds reflected primarily seasonality and changes in day count. With the drop in rates beginning in late 2018 and persisting through 2019, we have seen a notable pick up in prepayment activity. This activity level is rate dependent; If rates drop further, speeds are likely to increase. However, the seasonal patterns suggest, in the absence of rate movements, a slightly decrease in speeds in the months ahead.



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



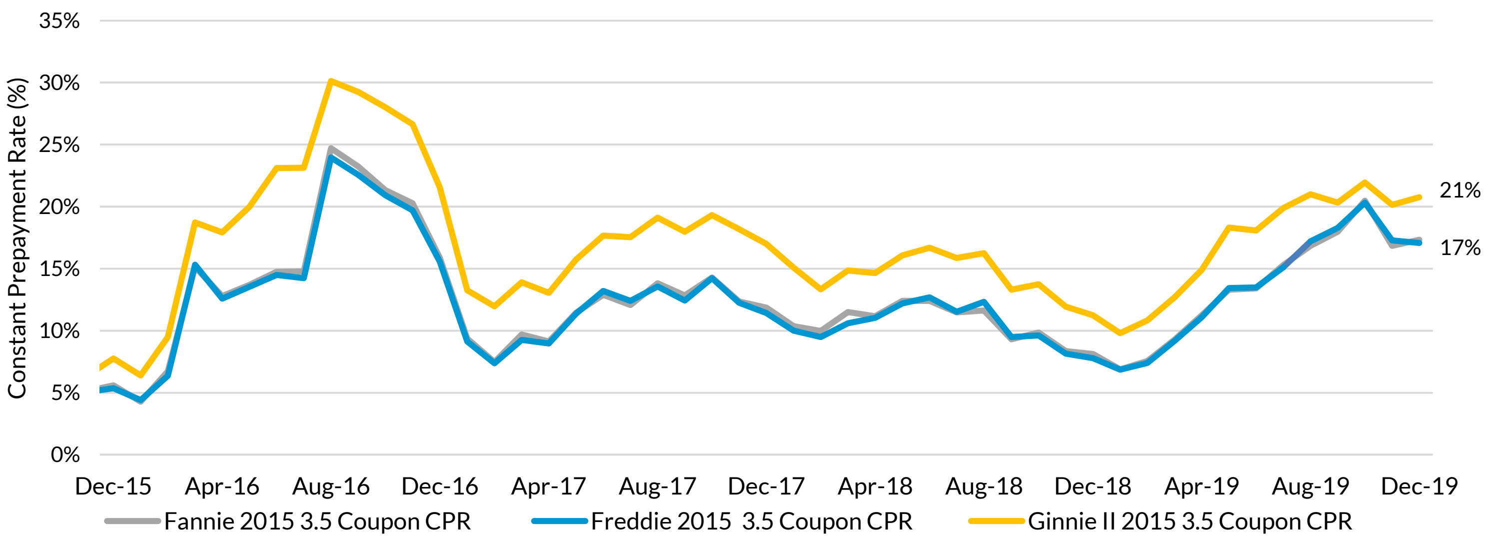
Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of December 2019.*

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.

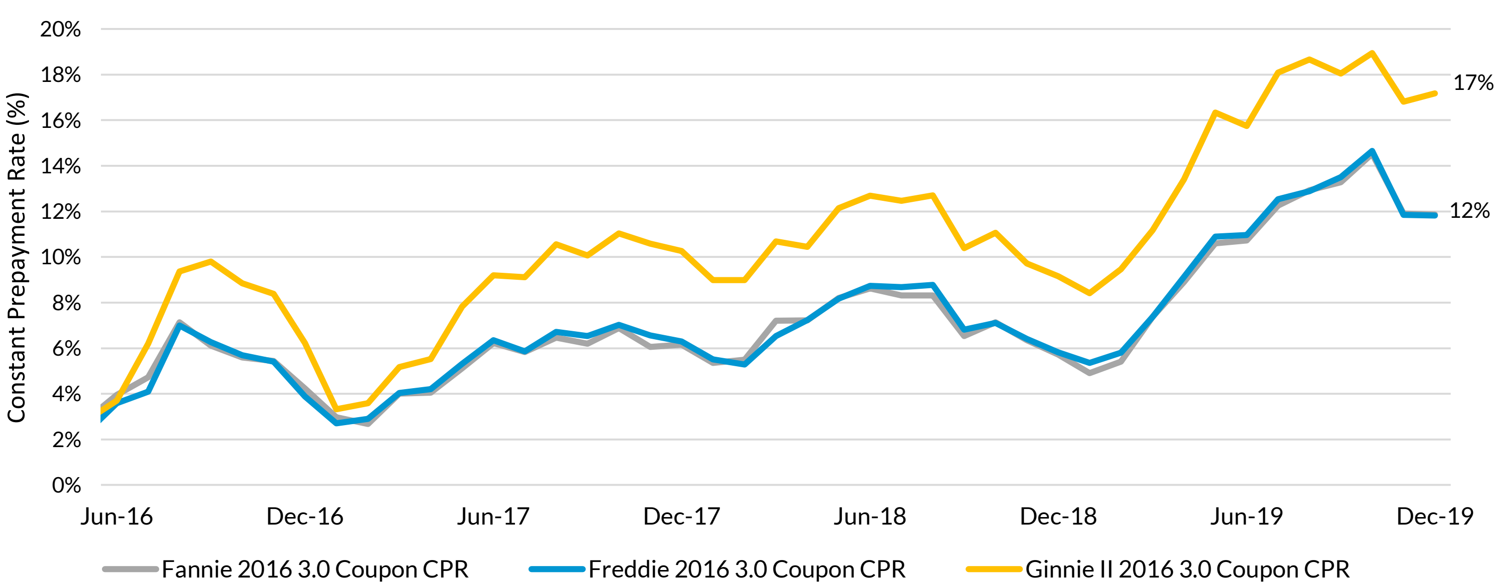
With the increase in interest rates over the 2 year period beginning in November 2016, the prepayment speeds for all agency MBS had slowed. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflected seasonality, changes in day count and changes in mortgage interest rates. With the drop in rates beginning in late 2018 and persisting through 2019, we have seen a notable pick up in prepayment activity. This activity level is rate dependent; If rates drop further, speeds are likely to increase. However, the seasonal patterns suggest, in the absence of rate movements, a slightly decrease in speeds in the months ahead.

2015 Issued 3.5 Coupon CPR



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

2016 Issued 3.0 Coupon CPR

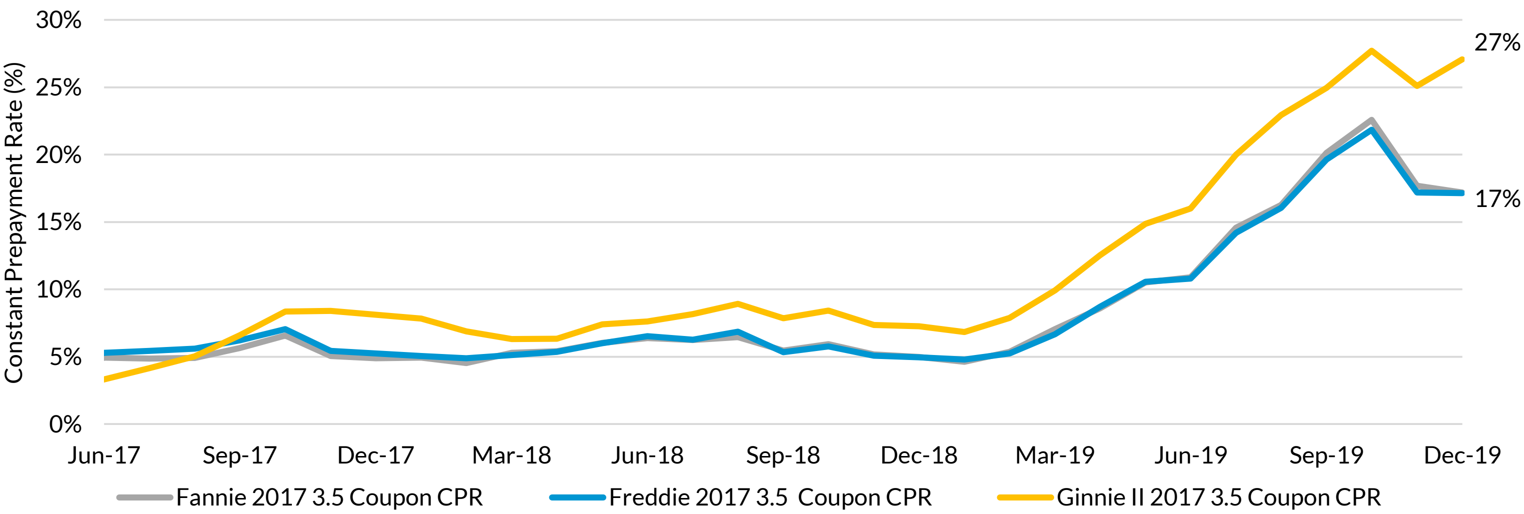


Sources: *Credit Suisse and Urban Institute.* **Note:** *Data as of December 2019.*

Prepayments

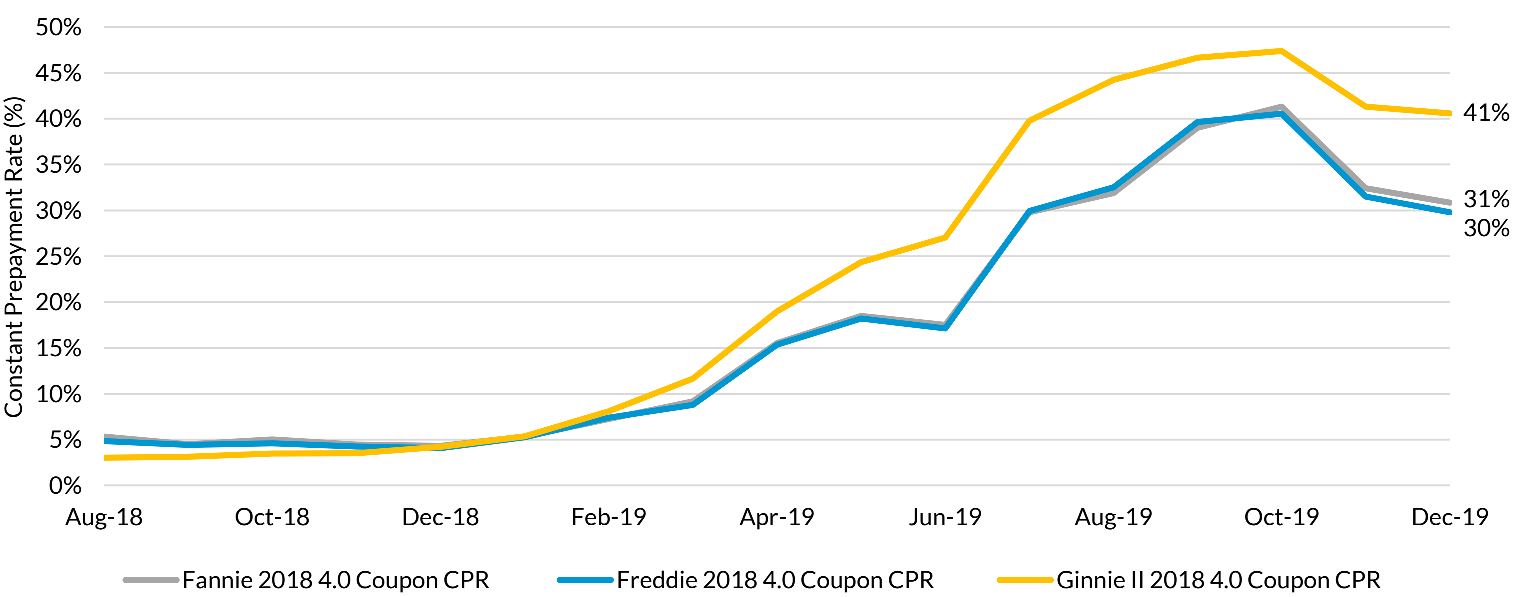
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayment in the early months but are more interest rate responsive thereafter. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of 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. Similarly, the 2018 Ginnie II 4.0s prepaid more slowly than their conventional counterparts until January of 2019. In 2019, speeds of all 2018 4.0s have accelerated, and Ginnie II speeds have accelerated more than their conventional counterparts.

2017 Issued 3.5 Coupon CPR



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

2018 Issued 4.0 Coupon CPR

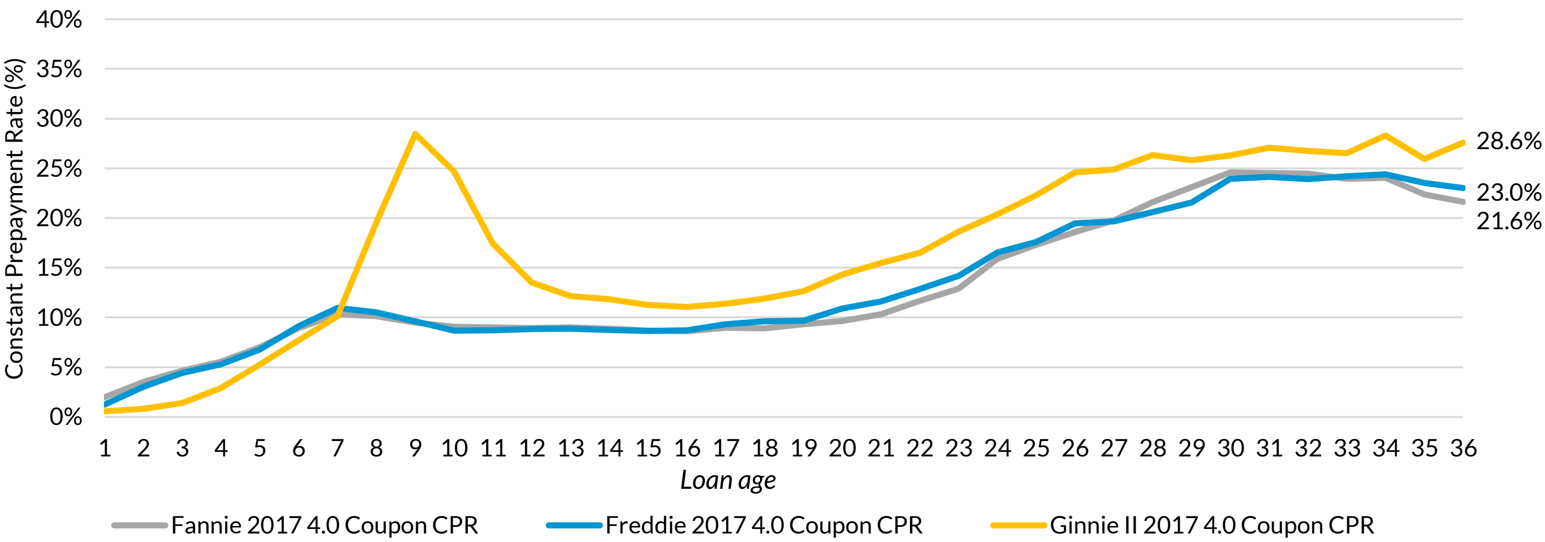


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of December 2019.*

Prepayments

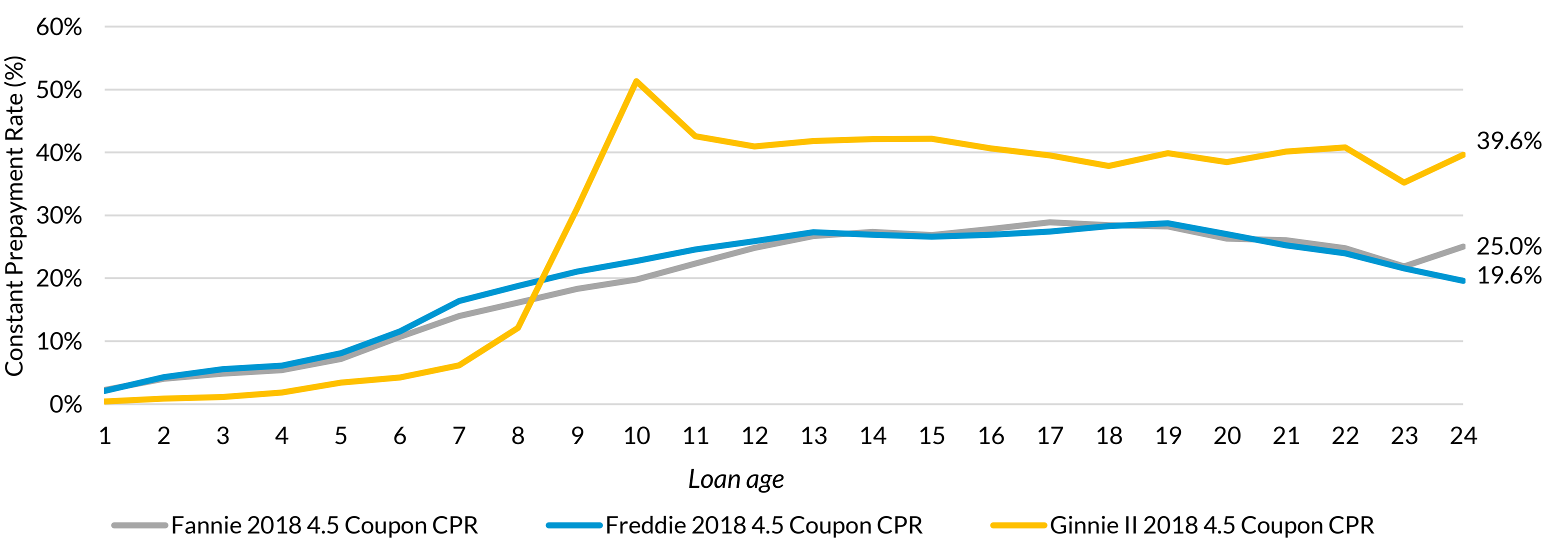
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined 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. Ginnie's latest action on this front became effective for securities issued on or after Nov 1 2019. It bars the securitization of over 90% LTV cash-out refinances into Ginnie I and Ginnie II pools (custom pools excepted). In addition, VA has implemented a net tangible benefit test, requiring the lender to show the borrower has obtained a benefit from the refinance. Even so, the recent experience of the 2018 Ginnie II 4.5s indicates they are much more responsive to interest rate changes than conventional mortgages.

2017 Issued 4.0 Coupon CPR, by Loan Age



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

2018 Issued 4.5 Coupon CPR, by Loan Age

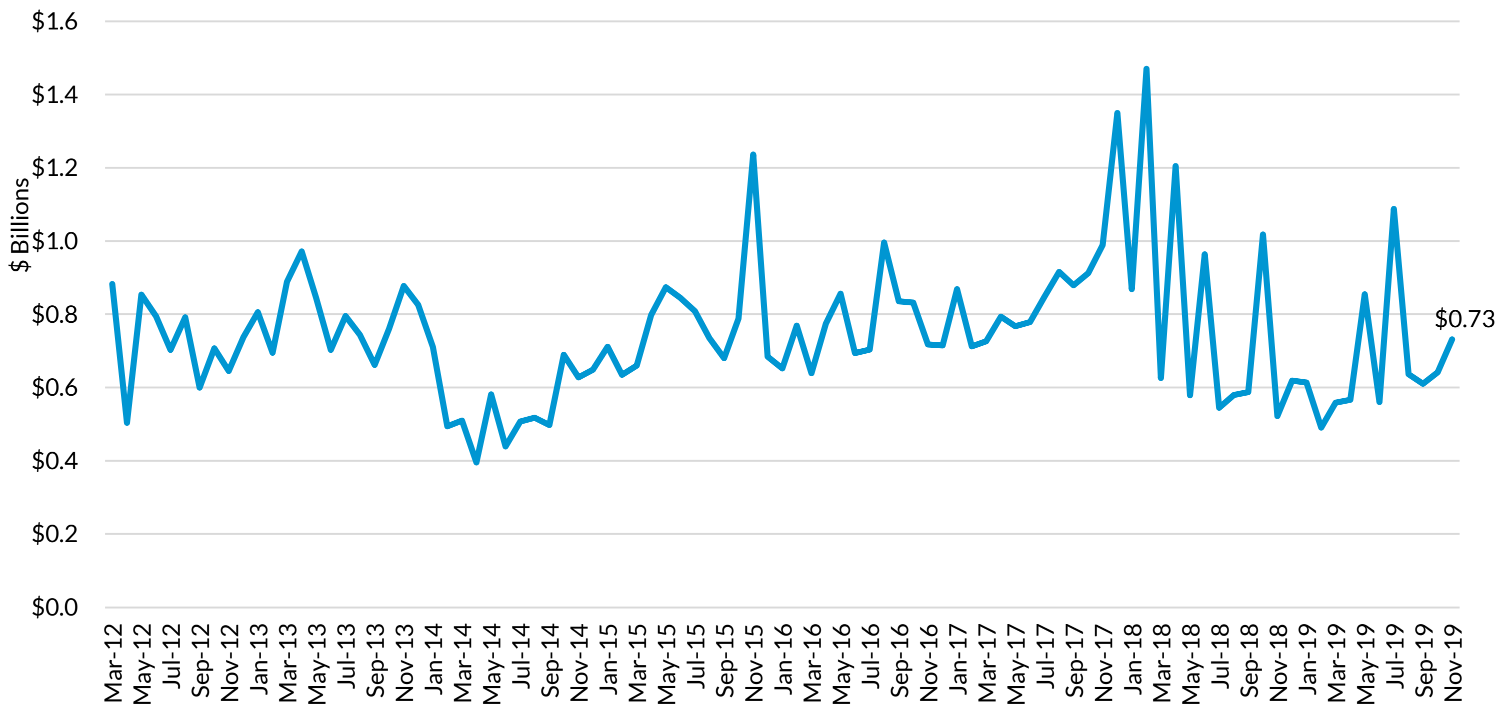


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of December 2019.*

Other Ginnie Mae Programs Reverse Mortgage Volumes

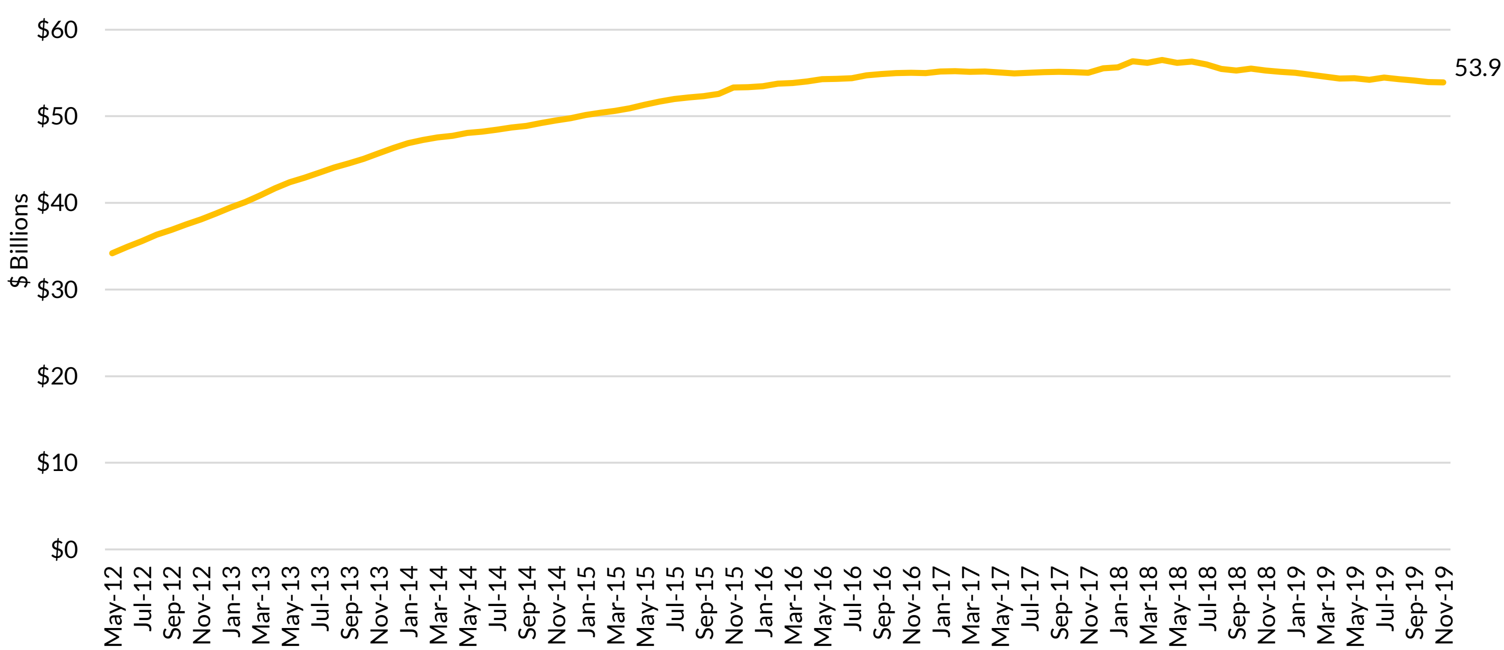
Ginnie Mae reverse mortgage issuance has been volatile in recent months; after increasing in July, volume fell consecutively in August and September 2019 but has risen since to $0.73 billion in November. Issuance has been generally declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In November 2019, outstanding reverse mortgage securities totaled $53.9 billion, lower compared to recent past, reflecting a lower volume of new issuances.

HMBS Issuance Volume



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

HMBS Outstanding

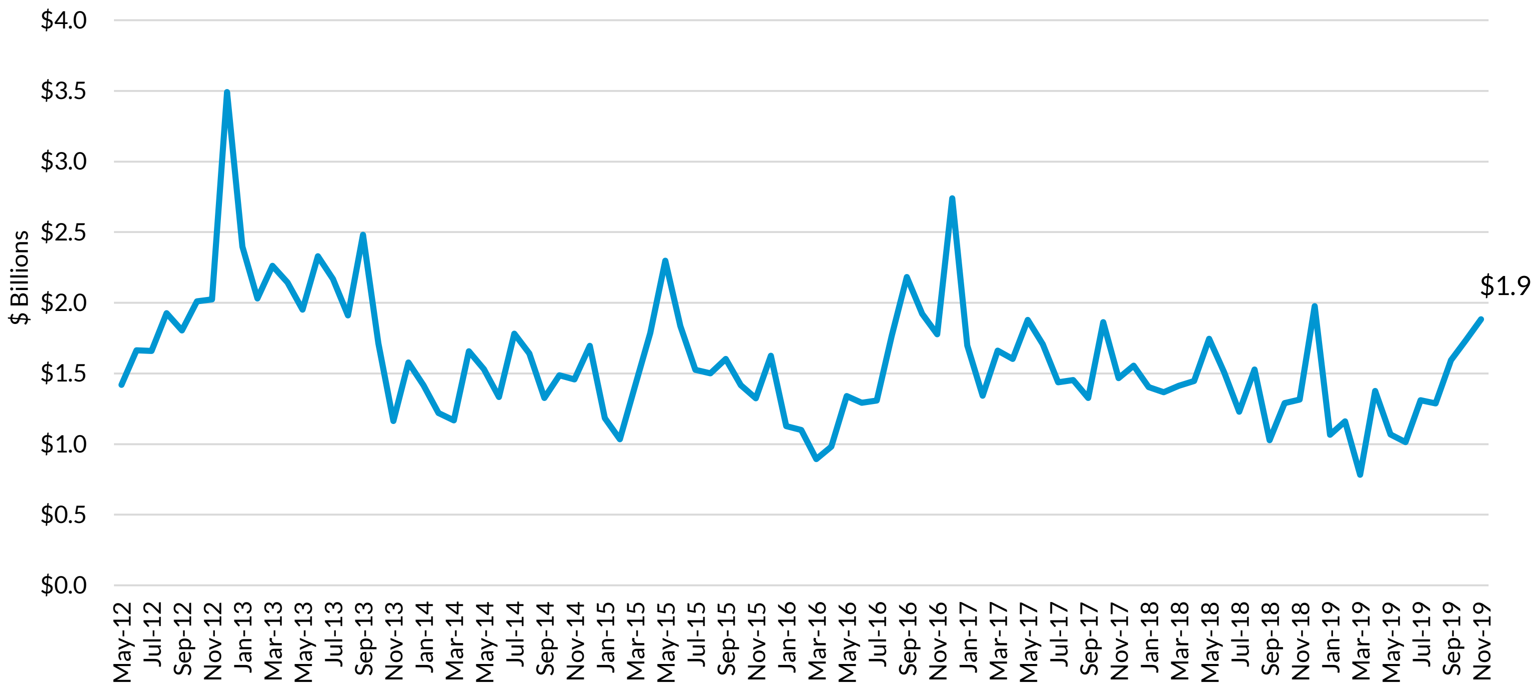


Sources: *Ginnie Mae and Urban Institute.* ***Note****: Data as of November 2019.*

Other Ginnie Mae Programs Multifamily Market

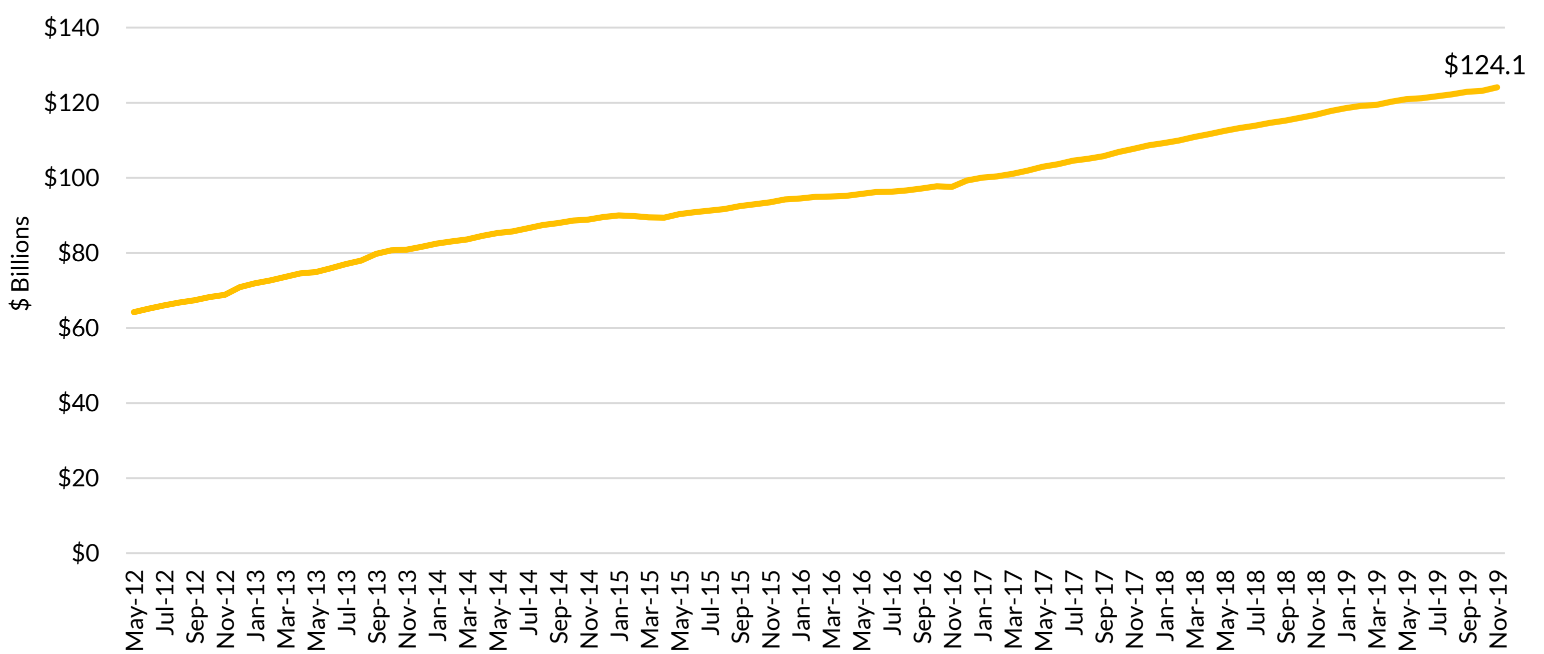
Ginnie Mae multifamily issuance volume in November 2019 totaled $1.9 billion, an increase from the past month. Outstanding multifamily securities totaled $124.1 billion in November.

Ginnie Mae Multifamily MBS Issuance



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

Ginnie Mae Multifamily MBS Outstanding

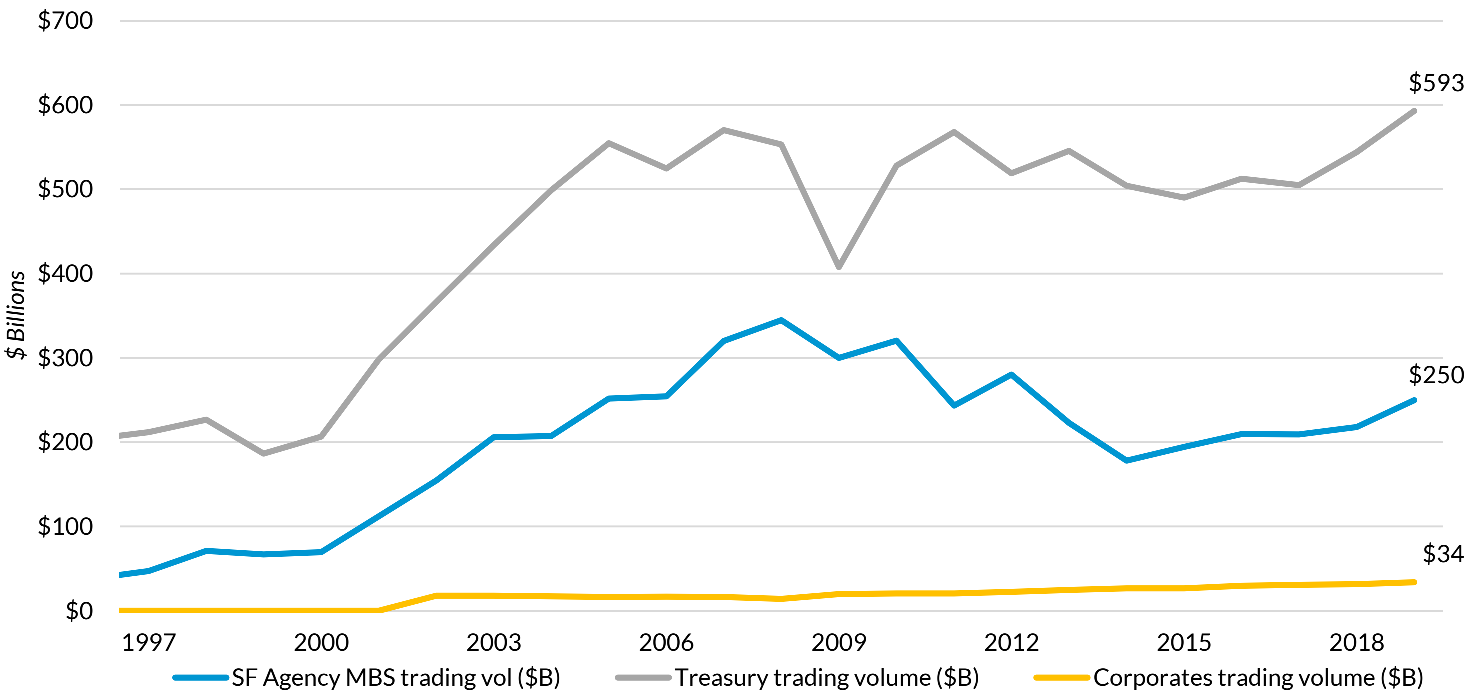


Sources: *Ginnie Mae and Urban Institute.* ***Note***: *Data as of November 2019.*

Market Conditions

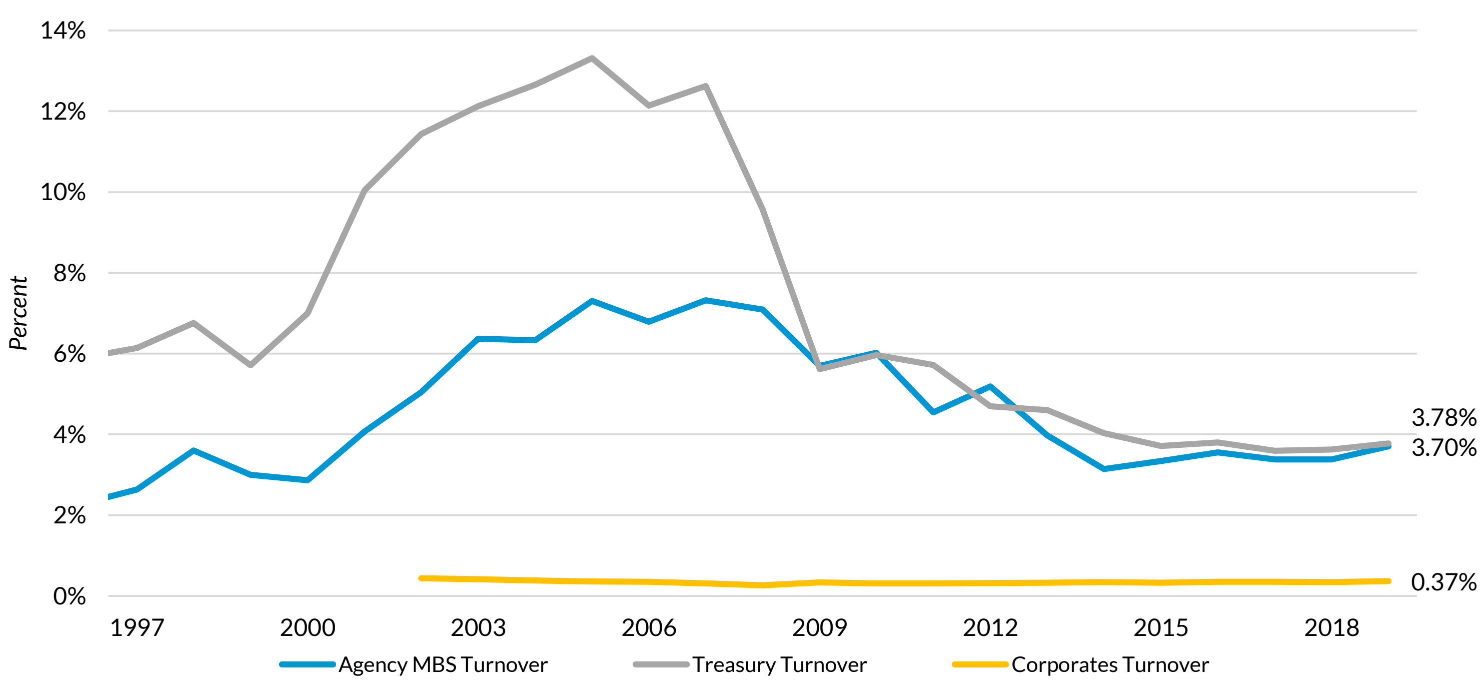
Agency MBS trading volume was $250 billion/day on average 2019 YTD, more robust than in the 2014-2018 period, but well below the pre-crisis peak of $345 billion in 2008. In contrast, average daily trading volume for Treasuries now exceeds the pre-crisis peak. Agency MBS turnover in 2019 YTD also has been slightly higher than the 2014-2018 period; in the first eleven months of 2019, average daily MBS turnover was 3.70 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 November 2019.*

Average Daily Turnover by Sector

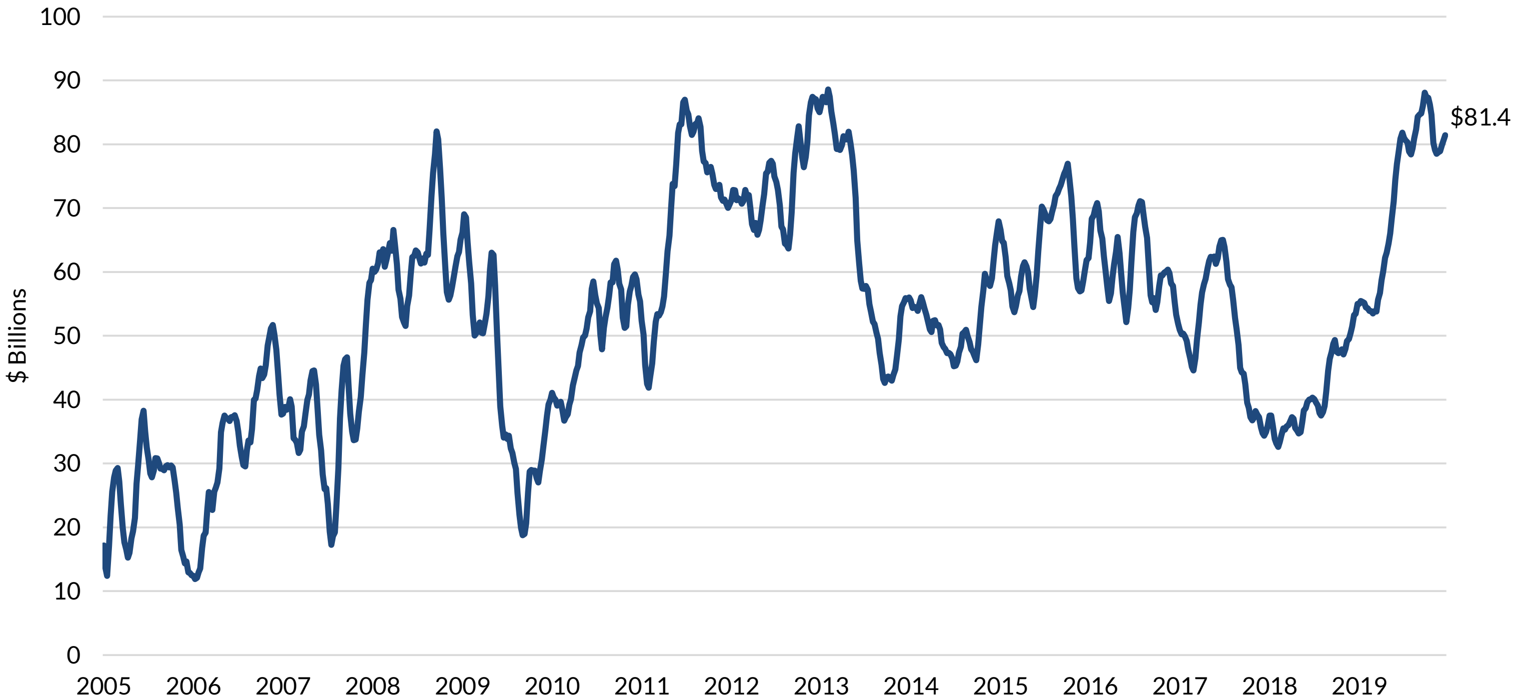


Sources: *SIFMA and Urban Institute.* ***Note:*** *Data as of November 2019.*

Market Conditions

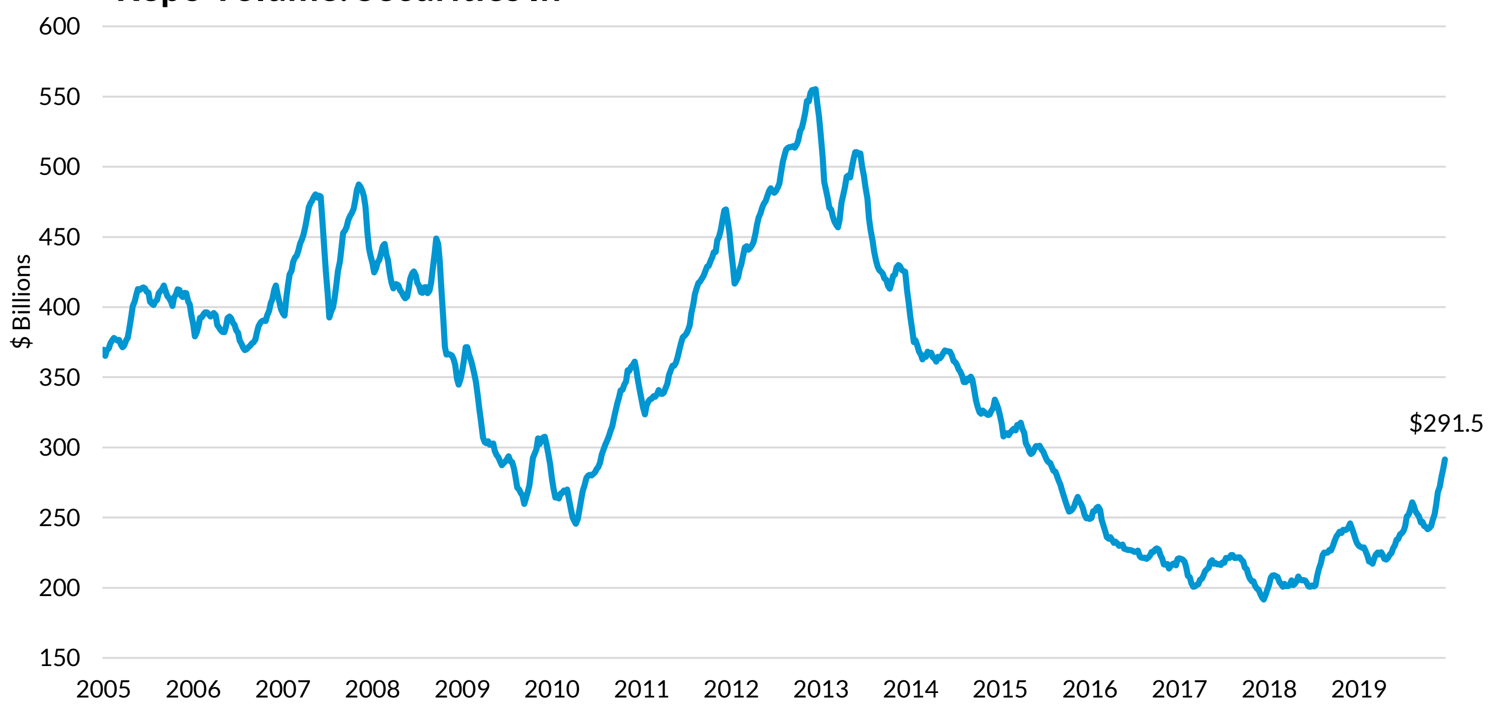
Dealer net positions are near their post-crisis highs. By contrast, dealer gross positions have fallen dramatically. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

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 December 2019.*

Repo Volume: Securities In

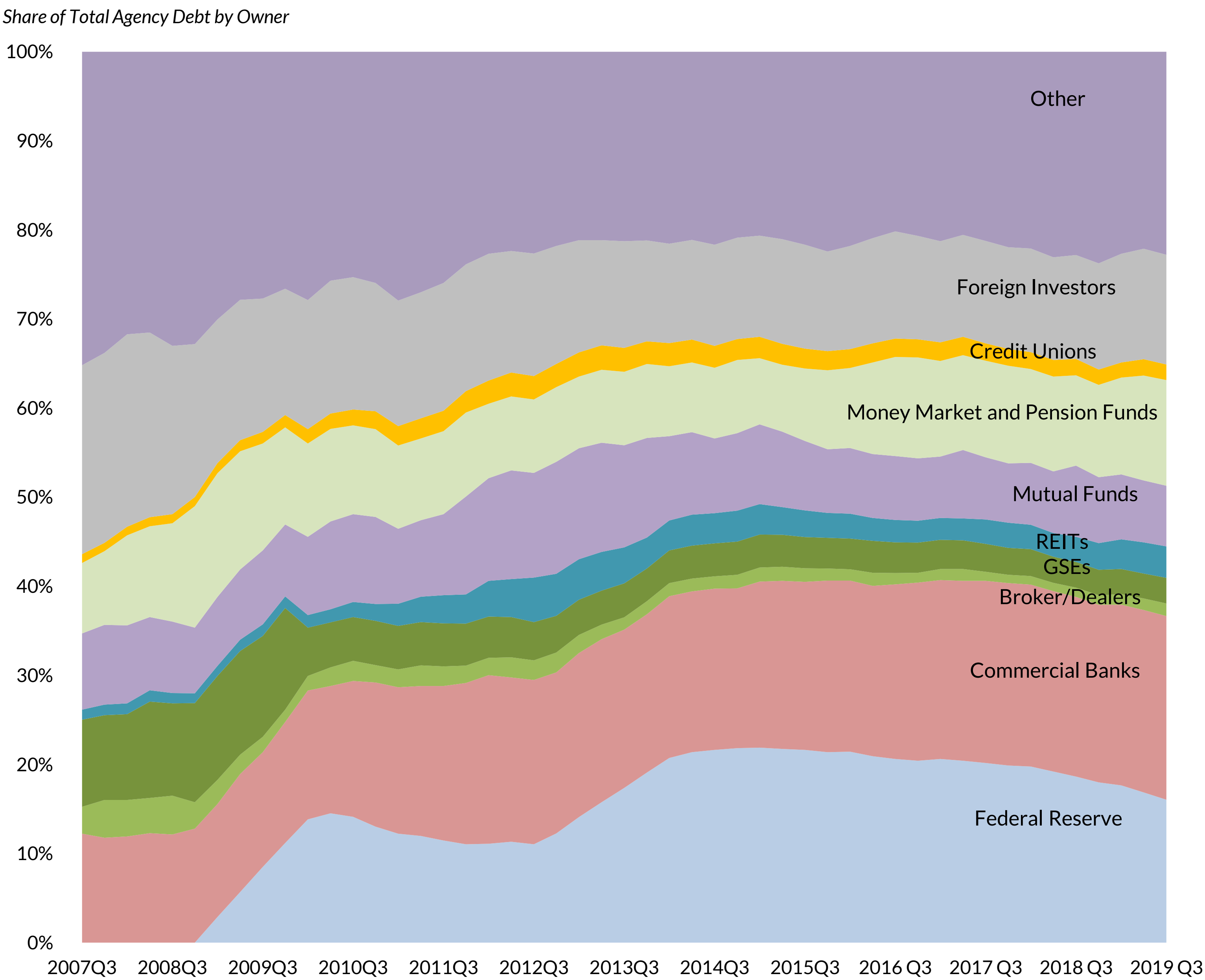


Sources: *Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute.* ***Note:*** *Data as of December 2019.*

MBS Ownership

The largest holders of agency debt (Agency MBS + Agency notes and bonds) include the Federal Reserve (16 percent), commercial banks (21 percent) and foreign investors (12 percent). The broker/dealer and GSE shares are a fraction of what they once were.

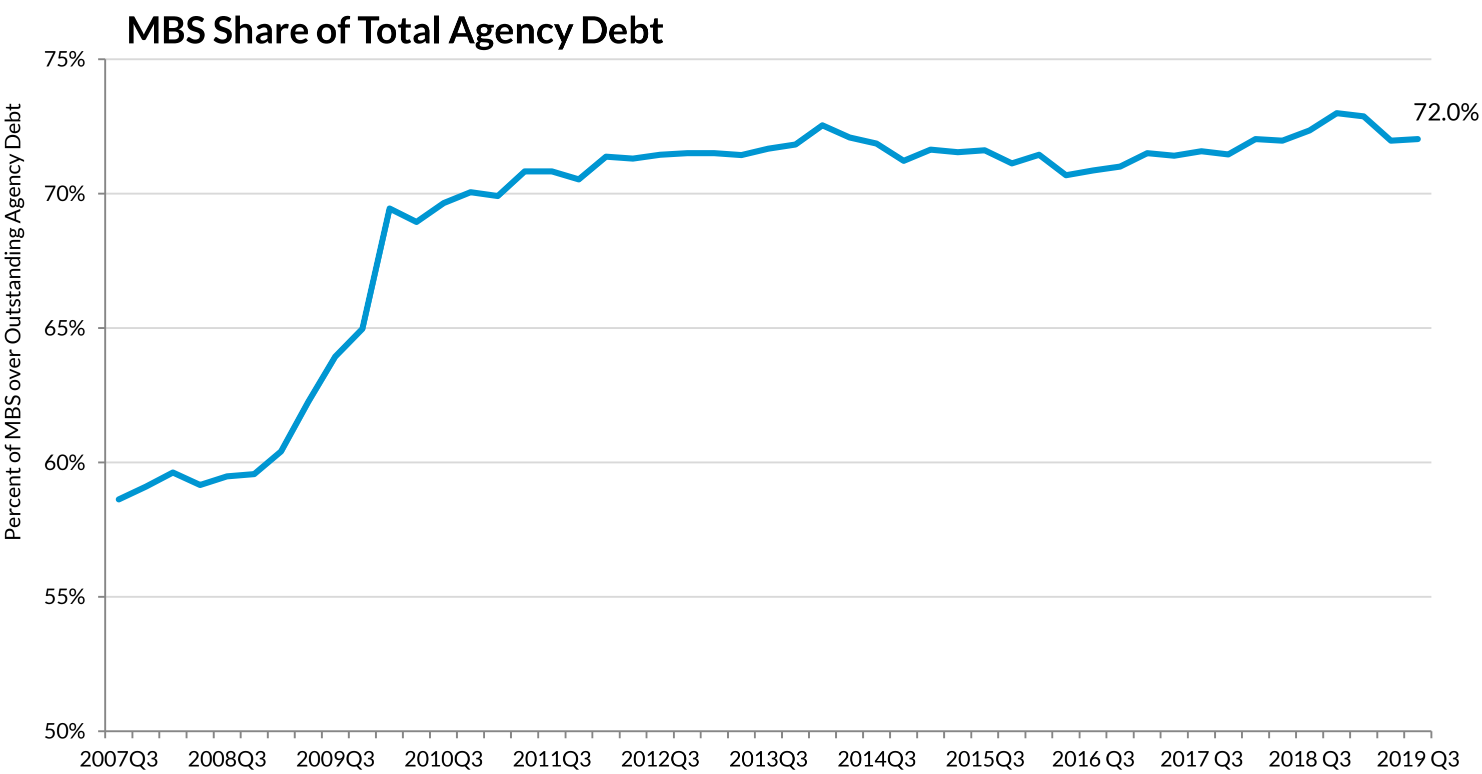
Who owns Total Agency Debt?



Sources: *Federal Reserve Flow of Funds and Urban Institute.* **Note**: *The "other" category includes primarily life insurance companies, state and local govts, households, and nonprofits. Data as of Q3 2019.*

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 Q3 2019, the MBS share of total agency debt stood at 72.0 percent. Commercial banks are now the largest holders of Agency MBS. Out of their $2.1 trillion in holdings as of the end of December 2019, $1.5 trillion was held by the top 25 domestic banks.



***Sources**: Federal Reserve Flow of Funds and Urban Institute. **Note**: Data as of Q3 2019.*

	Commercial Bank Holdings ($Billions)								Week Ending			
	Nov-18	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec 4	Dec 11	Dec 18	Dec 25
Largest 25 Domestic Banks	1,338.1	1,442.4	1,460.0	1,464.4	1,471.3	1,495.3	1,508.6	1,529.1	1,533.9	1,531.9	1,492.1	1,496.3
Small Domestic Banks	476.3	496.2	501.0	506.0	506.2	511.5	515.5	520.5	522.9	522.7	525.7	528.6
Foreign Related Banks	23.7	29.4	28.8	29.6	33.8	34.7	36.5	37.4	39.2	40.0	34.9	35.0
Total, Seasonally Adjusted	1,838.1	1,968.0	1,989.8	2,000.0	2,011.3	2,041.5	2,060.6	2,087.0	2,096.0	2,094.6	2,052.7	2,059.9

***Sources**: Federal Reserve Bank and Urban Institute. **Note**: Small domestic banks includes all domestically chartered commercial banks not included in the top 25. Data as of December 2019.*

MBS Ownership

Out of the $2.0 trillion in MBS holdings at banks and thrifts as of Q3 2019, $1.5 trillion was agency pass-throughs: $1.1 trillion in GSE pass-throughs and $427 billion in Ginnie Mae pass-throughs. Another $429 billion was agency CMOs, while non-agency holdings totaled $40 billion. MBS holdings at banks and thrifts increased for the fourth quarter in a row in Q3 2019. This increase was broad based, coming from Ginnie Mae and GSE pass-throughs, agency CMOs as well as non-agency holdings.

Bank and Thrift Residential MBS Holdings

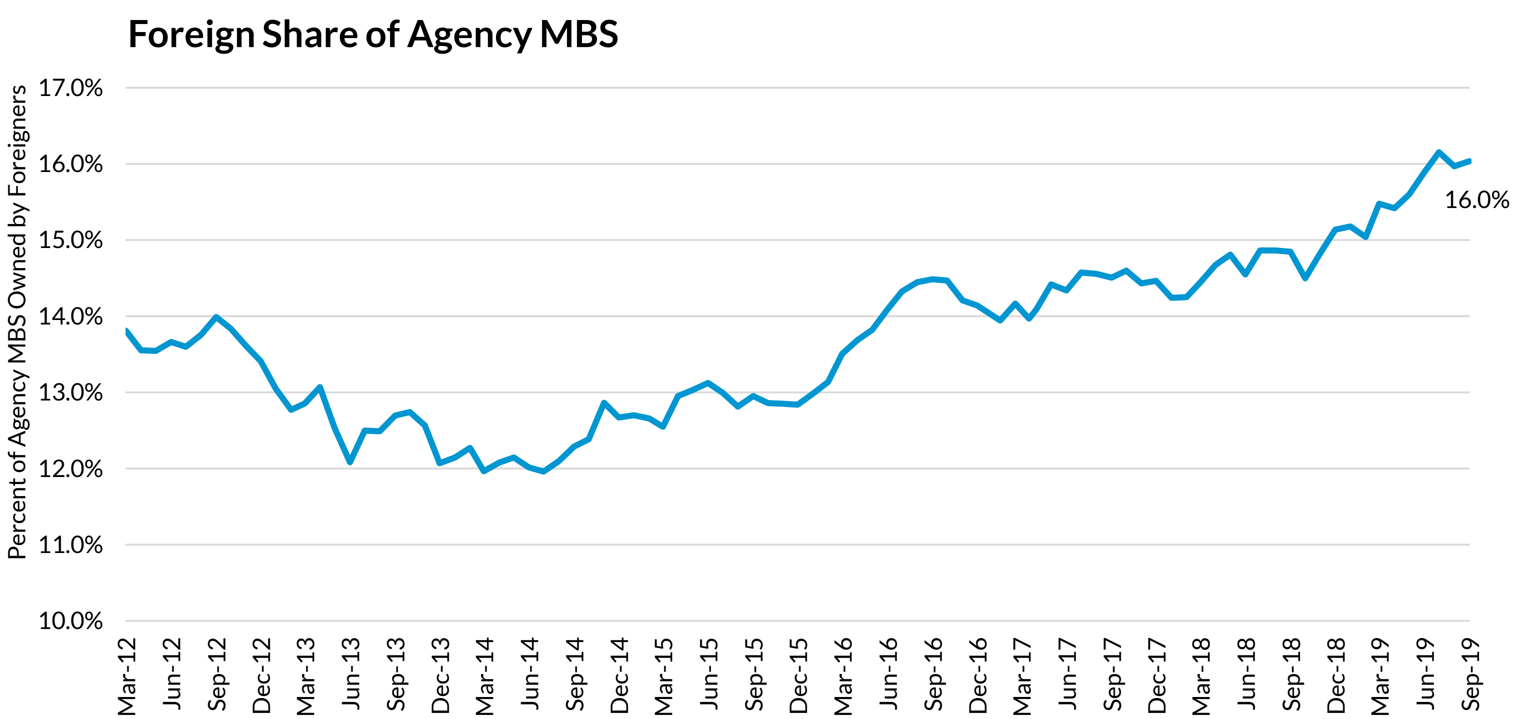
	All Banks & Thrifts ($Billions)						
	Total	Agency MBS PT	GSE PT	GNMA PT	Agency CMO	Private MBS PT	Private CMO
2000	$683.90	$392.85	$234.01	$84.26	$198.04	$21.57	$71.43
2001	$810.50	$459.78	$270.59	$109.53	$236.91	$37.62	$76.18
2002	$912.36	$557.43	$376.11	$101.46	$244.98	$20.08	$89.88
2003	$982.08	$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
2016	$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
1Q19	$1,844.99	$1,385.10	$1,001.61	$383.49	$422.18	$3.06	$34.65
2Q19	$1,907.13	$1,445.91	$1,037.93	$407.97	$421.56	$2.90	$36.76
3Q19	$1,975.78	$1,506.92	$1,079.82	$427.10	$428.69	$4.74	$35.44

	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	$321,946	$183,062	$128,029	$10,760	$95	16.3%
2	Wells Fargo & Company	$257,583	$183,897	$69,614	$3,220	$852	13.0%
3	JP Morgan Chase & Co.	$140,403	$95,347	$31,927	$227	$12,902	7.1%
4	U S. Bancorp.	$92,916	$39,656	$31,241	$22,017	$1	4.7%
5	Charles Schwab Bank	$90,372	$51,499	$20,452	$18,421	$0	4.6%
6	Capital One Financial Corporation	$72,536	$60,813	$3,116	$7,119	$1,488	3.7%
7	Citigroup Inc.	$65,843	$27,719	$14,661	$22,622	$841	3.3%
8	Bank of New York Mellon Corp.	$54,546	$32,443	$4,103	$16,699	$1,301	2.8%
9	PNC Bank, National Association	$52,437	$44,728	$3,134	$2,497	$2,078	2.7%
10	State Street Bank and Trust Company	$48,315	$19,893	$5,639	$22,409	$374	2.4%
11	Branch Banking and Trust Company	$43,243	$22,785	$11,059	$6,762	$2,637	2.2%
12	Morgan Stanley	$27,252	$6,033	$12,317	$8,900	$2	1.4%
13	E*TRADE Bank	$25,044	$14,231	$6,493	$4,320	$0	1.3%
14	HSBC Banks USA, National Association	$24,252	$14,951	$2,385	$4,226	$2,690	1.2%
15	KeyBank National Association	$22,532	$10,951	$10,686	$894	$0	1.1%
16	SunTrust Bank	$22,193	$10,312	$3,296	$8,585	$0	1.1%
17	Ally Bank	$22,002	$1,604	$793	$19,605	$0	1.1%
18	Citizens Bank	$21,688	$10,692	$5,459	$4,679	$858	1.1%
19	Regions Bank	$20,114	$16,475	$2,391	$1,248	$0	1.0%
20	MUFG Union Bank	$17,370	$2,325	$533	$14,173	$338	0.9%
	Total Top 20	**$1,442,585**	**$849,416**	**$367,331**	**$199,382**	**$26,456**	**73.0%**

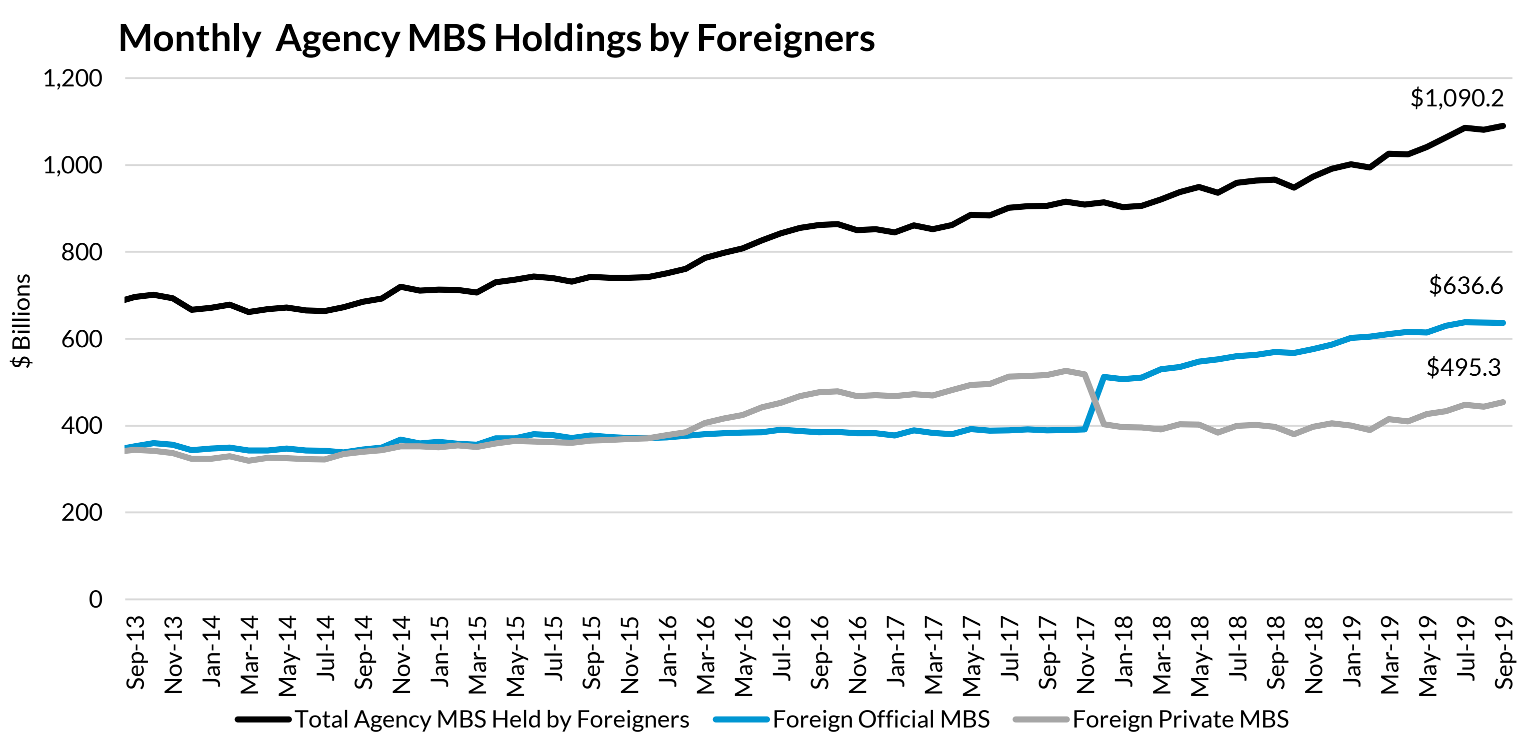
Sources: *Inside Mortgage Finance and Urban Institute.* ***Note:*** *Data as of Q3 2019.*

MBS Ownership

Foreign investors held 16.0 percent of agency MBS in September 2019, up from a low of 12.0 percent in July 2014. For the month of September 2019, this represents $1.09 trillion in Agency MBS, $495 billion held by foreign private institutions and $637 billion held by foreign institutions.



Sources*: SIFMA and Treasury International Capital (TIC).* ***Note****: Data as of August 2019.*



Sources*: Treasury International Capital (TIC) and Urban Institute.* ***Note****: Data as of September 2019. 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 Japan, Taiwan, and China; these three comprise just under 70 percent of all foreign holdings. Between June 2018 and September 2019, we estimate Japan has increased their agency MBS holdings by $53.6 billion, China has increased their holdings by $53.3 billion and Taiwan has increased their holdings by $13.0 billion.

Agency MBS+ Agency Debt

	Level of Holdings ($Millions)*						Change in Holdings ($Millions)*				
Country	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Japan	257,547	254,511	271,999	284,322	296,445	311,044	-3,036	17,488	12,323	12,123	14,599
Taiwan	250,009	250,639	261,262	265,992	265,520	263,013	630	10,623	4,730	-472	-2,507
China	180,635	190,203	188,921	208,540	227,312	233,778	9,568	-1,282	19,619	18,772	6,466
Ireland	46,817	48,220	48,020	46,623	44,979	41,374	1,403	-200	-1,397	-1,644	-3,605
Luxembourg	36,372	38,800	50,869	44,561	46,335	46,606	2,428	12,069	-6,308	1,774	271
South Korea	44,039	43,944	44,794	42,604	42,669	41,309	-95	850	-2,190	65	-1,360
Bermuda	27,866	27,610	28,861	28,535	29,377	29,651	-256	1,251	-326	842	274
Cayman Islands	31,017	31,638	31,405	30,374	30,885	29,434	621	-233	-1,031	511	-1,451
Malaysia	12,710	12,874	12,671	12,395	12,108	15,585	164	-203	-276	-287	3,477
Netherlands	11,995	12,229	9,601	9,400	13,548	10,546	234	-2,628	-201	4,148	-3,002
Rest of World	125,197	128,807	129,130	129,987	128,056	135,504	3,610	323	857	-1,931	7,448
Total	1,024,200	1,039,475	1,077,533	1,103,333	1,137,234	1,157,844	15,275	38,058	25,800	33,901	20,610

Agency MBS Only (Estimates)

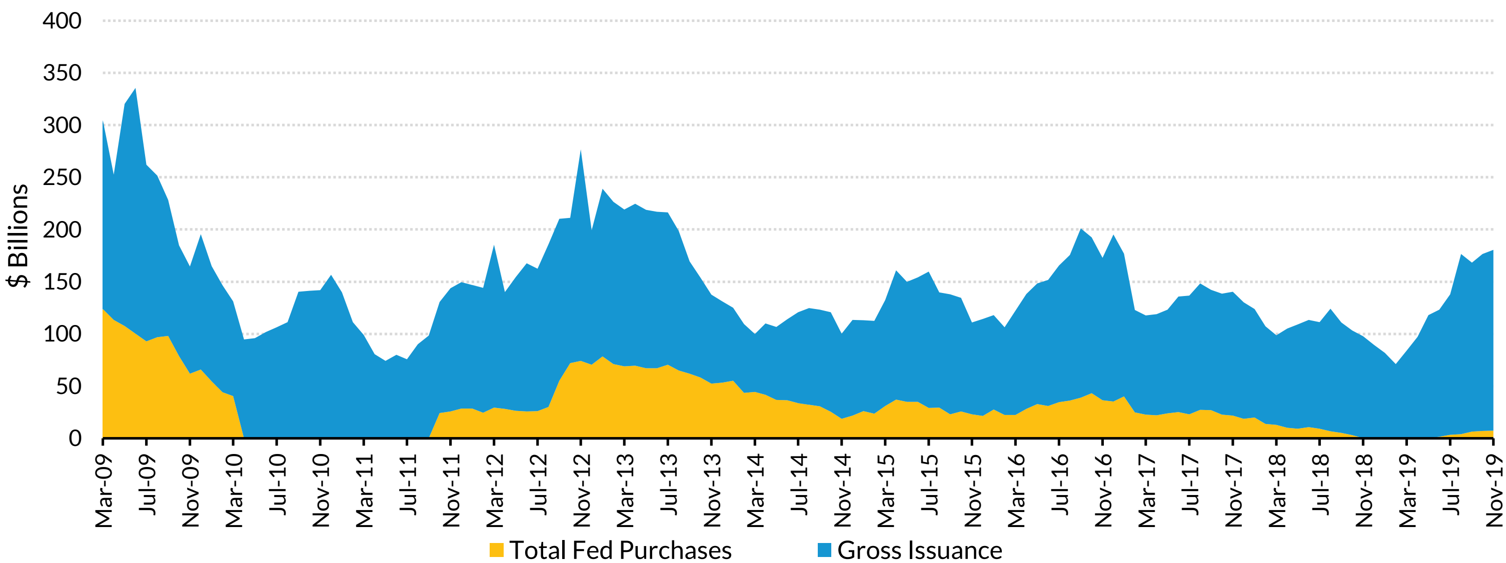
	Level of Holdings ($Millions)*						Change in Holdings ($Millions)*				
Country	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Japan	253,972	250,851	268,105	280,394	292,984	307,621	-3,121	17,254	12,289	12,590	14,637
Taiwan	249,773	250,397	261,005	265,733	265,292	262,787	624	10,608	4,728	-441	-2,504
China	176,345	185,811	184,249	203,827	223,159	229,671	9,466	-1,562	19,578	19,332	6,512
Ireland	37,832	39,021	38,234	36,751	36,281	32,772	1,189	-787	-1,483	-471	-3,509
Luxembourg	34,012	36,384	48,299	41,968	44,050	44,347	2,372	11,915	-6,331	2,082	296
South Korea	33,064	32,708	32,841	30,546	32,044	30,802	-356	133	-2,295	1,498	-1,242
Bermuda	24,969	24,644	25,706	25,352	26,572	26,877	-325	1,062	-354	1,220	305
Cayman Islands	24,384	24,847	24,181	23,086	24,464	23,084	463	-667	-1,094	1,377	-1,380
Malaysia	12,319	12,474	12,245	11,965	11,729	15,211	155	-229	-280	-236	3,481
Netherlands	11,437	11,658	8,993	8,787	13,008	10,012	221	-2,664	-206	4,221	-2,996
Rest of World	95,510	98,414	96,797	97,370	99,317	107,082	2,904	-1,617	574	1,946	7,766
Total	953,612	967,209	1,000,653	1,025,779	1,068,899	1,090,265	13,597	33,444	25,126	43,120	21,366

Sources *:Treasury International Capital (TIC) and Urban Institute.*
Note: **calculated based on June 2018 report with amount asset backed per country. Revised to include Top 10 holders of MBS listed as of June 2018. Monthly data as of September 2019.*

MBS Ownership

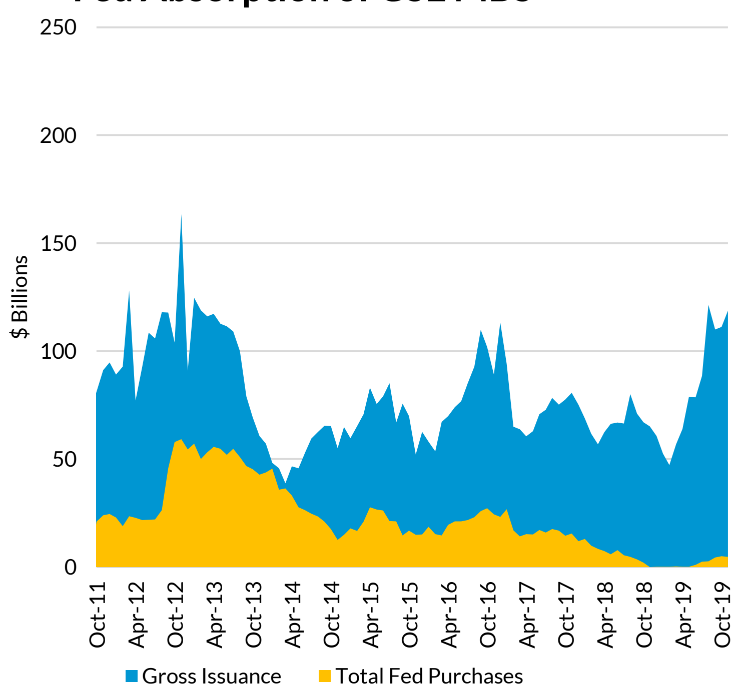
The Federal Reserve is actively winding down its mortgage portfolio; MBS purchases are very low. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross 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 in Q4, 2018 and thereafter. With the Fed now at its maximum taper, Fed absorption of gross issuance was 4.26 percent in November.

Total Fed Absorption



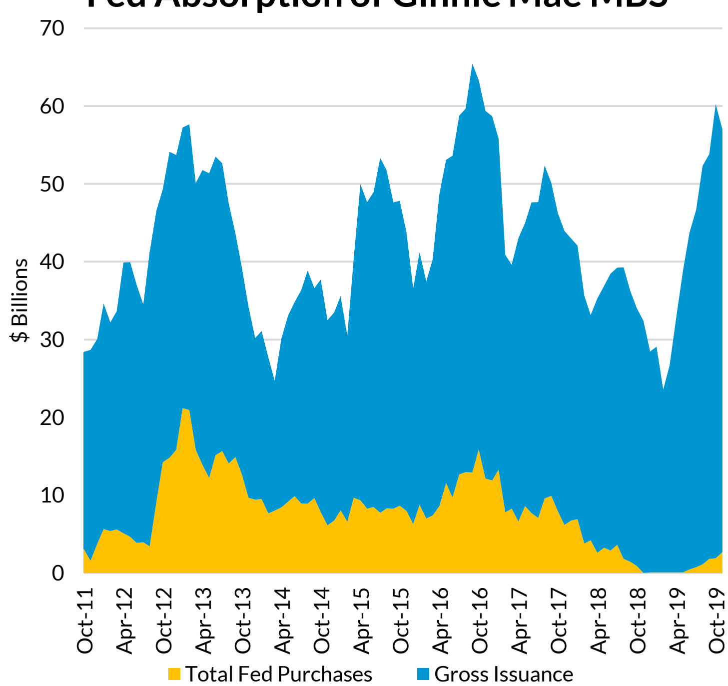
***Sources**: eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note:** Data as of November 2019.*

Fed Absorption of GSE MBS



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

Fed Absorption of Ginnie Mae MBS



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

Disclosures

Tracking Code: 2911282.1.1.GBL.INST

Expiration Date: 01/31/2021