Global Markets Analysis Report

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

FEB
2020

Ginnie Mae
Our Guaranty Matters

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

CONTENTS

HIGHLIGHTS

Liquidation trends for Ginnie Mae single-family loans

As interest rates fell over the course of 2019, refinance increased as expected. About half of Ginnie Mae and over 60 percent of Fannie Mae and Freddie Mac December 2019 originations were refinances. Within the Ginnie Mae market, nearly 63 percent of VA's and 59 percent of FHA's December originations were refinances, as the 30-year fixed-rate mortgage fell to 3.75 percent.

To better understand precisely which types of loans were refinanced recently, we look at data comparing the characteristics of loans refinanced (i.e. liquidated) to those not refinanced (i.e. current.) during the October to December 2019 period. We restrict our data to Ginnie Mae single-family loans with a loan age of 3 years or less as of the month of liquidation. This allows us to exclude loans that may be liquidated for other reasons, such as trade up or household relocation.

How are liquidated loans different from current loans? Table 1 shows key characteristics for Ginnie Mae loans in aggregate, and separately for FHA and VA. We find that liquidated loans tend to have higher original and outstanding UPB compared to current loans. This is expected because larger loan balances offer larger potential for monthly payment reduction when rates fall, all else being equal. Liquidated loans have slightly higher FICO scores than current loans for FHA; VA liquidated loans have lower FICOs than VA current loans. The weighted-average coupon for liquidated loans is higher than current loans for both FHA and VA.

Table 1: Characteristics of Liquidated vs. Current Ginnie Mae Loans

		Mean Original UPB	Mean Remaining UPB	Mean FICO	Mean LTV	Mean GWAC	Loan Count
FHA	Current	$201,675	$188,453	671	92.1	3.83	2,970,000
	Liquidated	$236,752	$231,282	670	90.8	4.06	111,656
VA	Current	$263,238	$239,809	710	94.8	3.51	1,640,000
	Liquidated	$297,840	$289,565	706	95.5	3.96	97,478
GNMA	Current	$218,370	$200,949	685	93.5	3.7	4,950,000
	Liquidated	$263,015	$256,561	687	93.1	4.0	213,664

Source: eMBS and Urban Institute

Liquidated and current loans also differ depending on MBS coupon they are securitized into. Table 2 shows the distribution of current and liquidated loans for three selected MBS coupon cohorts, and in aggregate, covering the same Oct to Dec 2019 period. There are three main takeaways:

- VA loans comprised 45.6 percent of all liquidated loans, compared to 33.2 percent of all current loans. In other words, liquidated loans were more likely than current loans to be VA.

- The above effect is more pronounced in higher than in lower coupons. For instance, in the 4.5 percent MBS coupon bucket, VA loans made up 47.4 percent of liquidated loans, significantly larger than the 26.2 percent VA share of current loans. The gap was less pronounced in the 4.0 percent and almost nonexistent in the 3.5 percent MBS coupon cohort.

HIGHLIGHTS

- In sharp contrast, FHA loans comprised a smaller share of liquidated loans than current loans in aggregate (52.3 vs. 60.0 percent) and within the 4.0 and 4.5 percent MBS coupons. In other words, liquidated loans were less likely than current loans to be FHA, except in the 3.5 coupon cohort, where the opposite was true, although by a small margin.

Table 2: Distribution of Liquidated and Current loans by agency and coupon.

	3.50%		4.00%		4.50%		All	
	Current	Liquidated	Current	Liquidated	Current	Liquidated	Current	Liquidated
FHA	43.6%	45.4%	57.1%	51.3%	65.6%	50.5%	60.0%	52.3%
RHS	4.7%	3.3%	6.7%	2.5%	8.0%	2.1%	6.7%	2.1%
VA	51.6%	51.2%	36.0%	46.1%	26.2%	47.4%	33.2%	45.6%

Source: eMBS and Urban Institute

These data reflect the comparative efficiency of the VA refinance programs. VA IRRRL, for example, is a rate/term refinance program that only requires the borrower to be current on their existing loan. There is no updated credit review or appraisal. And origination fees can be rolled into the new loan balance subject to certain limits.

A note from Ginnie Mae

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

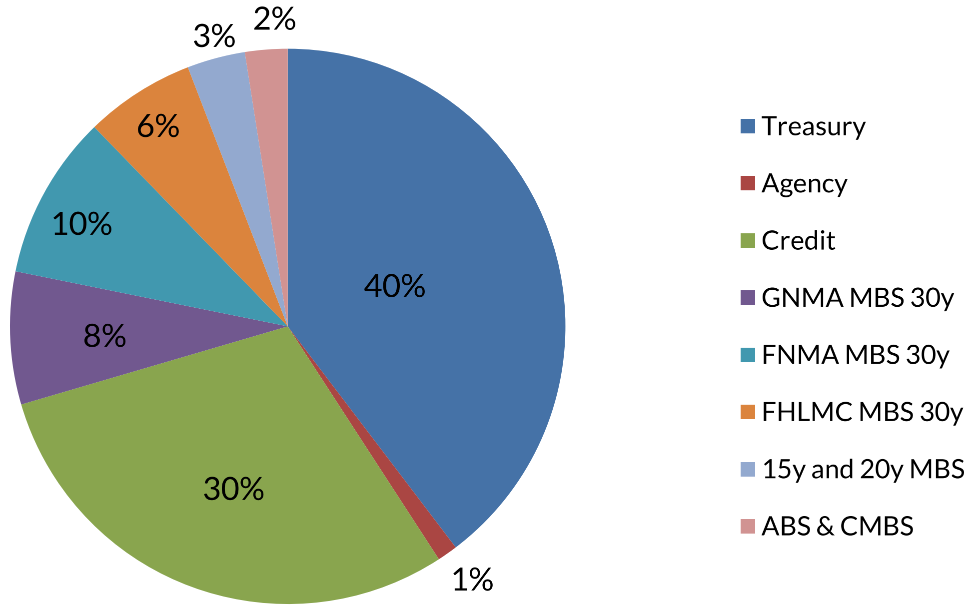
***Highlights this month*:**

- The OAS Spread between US Intermediate Credit and GNMA II 30 year MBS tightened substantially in Jan 2020; the18 bps drop reflected a widening of Ginnie Mae spreads and a tightening of corporate spreads, leaving the differential at the lowest level since at least mid-2016 (page 10).
- Agency gross issuance was $1.55 trillion for the full year 2019, up 29.7 percent compared to full year 2018 (page 20).
- In recent months, the first-time homebuyer share has declined for Fannie and Freddie; it has remained steady for Ginnie Mae, hovering around 70 percent (page 24).
- The share of loans originated by nonbanks hit another record high of 90.2 percent (page35).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

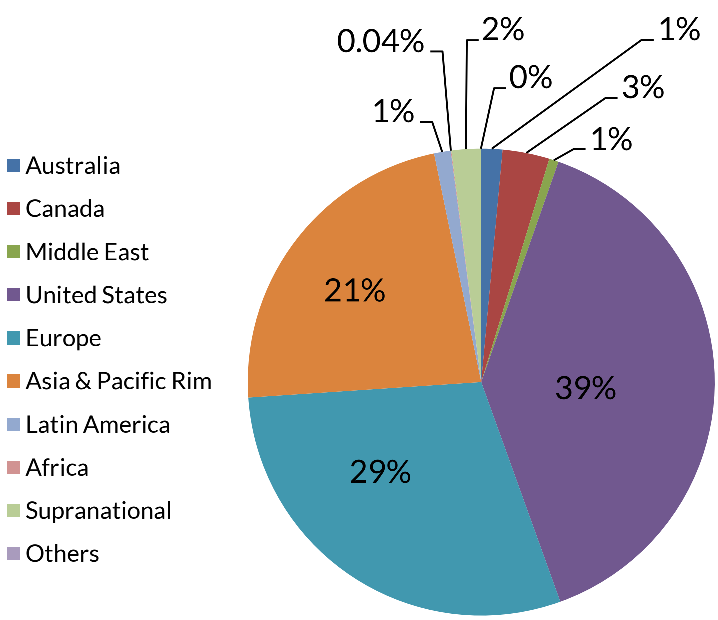
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 27 percent of the Barclays US Aggregate Index- less than either the US Treasury share (40 percent) or the US Credit share (30 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (10 percent), while Ginnie Mae 30-year MBS and 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



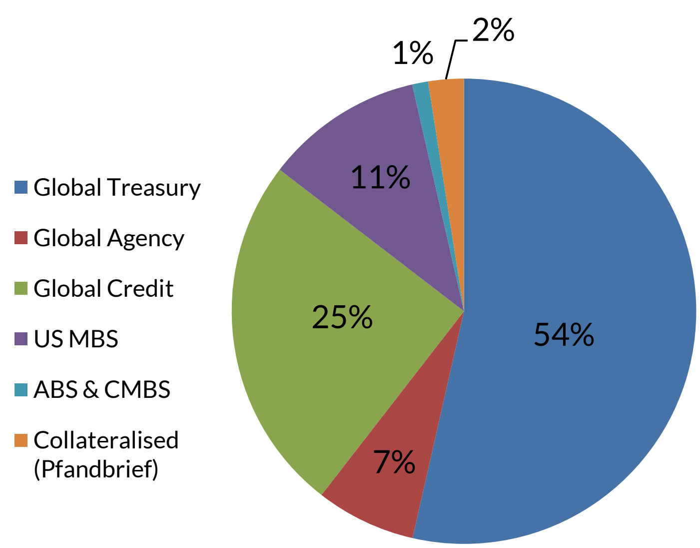
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of December 2019.*
Note*: Numbers in chart may not add to 100 percent due to rounding.*

Barclays Global Aggregate Index by Country



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

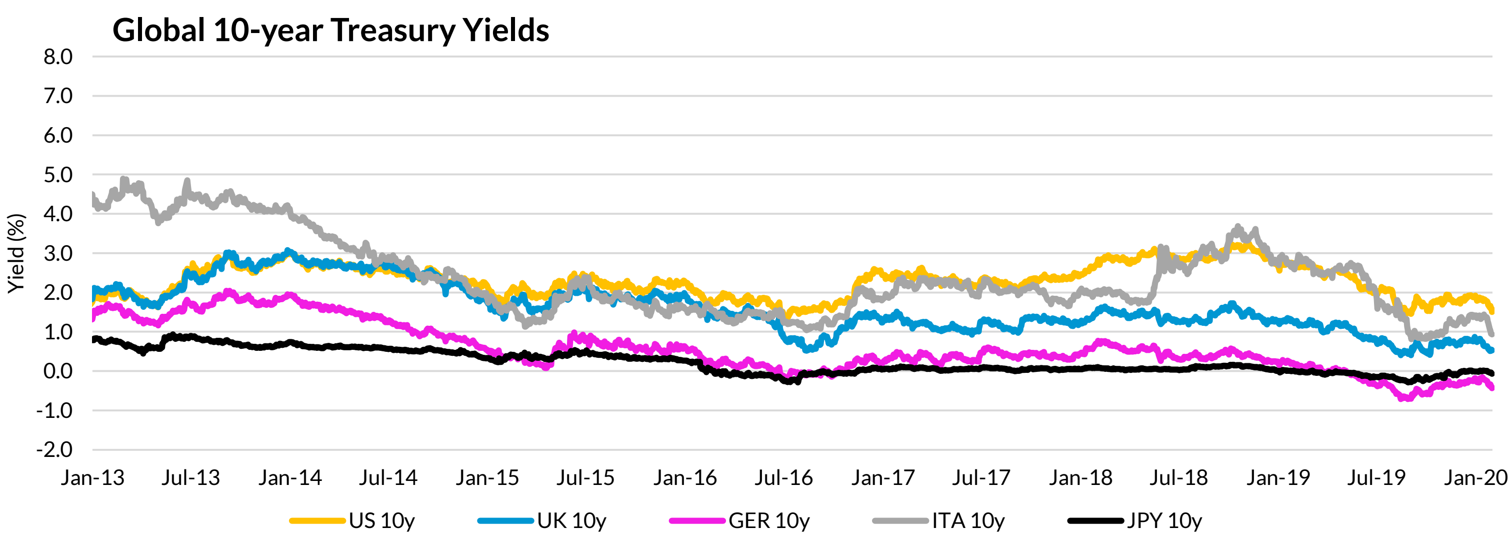
Barclays Global Aggregate Index by Sector



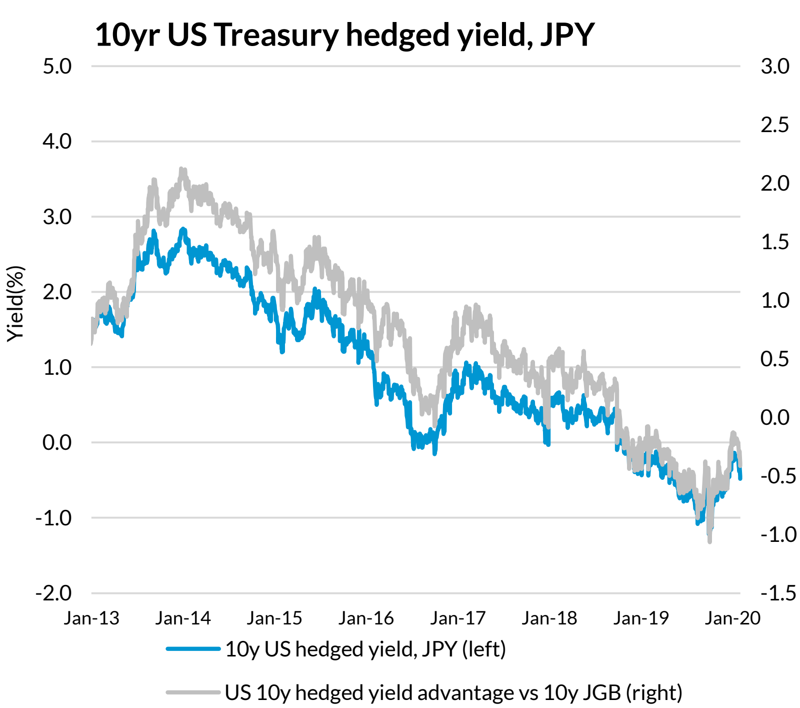
Sources: *Bloomberg and State Street Global Advisors*
Note*: Data as of December 2019.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

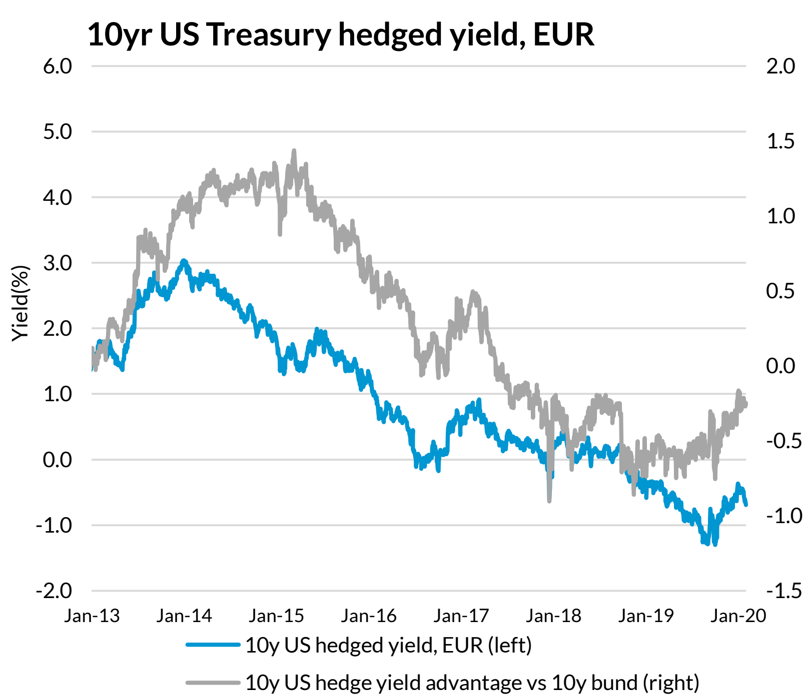
With weakness in economic data and worries about tariffs and trade wars, yields on government bonds dropped across the globe over the course of 2019. Kicking off 2020, the yield on the US 10-year treasury fell 41 bps in January to 1.51 percent. Despite this drop, US treasury yields are the highest in the developed world. This is followed by yields on the Italian 10-year note, down 48 basis points in January to 0.94 percent, the UK 10-year bond, down 30 bps to 0.52 percent, German 10 year, down 25 bps to -0.43 percent, and the Japanese 10 year government bond, which fell by 6 basis points to -0.07 percent over the course of January. At the end of January, the hedged yield differential between the 10-year Treasury and the 10-year JGB stood at -41 bps, a decrease of 28 bps since December 2019. The hedged yield differential between the 10-year Treasury and the 10-year Bund stands at -26 bps, a decrease of 8 bps since the end of December 2019.



Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of January 2020.*



Sources: *Bloomberg and State Street Global Advisors.*
Note: *Data as of January 2020.*

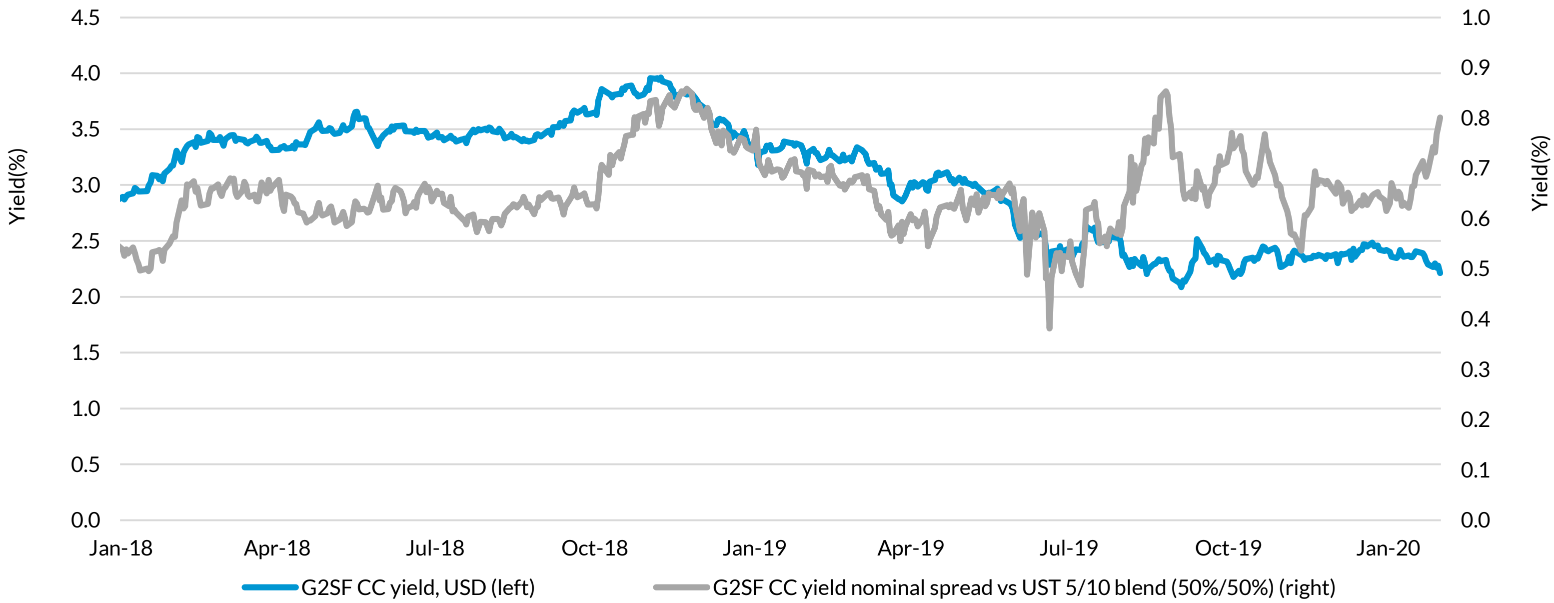


Sources: *Bloomberg and State Street Global Advisors*
Note*: Data as of January 2020.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

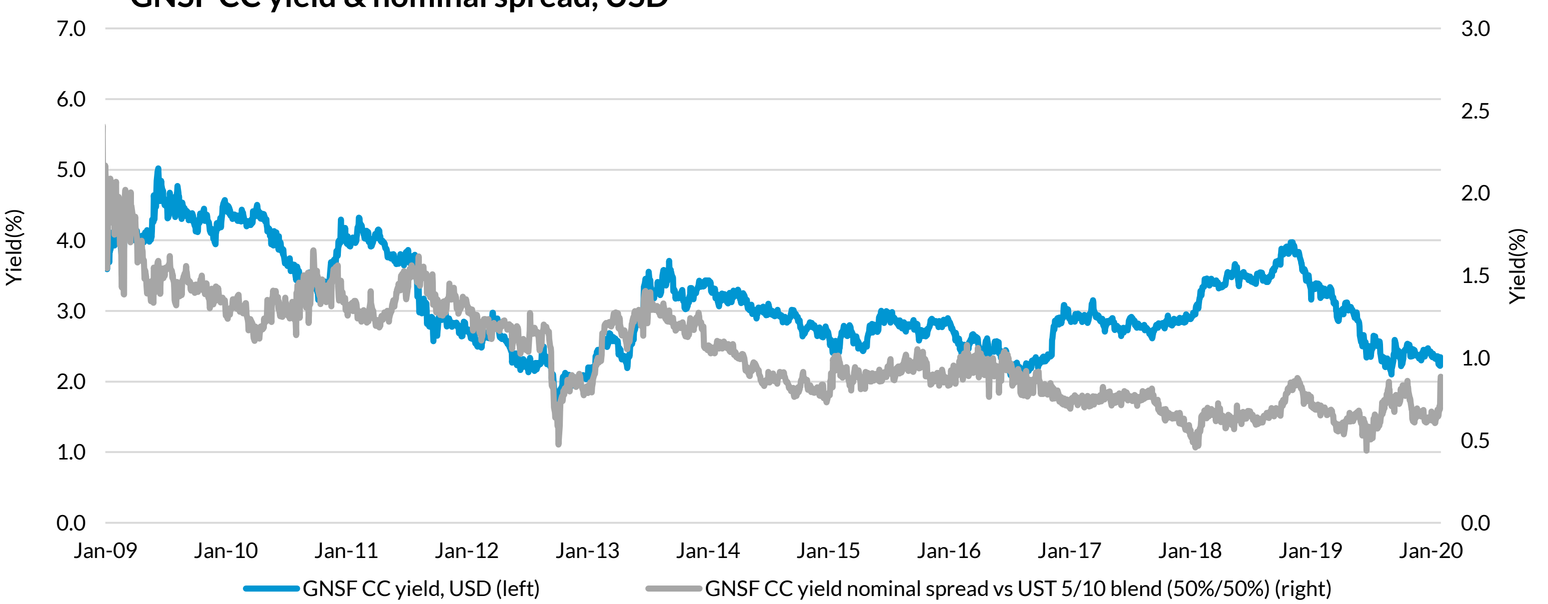
Nominal yields fell in January 2020, with GNMA II yields declining 21 bps to 2.21% and GNMA I yields declining 13 bps to 2.30% respectively. Current coupon Ginnie Mae securities outyield their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 80 bps on the G2SF and 89 bps on the GNSF, an increase of 19 and 26 bps respectively since last month.

G2SF CC yield & nominal spread, USD



***Sources:** Bloomberg and State Street Global Advisors. **Note**: Data as of January 2020.*

GNSF CC yield & nominal spread, USD

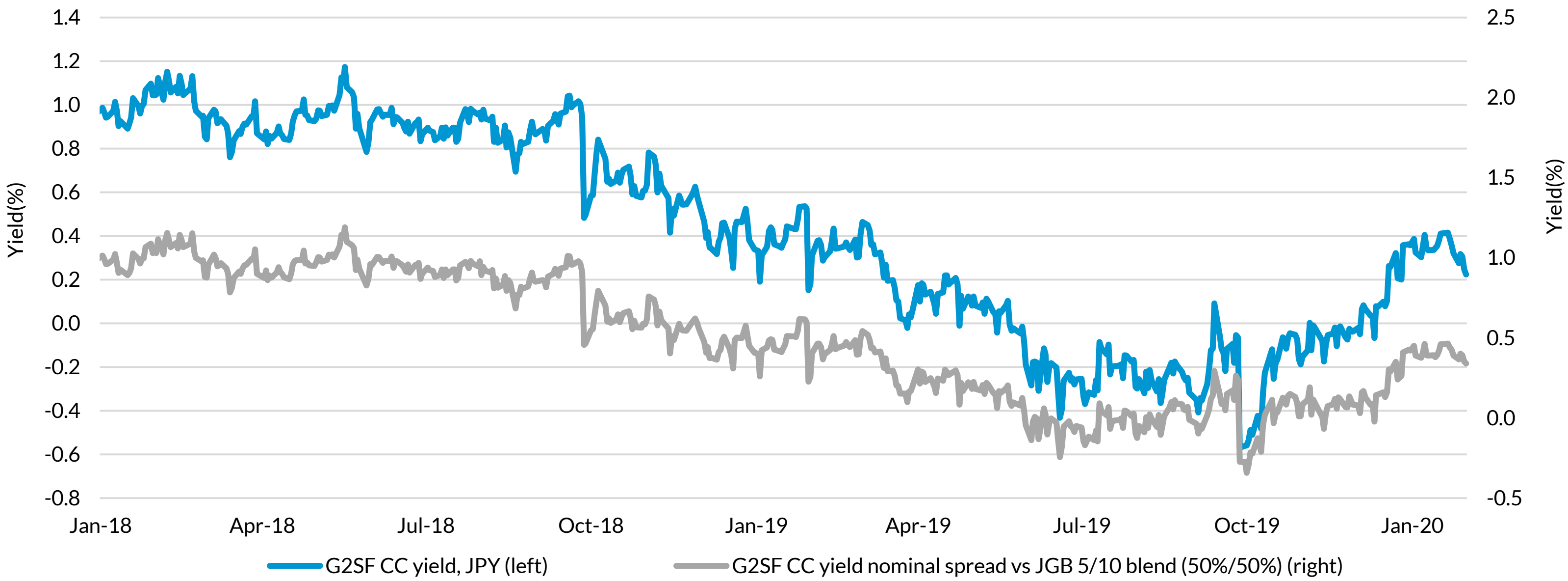


***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of January 2020.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

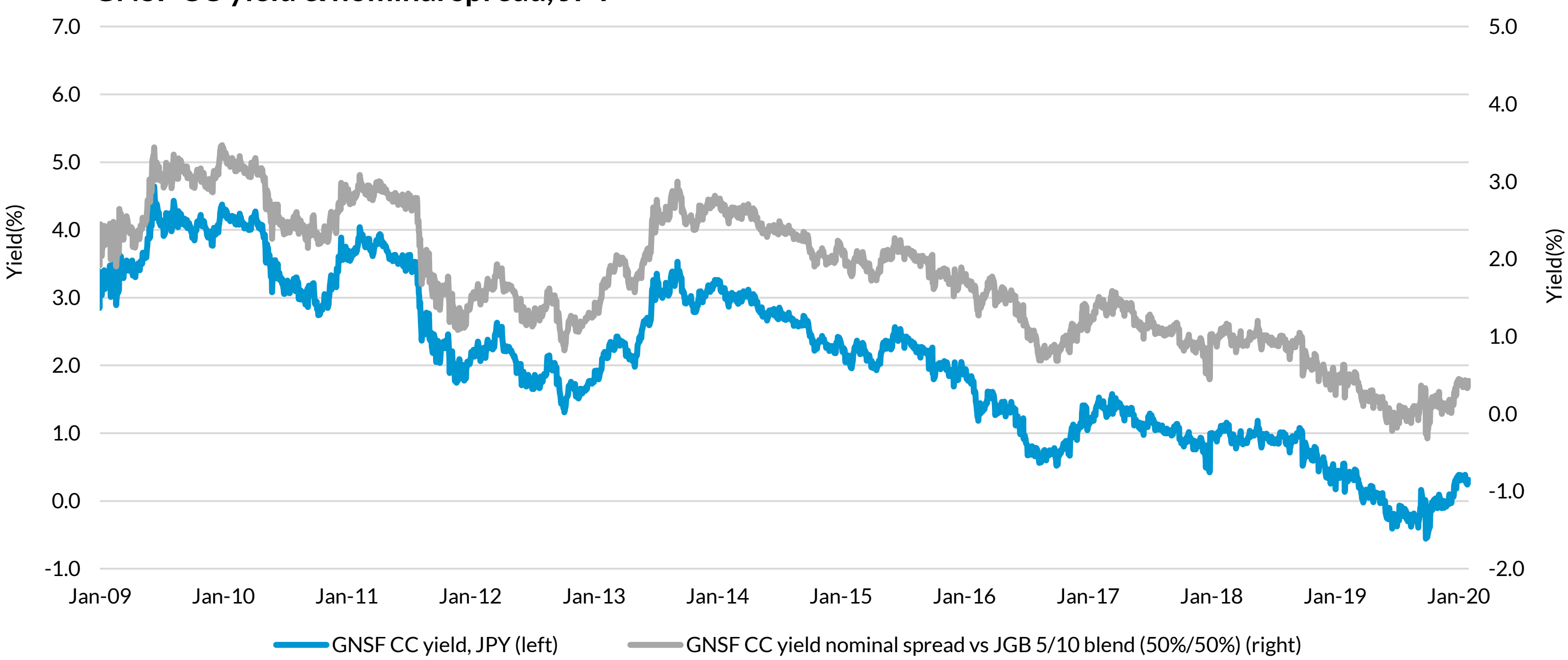
If Ginnie Mae securities are hedged into Japanese Yen, they look favorable on a yield basis versus the JGB 5/10 blend. More precisely, G2SF and GNSF hedged into Japanese yen have a yield of 34 and 42 bps, respectively, versus the JGB 5/10 blend. This represents an 8 bp tightening for the G2SF and no change for the GNSF since the end of December 2019.

G2SF CC yield & nominal spread, JPY



***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of January 2020.*

GNSF CC yield & nominal spread, JPY

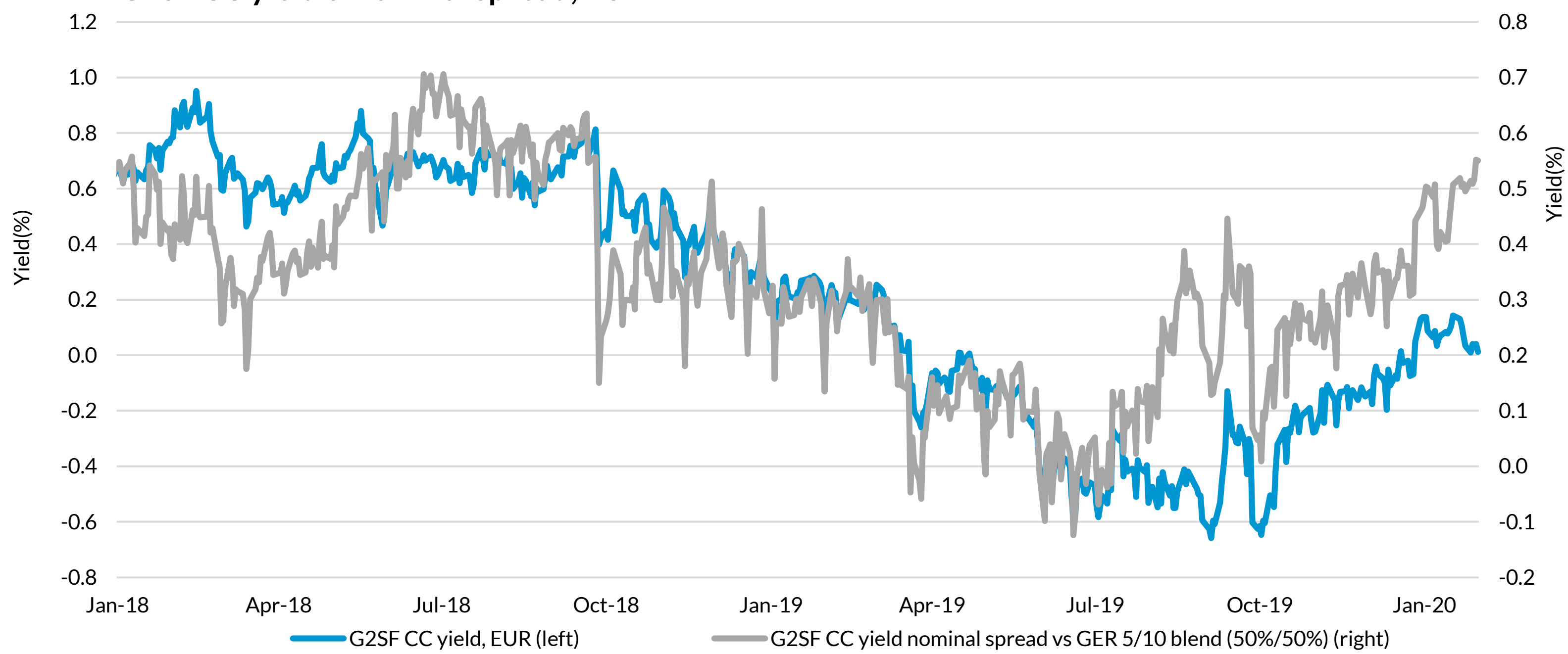


***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of January 2020.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

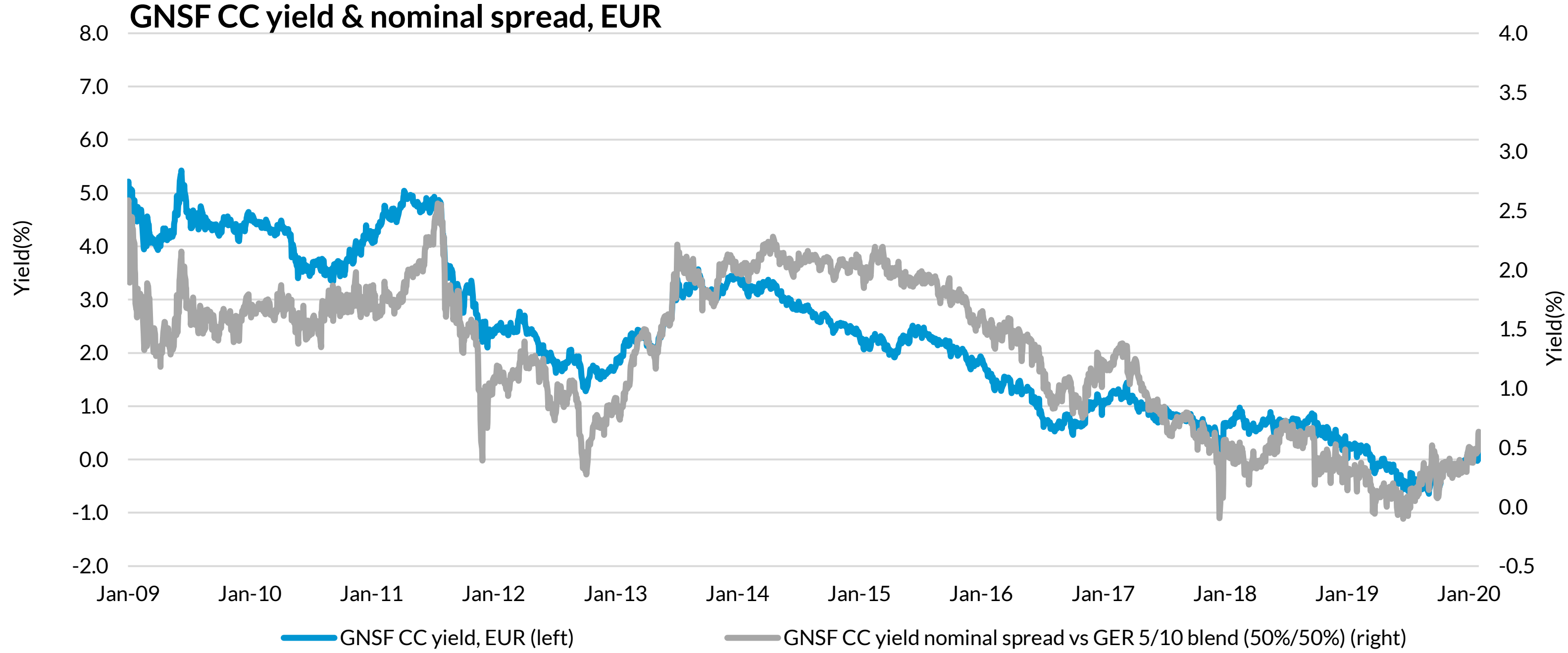
If Ginnie Mae securities are hedged into Euros, they look favorable on a yield basis versus the German 5/10 Blend. The figures below show that at the end of January, the current coupon G2SF and GNSF hedged into euros have a 55 and 64 bp higher yield, respectively, than the average of the German 5/10. This represents an 8 bp increase for the G2SF and a 16 bp increase for the GNSF since the end of December 2019.

G2SF CC yield & nominal spread, EUR



***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of January 2020.*

GNSF CC yield & nominal spread, EUR

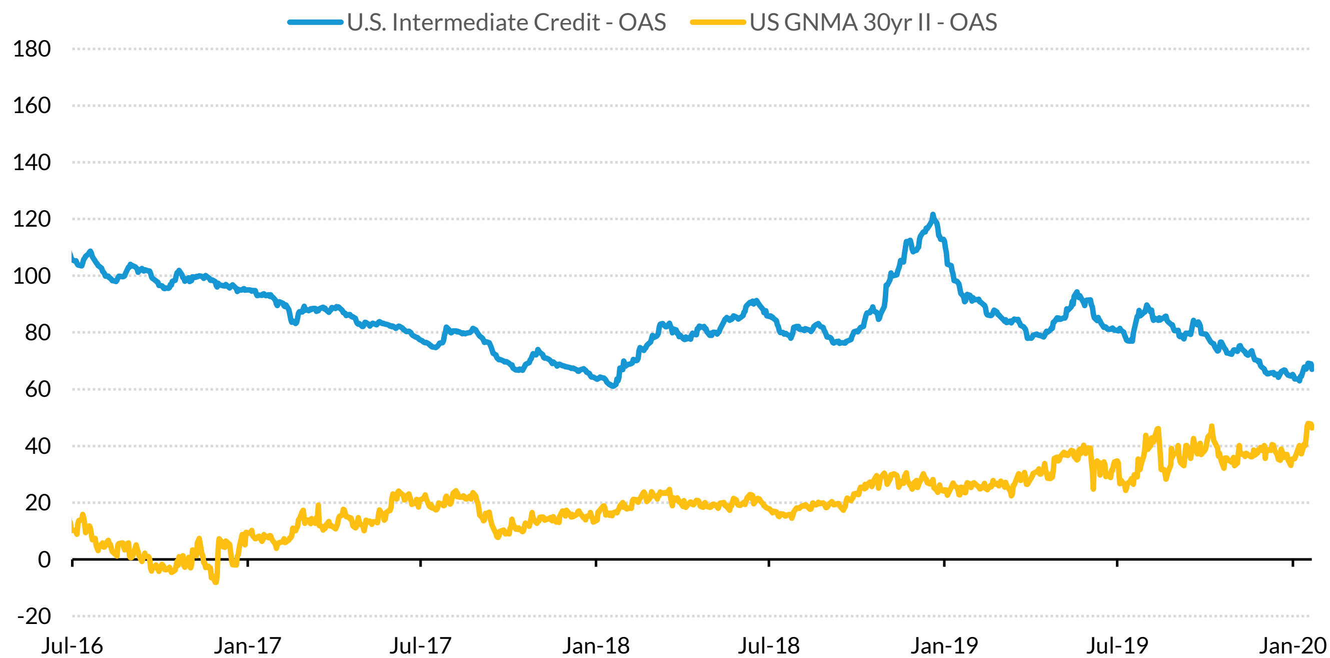


***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of January 2020.*

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 21 bps at the end of January 2020, 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 January 2020.*

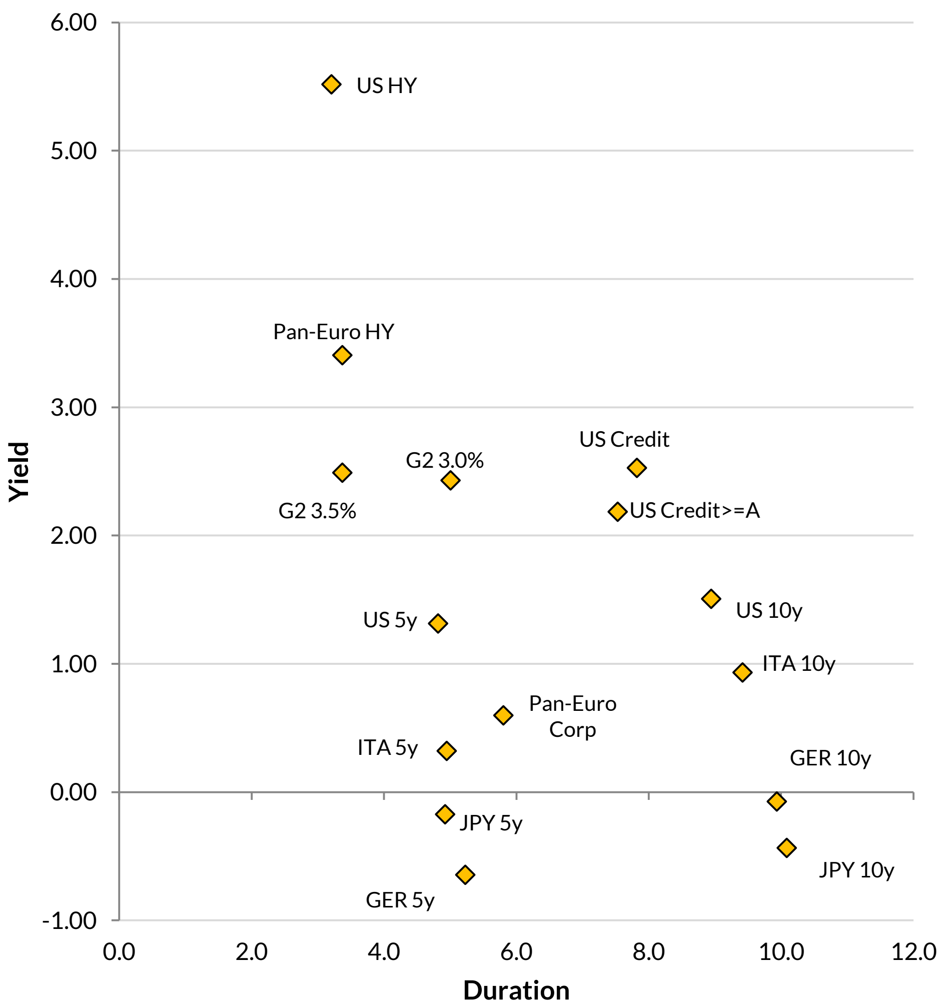
G2 30 MBS and Intermediate Credit OAS

Sources: *State Street Global Advisors.* ***Note:*** *Data as of January 2020.*

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.

Yield versus duration



Security	Duration	Yield
US 5y	4.8	1.31
US 10y	8.9	1.51
GNMA II 3.0%	5.0	2.43
GNMA II 3.5%	3.4	2.49
JPY 5y	4.9	-0.17
JPY 10y	9.9	-0.07
GER 5y	5.2	-0.64
GER 10y	10.1	-0.44
ITA 5y	4.9	0.32
ITA 10y	9.4	0.93
US credit	7.8	2.53
US credit >= A	7.5	2.19
US HY	3.2	5.52
Pan-Euro Corp	5.8	0.60
Pan-Euro HY	3.4	3.40

Sources: *Bloomberg and State Street Global Advisors.* ***Note****: Yields are in base currency of security and unhedged. Data as of January 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	0.45	0.73	1.14	0.65	0.76	0.79
3 year	0.26	0.34	0.54	0.29	0.48	0.39
5 year	0.19	0.20	0.37	0.19	0.50	0.37
10 year	0.26	0.27	0.46	0.40	0.61	0.64

	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	0.29	0.57	0.98	0.70	0.60	0.84
3 year	0.12	0.20	0.40	0.35	0.34	0.45
5 year	0.10	0.11	0.28	0.24	0.41	0.43
10 year	0.21	0.22	0.42	0.42	0.56	0.66

	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	0.49	1.43	1.19	0.72	0.96	1.00
3 year	0.61	1.06	1.10	0.70	1.17	1.03
5 year	0.57	1.05	1.14	0.92	1.53	1.33
10 year	0.65	1.03	1.19	1.13	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	0.58	0.40	0.83	0.97	0.62	0.85
3 year	0.19	0.19	0.37	0.51	0.29	0.43
5 year	0.18	0.10	0.25	0.26	0.27	0.32
10 year	0.33	0.22	0.35	0.37	0.34	0.39

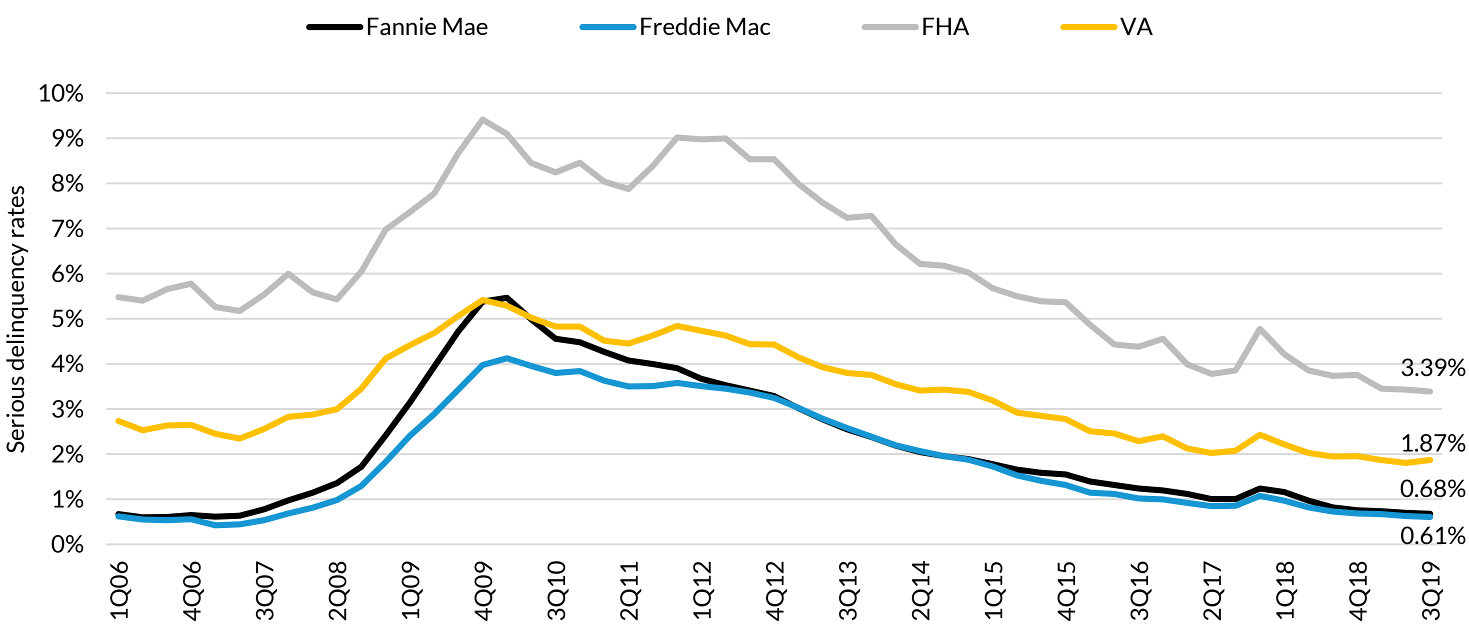
**Assumes 2% capitalization max per issuer on high yield indices*

Sources: *Barclays Indices, Bloomberg and State Street Global Advisors* ***Note:*** *Data as of January 2019.*

State of the US Housing Market

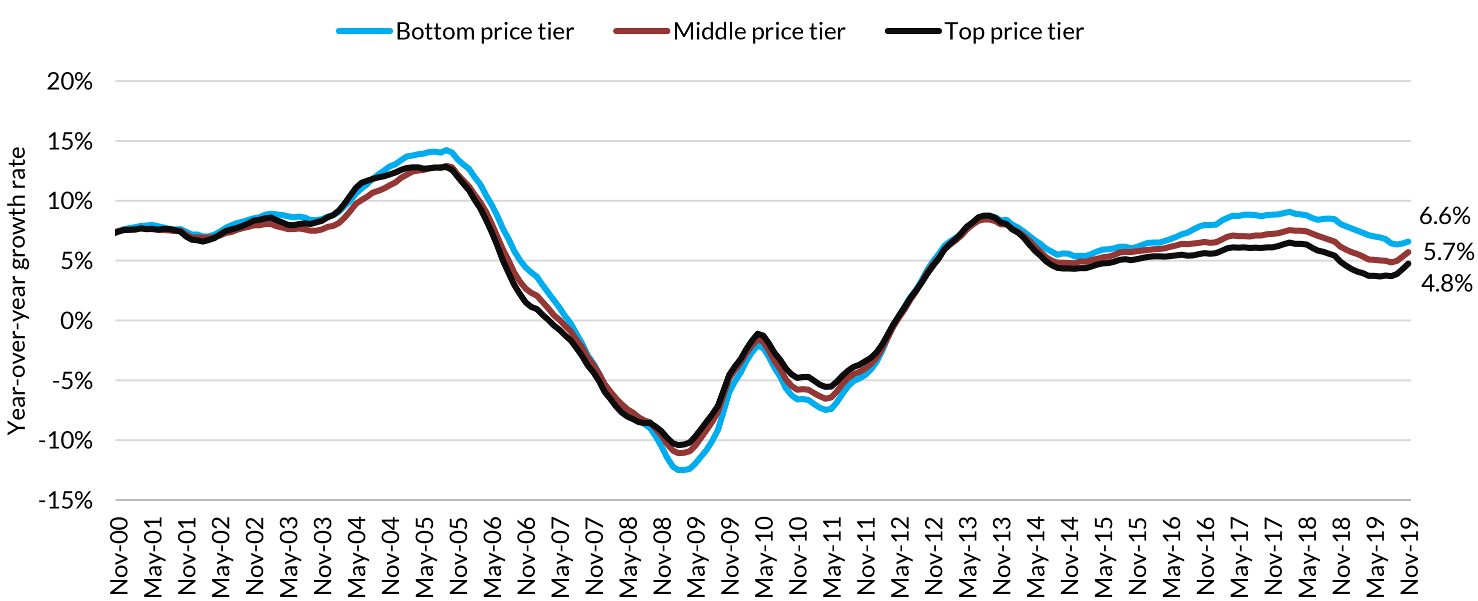
Serious delinquency rates for single-family GSE loans and FHA loans continued to decline in Q3 2019, while the rate grew slightly for VA loans. GSE delinquencies remain slightly higher relative to 2006-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are well below 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 6.6 percent for 12 months ended November 2019, much higher than the 4.8 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 and Urban Institute.* ***Note:*** *Black Knight divides home prices in each region into quintiles; this figure shows the performance of the bottom, middle and top quintiles. Data as of November 2019.*

State of the US Housing Market

Nationally, nominal home prices have increased by 54.9 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 15.5 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 (13.2% below), Nevada(9.6% below), Maryland (9.3% below), and Illinois (9.3% below).

		HPI Changes			
State	**2000 to Peak**	**Peak to Trough**	**Trough to Current**	**YOY**	**Current HPI % Above Peak**
National	75.4%	-25.4%	54.9%	4.7%	15.5%
Alabama	43.9%	-15.2%	33.0%	7.0%	12.7%
Alaska	69.4%	-3.1%	23.1%	3.1%	19.3%
Arizona	110.1%	-47.9%	85.3%	7.3%	-3.6%
Arkansas	41.7%	-10.5%	25.7%	3.5%	12.5%
California	155.0%	-43.3%	89.4%	3.2%	7.4%
Colorado	40.3%	-12.8%	80.0%	4.9%	56.9%
Connecticut	92.4%	-24.7%	15.3%	2.1%	-13.2%
Delaware	95.0%	-24.0%	31.8%	4.3%	0.2%
District of Columbia	174.9%	-13.6%	55.1%	2.6%	33.9%
Florida	128.9%	-47.0%	72.8%	4.1%	-8.4%
Georgia	38.2%	-31.8%	67.0%	5.7%	13.8%
Hawaii	162.9%	-22.4%	51.4%	2.7%	17.5%
Idaho	71.8%	-28.8%	89.0%	11.5%	34.6%
Illinois	61.5%	-34.5%	38.4%	2.1%	-9.3%
Indiana	21.1%	-7.7%	37.9%	6.8%	27.2%
Iowa	28.4%	-4.8%	28.1%	4.6%	22.0%
Kansas	34.6%	-9.2%	45.3%	7.1%	32.0%
Kentucky	29.8%	-7.6%	31.6%	4.6%	21.6%
Louisiana	48.9%	-5.1%	23.5%	2.6%	17.2%
Maine	82.1%	-12.4%	43.6%	8.4%	25.9%
Maryland	129.3%	-28.7%	27.1%	2.3%	-9.3%
Massachusetts	92.5%	-22.9%	56.5%	4.8%	20.7%
Michigan	24.0%	-39.6%	75.6%	4.1%	6.1%
Minnesota	66.4%	-27.7%	54.9%	4.6%	12.0%
Mississippi	41.1%	-13.7%	28.0%	3.0%	10.5%
Missouri	42.8%	-14.9%	38.0%	7.3%	17.5%
Montana	81.6%	-11.3%	52.8%	7.3%	35.6%
Nebraska	26.5%	-6.6%	42.3%	5.1%	32.9%
Nevada	126.9%	-59.2%	121.5%	2.7%	-9.6%
New Hampshire	90.7%	-23.6%	43.5%	6.2%	9.7%
New Jersey	117.9%	-27.9%	28.7%	3.4%	-7.2%
New Mexico	67.1%	-16.3%	24.1%	5.7%	3.9%
New York	98.3%	-15.1%	43.1%	4.4%	21.5%
North Carolina	40.7%	-15.7%	38.1%	5.8%	16.4%
North Dakota	53.5%	-3.9%	56.8%	3.8%	50.7%
Ohio	21.1%	-18.4%	46.2%	12.1%	19.3%
Oklahoma	37.5%	-2.5%	20.3%	4.3%	17.3%
Oregon	82.3%	-28.1%	79.4%	5.2%	29.0%
Pennsylvania	70.2%	-11.6%	25.7%	4.2%	11.1%
Rhode Island	130.8%	-34.5%	55.1%	6.7%	1.5%
South Carolina	44.6%	-19.3%	37.0%	5.3%	10.6%
South Dakota	45.1%	-3.8%	46.1%	4.5%	40.5%
Tennessee	35.2%	-11.9%	45.7%	6.3%	28.4%
Texas	33.3%	-5.7%	51.2%	3.4%	42.5%
Utah	54.6%	-22.0%	77.2%	7.9%	38.3%
Vermont	83.5%	-7.5%	35.8%	7.1%	25.7%
Virginia	99.4%	-22.7%	27.3%	4.3%	-1.6%
Washington	85.4%	-28.7%	87.7%	6.8%	33.8%
West Virginia	42.7%	-6.6%	27.3%	7.9%	18.9%
Wisconsin	44.6%	-16.3%	36.1%	5.1%	13.9%
Wyoming	77.4%	-5.7%	31.3%	6.5%	23.8%

Sources: *Black Knight and Urban Institute.* ***Note:*** *HPI data as of November 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 11/2019, the latest HPI data period.*

State of the US Housing Market

Ginnie Mae MBS constitute 28.6 percent of outstanding agency issuance by loan balance and 32.7 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 14.5 percent in the District of Columbia and as high as 49.5 percent in Alaska. In general, the Ginnie Mae share is higher in states with lower home prices.

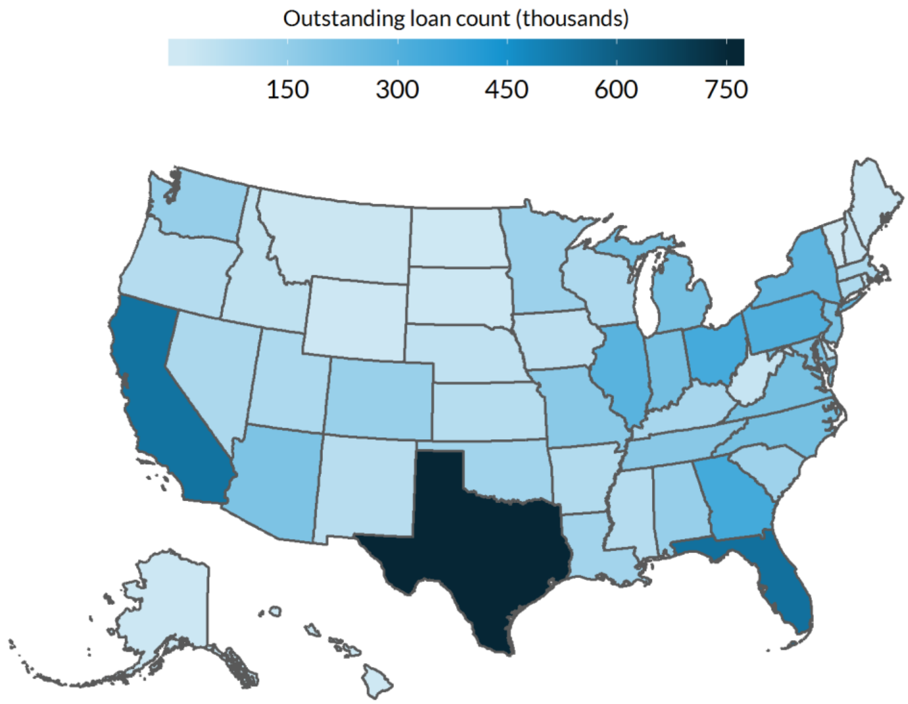
State	Agency Issuance (past 1 year)				Agency Outstanding			
	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)
National	32.7%	2,007,115	236.4	254.7	28.6%	11,433,903	163.3	190.5
Alabama	44.3%	36,588	179.0	200.4	43.1%	237,825	128.1	153.3
Alaska	52.7%	5,544	297.7	264.9	49.5%	38,838	231.0	200.7
Arizona	32.8%	71,294	234.7	239.3	28.3%	320,684	164.7	181.9
Arkansas	42.7%	20,252	153.7	180.2	42.8%	139,799	110.7	138.7
California	27.1%	178,176	376.7	368.2	18.9%	792,491	264.9	270.9
Colorado	32.4%	60,855	317.6	306.7	24.2%	239,367	218.8	230.0
Connecticut	31.7%	16,589	224.8	241.8	28.3%	110,107	181.7	189.3
Delaware	38.9%	8,747	228.3	240.4	34.7%	52,113	179.1	185.3
District of Columbia	17.7%	1,563	454.6	401.7	14.5%	10,092	298.2	306.0
Florida	40.6%	176,299	227.5	224.3	33.8%	839,375	166.5	173.5
Georgia	40.5%	91,370	202.3	228.5	36.8%	518,625	143.2	172.1
Hawaii	44.1%	7,222	527.4	418.8	28.1%	31,631	381.2	318.1
Idaho	32.0%	16,140	233.0	231.0	28.8%	80,012	155.2	171.8
Illinois	25.0%	59,030	189.9	217.5	23.3%	375,513	140.1	161.5
Indiana	36.3%	50,512	157.6	175.2	35.4%	309,895	110.8	128.1
Iowa	25.2%	13,520	159.1	180.9	24.2%	87,838	113.3	132.8
Kansas	34.8%	15,835	168.5	193.5	33.8%	106,722	119.5	140.4
Kentucky	38.5%	27,779	163.2	183.0	37.2%	169,546	121.0	134.4
Louisiana	43.3%	29,785	180.9	206.7	40.6%	189,179	136.8	159.9
Maine	33.4%	7,166	199.4	217.2	30.4%	41,143	151.7	162.5
Maryland	43.3%	52,188	302.0	291.4	37.3%	306,130	230.0	220.5
Massachusetts	22.2%	24,793	316.6	315.6	17.8%	125,353	235.6	231.8
Michigan	23.7%	49,056	161.7	189.0	23.5%	312,024	113.2	136.7
Minnesota	23.5%	29,357	217.6	231.3	21.9%	192,693	155.6	173.1
Mississippi	50.9%	17,806	164.8	184.7	48.9%	116,048	120.1	143.0
Missouri	33.7%	43,077	166.9	191.3	33.1%	267,513	120.3	140.7
Montana	30.4%	6,279	236.1	239.6	27.3%	37,127	169.1	180.0
Nebraska	32.0%	10,796	181.4	186.8	31.0%	74,541	122.0	139.2
Nevada	38.1%	33,183	274.0	255.0	31.8%	143,725	188.0	195.5
New Hampshire	31.3%	8,531	253.6	245.9	27.0%	45,396	192.6	183.8
New Jersey	28.7%	42,508	270.6	290.8	25.6%	251,119	209.2	220.8
New Mexico	42.3%	14,335	195.2	205.6	40.9%	98,917	140.6	154.3
New York	24.5%	43,757	262.6	294.3	24.1%	339,012	186.5	216.9
North Carolina	35.1%	73,669	200.0	225.1	31.9%	433,388	141.0	168.3
North Dakota	28.8%	2,859	226.2	224.0	24.5%	16,925	166.4	168.2
Ohio	33.6%	67,676	156.6	172.1	33.9%	457,489	112.0	128.1
Oklahoma	45.1%	27,103	164.7	185.5	46.3%	197,637	119.1	141.4
Oregon	28.8%	27,049	283.1	281.0	21.5%	128,436	199.1	210.8
Pennsylvania	31.3%	59,490	179.4	211.2	30.9%	421,267	135.6	159.8
Rhode Island	37.1%	6,871	249.0	241.6	32.0%	37,309	188.2	184.8
South Carolina	40.2%	43,512	201.8	212.1	35.6%	228,678	147.0	162.7
South Dakota	36.4%	5,541	193.0	202.3	33.7%	31,160	142.7	151.8
Tennessee	39.5%	52,247	203.9	221.6	37.3%	299,469	138.8	167.2
Texas	35.2%	169,702	216.0	232.8	33.9%	1,090,105	143.3	177.5
Utah	26.5%	28,426	273.3	279.5	24.3%	129,019	191.3	213.2
Vermont	25.0%	2,135	203.2	217.1	19.3%	12,904	163.7	160.4
Virginia	43.7%	76,164	293.9	292.0	38.8%	453,299	219.6	218.9
Washington	31.0%	58,158	319.5	321.7	24.8%	274,531	218.6	234.1
West Virginia	50.5%	9,047	166.1	167.6	44.8%	55,114	125.8	127.8
Wisconsin	21.2%	22,761	184.1	196.2	19.2%	139,541	133.0	143.1
Wyoming	41.5%	4,773	228.6	233.7	38.0%	27,239	176.7	178.2

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

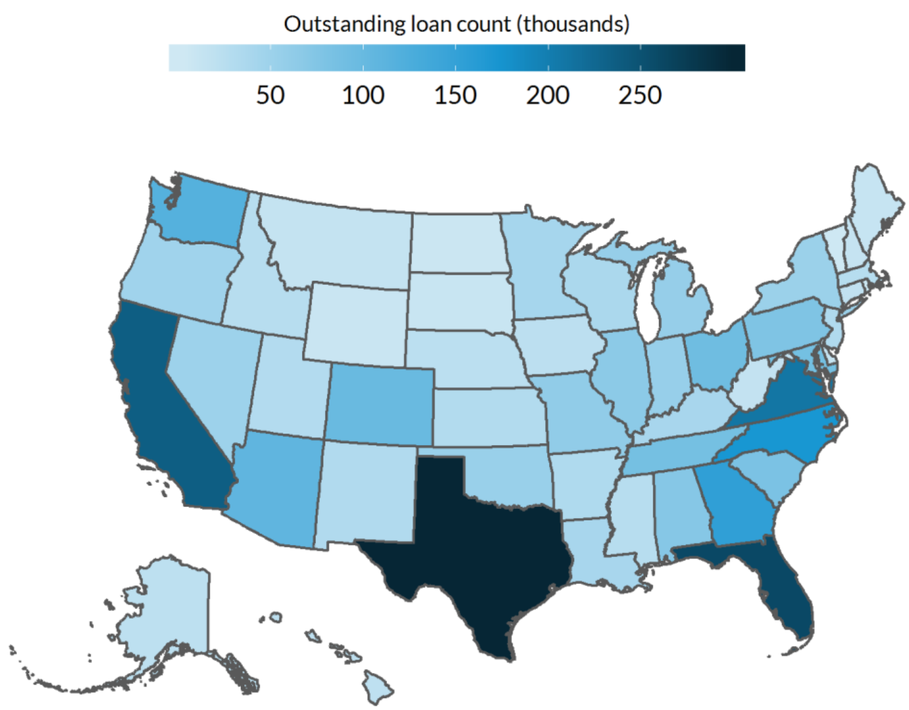
FHA and VA Outstanding Loan Count

Texas , Florida, and California are the top 3 states for FHA and VA lending as measured by the number of loans outstanding. As of December 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 240,000 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

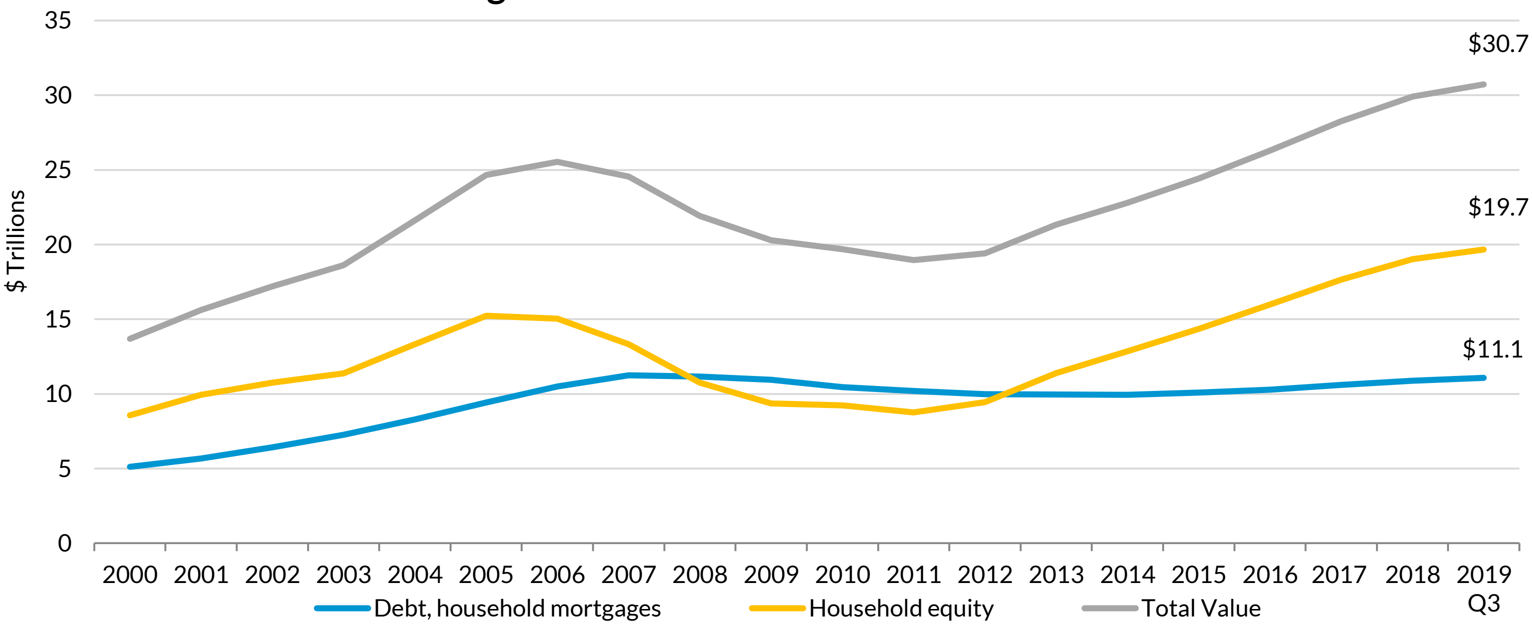


Sources: *eMBS and Urban Institute.* ***Note:*** *Ginnie Mae outstanding share are based on loan balance as of December 2019.*

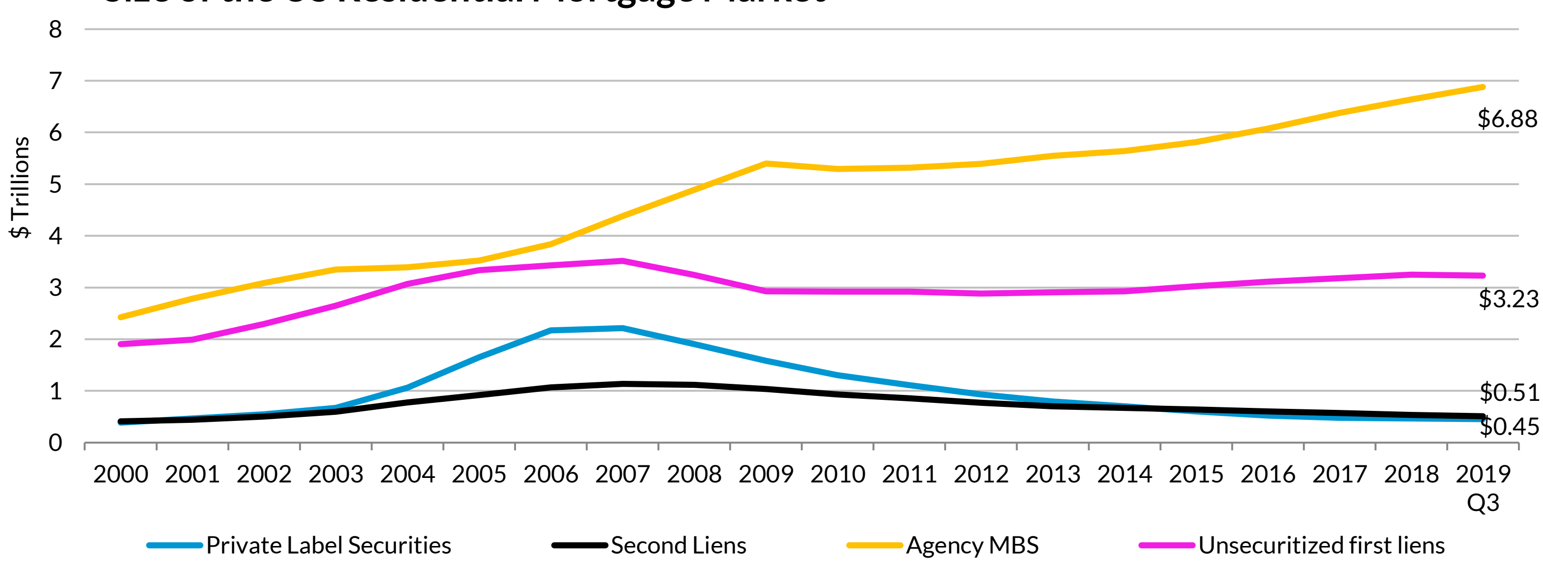
State of the US Housing Market

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 62.2 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

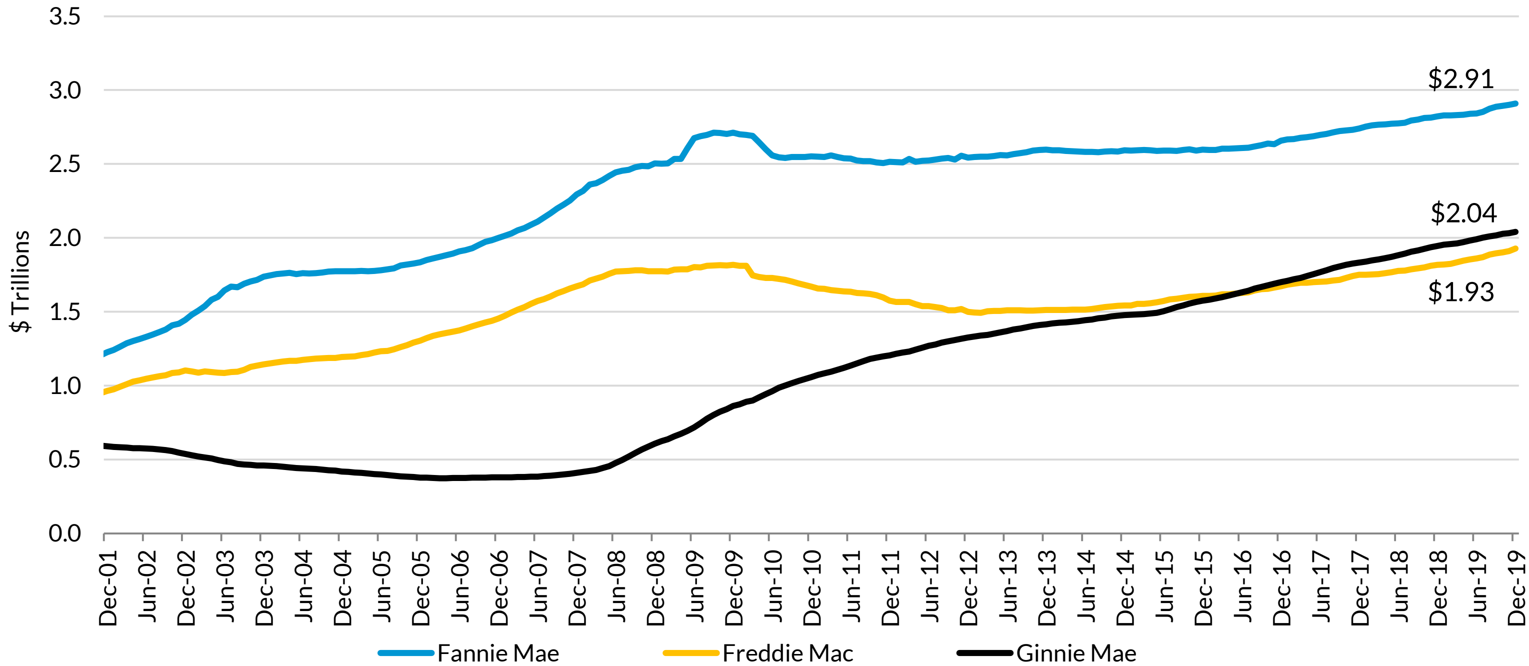


Sources: *Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.*
Note: *Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions.*

State of the US Housing Market

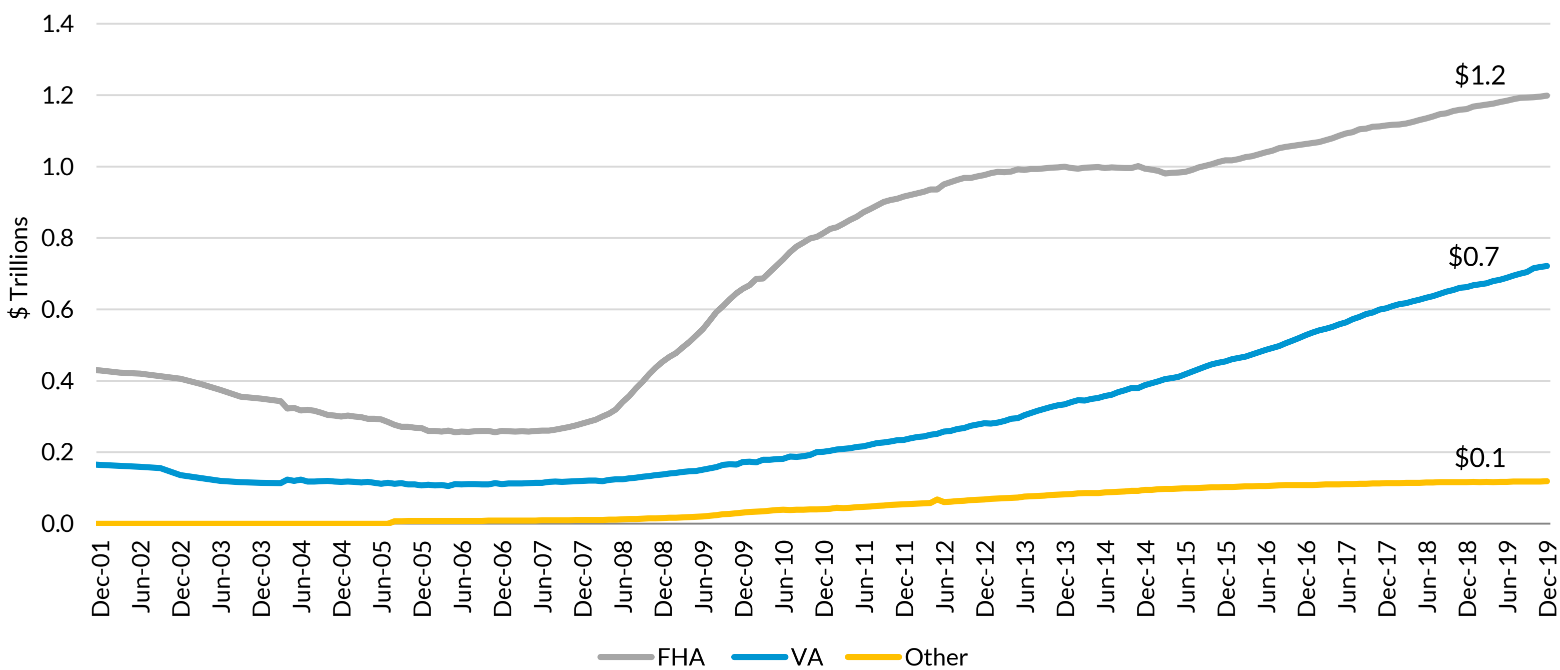
As of December 2019, outstanding securities in the agency market totaled $6.88 trillion: 42.3 percent Fannie Mae, 28.0 percent Freddie Mac, and 29.7 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. 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 December 2019.*

Outstanding Ginnie Mae Mortgage-Backed Securities

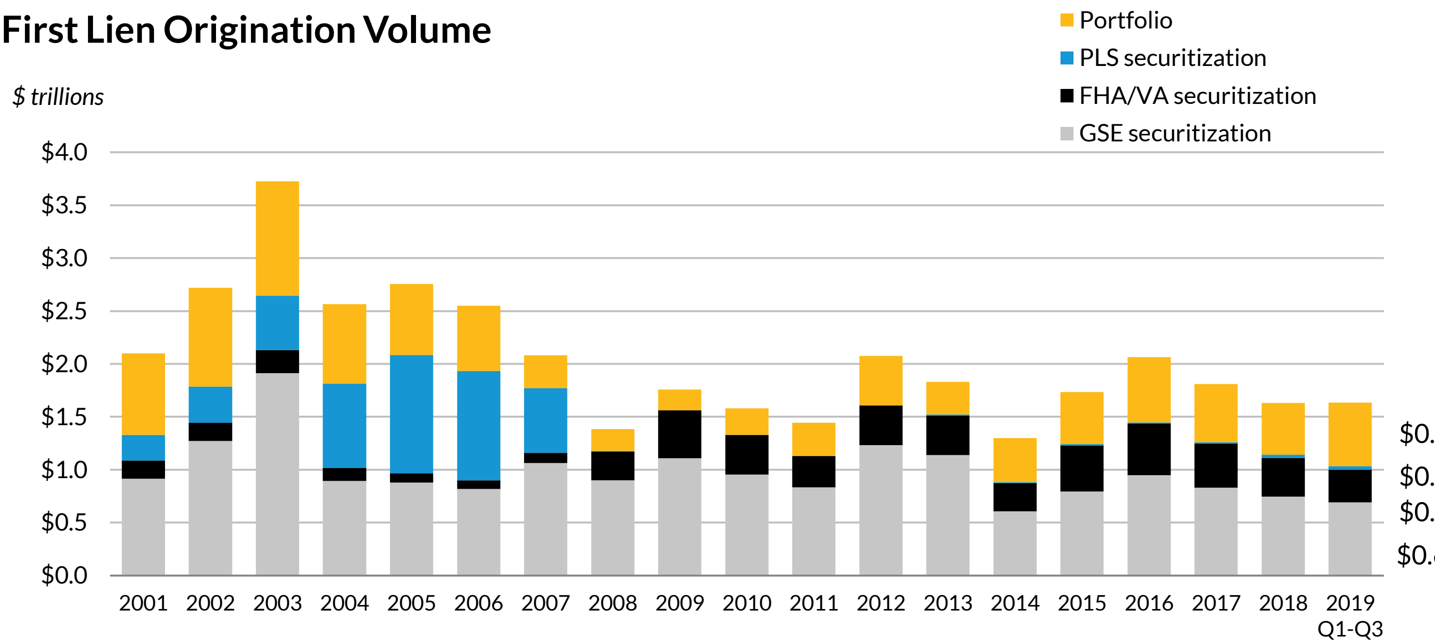


Sources: *eMBS and Urban Institute.* **Note:** *Data as of December 2019.*

State of the US Housing Market

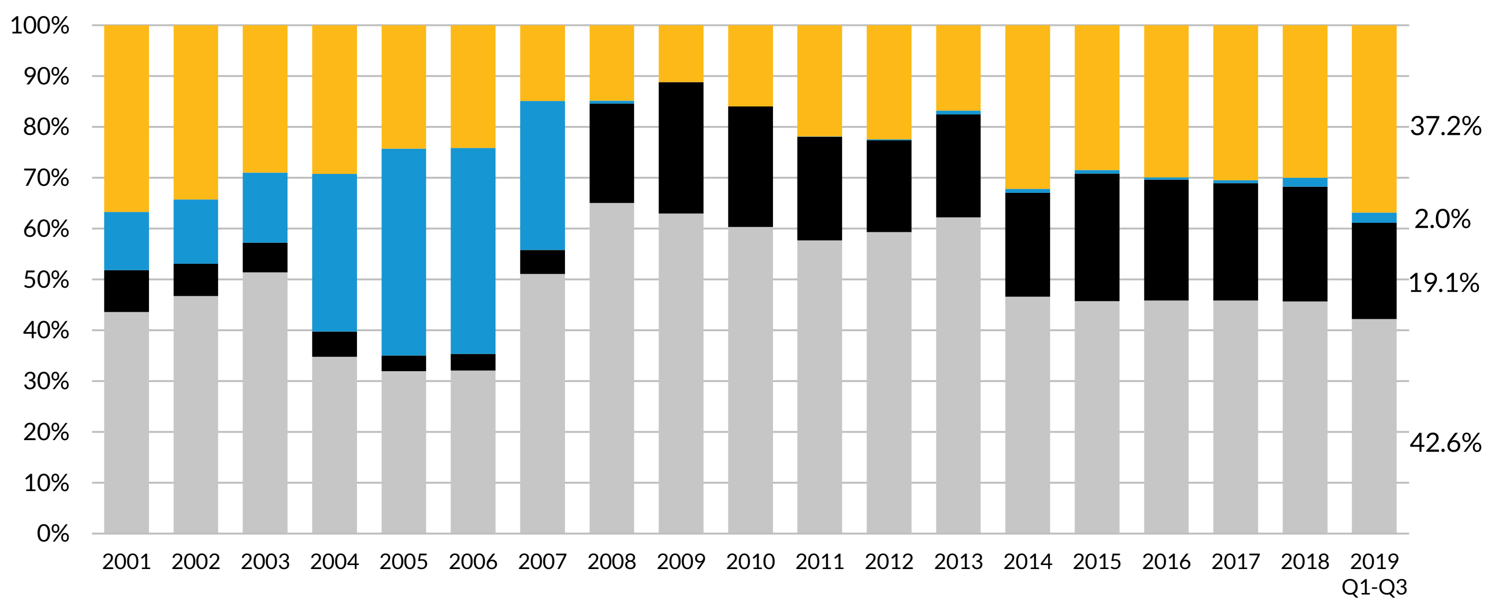
In the first three quarters of 2019, first lien originations totaled $1.62 trillion, up from $1.26 trillion at the same point in 2018. The share of portfolio originations was 37.2 percent through Q3 2019, up significantly from 30.9 percent in the same period of 2018. The GSE share was down at 42.6 percent, compared to 45.1 percent in the first three quarters of 2018. The FHA/VA share fell to 19.0 percent, as 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 $1.55 trillion for the full year 2019, up 29.7 percent compared to the 2018. Ginnie Mae gross issuance was up by 27.0 percent and GSE gross issuance was up by 31.1 percent for the full year. Within the Ginnie Mae market, FHA was up by 19.9 percent and VA origination was up by 40.4 percent. While origination volumes were lower at the start of the year, 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	$597.4	$445.2	$1,042.6	$508.6	$1,551.2
2019 % Change YOY	24.2%	41.7%	31.1%	27.0%	29.7%
2019 Ann.	$597.4	$445.2	$1,042.6	$508.6	$1,551.2

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	$266.9	$225.7	$16.0	$508.6
2019 % Change YOY	19.9%	40.4%	-7.3%	27.0%
2019 Ann.	$266.9	$225.7	$16.0	$508.6

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 December 2019.*

US Agency Market, Originations

Agency net issuance totaled $293.5 billion for the full year 2019, up 12.2 percent compared to 2018. Ginnie Mae net issuance was $95.7 billion, comprising 32.6 percent of total agency net issuance. Ginnie Mae net issuance was down 14.6 percent compared to the same period in 2018, while GSE net issuance was up 32.3 percent over the same period.

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	$81.9	$67.6	$149.4	$112.0	$261.5
2019	$87.4	$110.3	$197.8	$95.7	$293.5
2019 % Change YOY	6.8%	63.3%	32.3%	-14.6%	12.2%
2019 Ann.	$87.4	$110.3	$197.8	$95.7	$293.5

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	$35.9	$58.0	$1.9	$95.7
2019 % Change YOY	-25.5%	-4.1%	-45.6%	-14.6%
2019 Ann.	$35.9	$58.0	$1.9	$95.7

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 December 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 the remainder of the year was much higher, benefitting from the decline in interest rates. The December 2019 gross agency issuance of $167.3 billion is well above the December 2018 level of $89.1 billion.

Monthly Agency Issuance

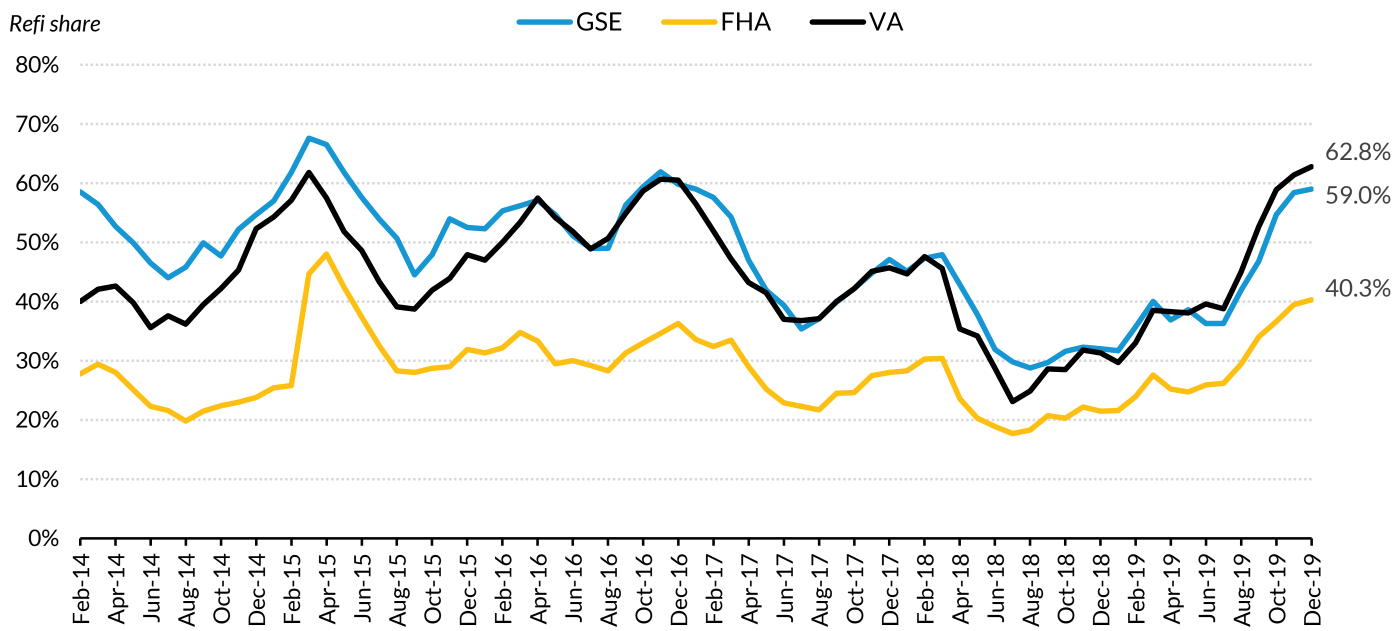
	Gross Issuance				Net Issuance			
Date	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-17	$55.6	$38.5	$42.6	$136.6	$8.5	$10.7	$10.3	$29.5
Feb-17	$37.6	$27.4	$33.1	$98.1	$2.5	$6.5	$9.4	$18.5
Mar-17	$39.5	$24.4	$31.3	$95.2	$9.7	$6.2	$9.7	$25.6
Apr-17	$39.3	$21.2	$36.4	$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	$8.2	$6.4	$8.2	$22.8
Jan-19	$33.3	$19.2	$29.0	$81.6	$5.9	$2.5	$9.2	$17.6
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
Dec-19	$52.5	$62.1	$52.7	$167.3	$10.1	$17.3	$7.4	$34.7

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 December 2019.*

US Agency Market, Originations

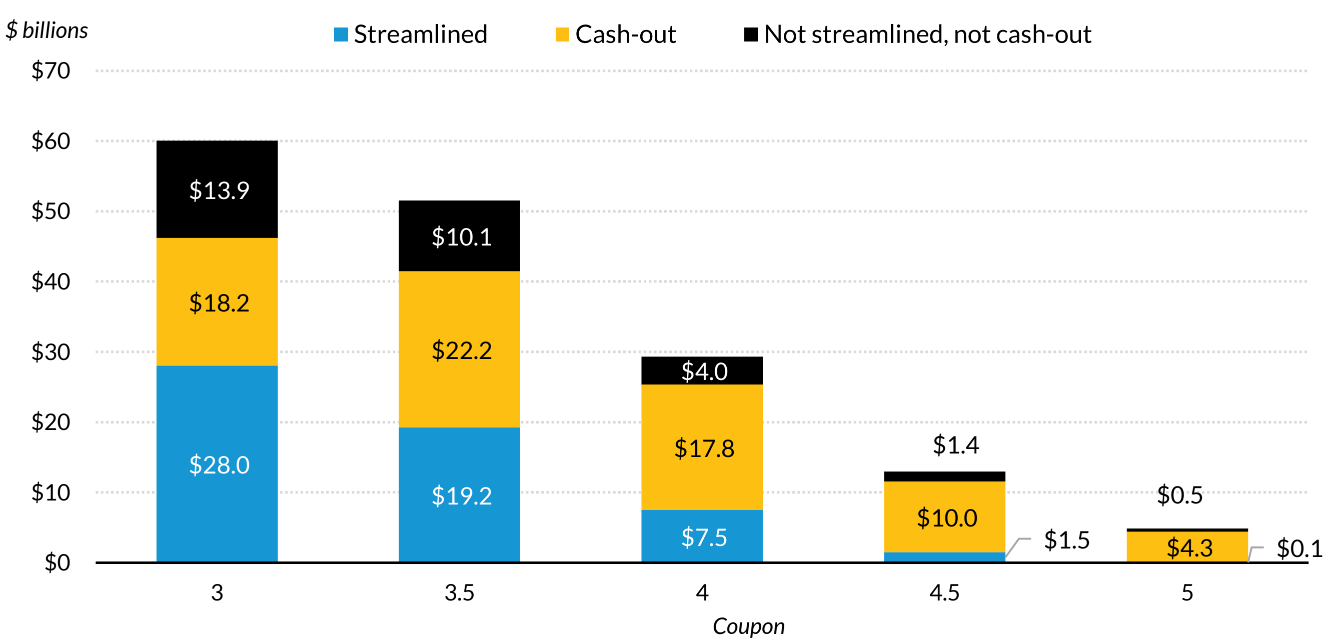
The FHA refinance share stood at 40.3 percent in December 2019, below the 62.8 percent refi share for VA originations and the 59.0 percent share for the GSEs. Refinances as a share of all originations have grown in 2019 as interest rates have fallen. The bottom section, focusing exclusively on Ginnie 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 December 2019.*

Ginnie Mae Refinance Issuance by Type: 2019 YTD

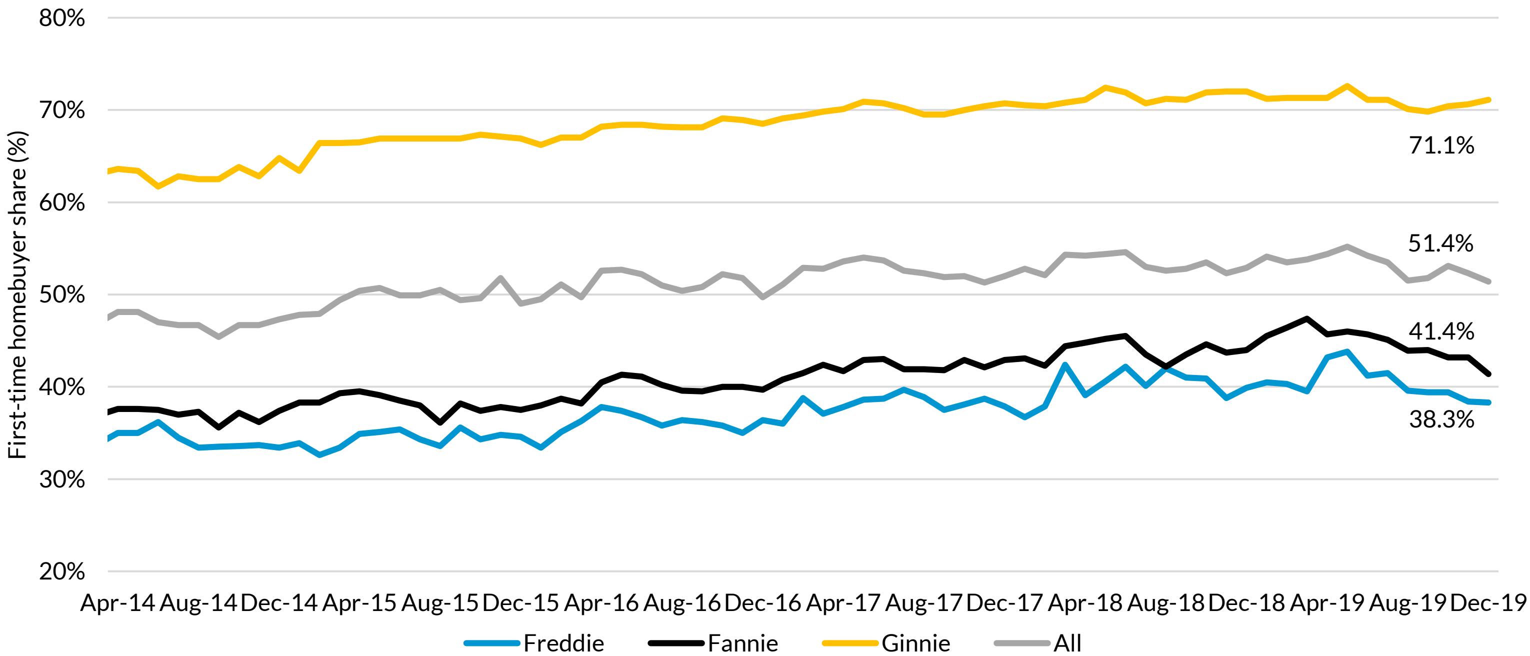


Sources: *eMBS and Urban Institute.*
Note: *Based on at-issuance balance. Data as of December 2019.*

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 71.1 percent in December 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 41.4 percent and 38.3 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in December 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 December 2019.*

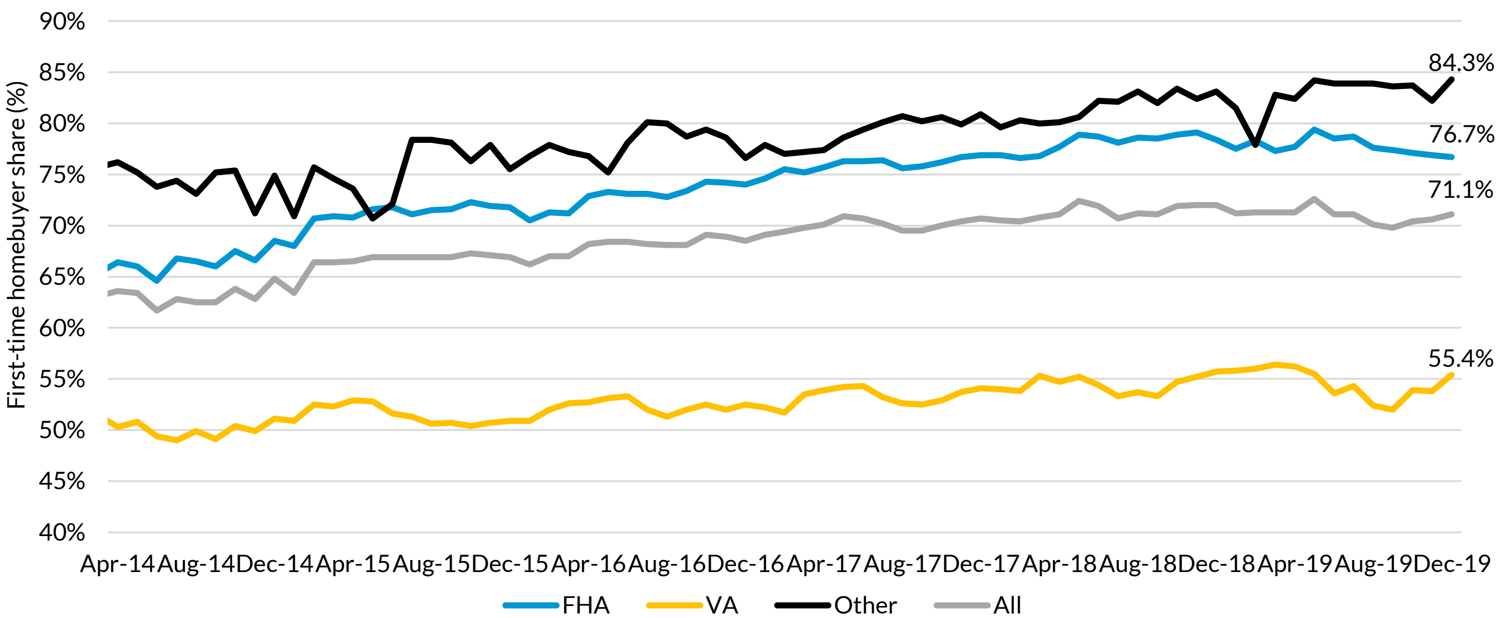
	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	256,042	281,546	251,650	272,467	224,927	267,555	239,066	274,377
Credit Score	743.4	756.2	745.2	757.3	680.8	700.4	711.8	741.7
LTV (%)	87.4	78.8	87.3	80.2	96.8	95.3	92.2	83.7
DTI (%)	35.4	36.2	35.0	36.1	41.6	42.7	38.5	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 December 2019.*

Credit Box

Within the Ginnie Mae purchase market, 76.7 percent of FHA loans, 55.4 percent of VA loans and 84.3 percent of other loans represent financing for first-time home buyers in December 2019. The bottom table shows that based on mortgages originated in December 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 December 2019.*

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	222,105	237,734	263,344	309,494	157,534	173,360	224,927	267,555
Credit Score	671.3	674.5	700.2	727.6	698.1	705.7	680.8	700.4
LTV (%)	95.4	94.0	99.8	96.5	99.0	99.0	96.8	95.3
DTI (%)	43.0	44.2	40.3	41.8	34.9	35.8	41.6	42.7
Loan Rate (%)	4.0	3.9	3.7	3.6	3.8	3.8	3.9	3.7

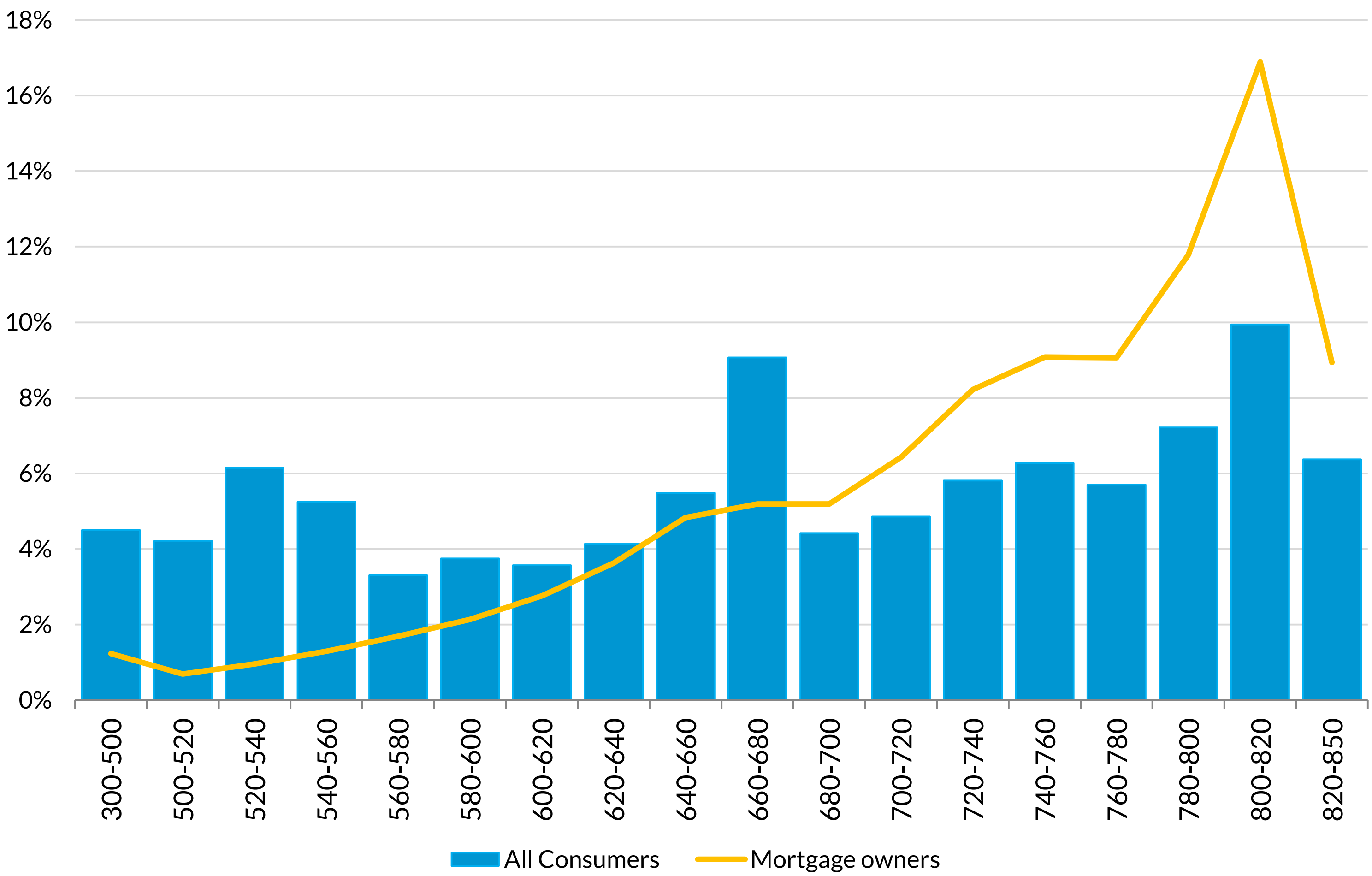
Sources: *eMBS and Urban Institute.* **Note**: *Data as of December 2019. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed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

December 2019 Credit Box at a Glance

In December 2019, the median Ginnie Mae FICO score was 683 versus 759 for both Fannie Mae and Freddie Mac. Note that the FICO score for the 10th percentile was 622 for Ginnie Mae, versus 689 for Fannie Mae and 690 Freddie Mac. Within the Ginnie Mae market, FHA loans have a median FICO score of 666, VA loans have a median FICO score of 715 and other loans have a median FICO score of 696.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	279,935	644	685	737	778	798	728
Fannie	88,147	691	723	760	788	802	752
Freddie	88,105	693	725	761	788	802	754
Ginnie	103,683	622	645	678	725	771	686
Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	332,891	661	701	746	780	799	737
Fannie	141,695	689	721	759	786	801	751
Freddie	111,967	687	720	757	784	801	749
Ginnie	79,229	623	651	689	740	780	694
All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	612,826	652	694	742	779	799	733
Fannie	229,842	689	722	759	786	801	751
Freddie	200,072	690	722	759	786	801	751
Ginnie	182,912	622	647	683	731	776	690

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	103,683	622	645	678	725	771	686
FHA	63,697	617	639	666	701	741	672
VA	30,874	630	662	713	766	795	712
Other	9,112	641	661	695	735	769	699
Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	79,229	623	651	689	740	780	694
FHA	35,255	612	639	666	697	733	669
VA	43,495	637	671	716	764	792	714
Other	479	646	667	701	746	780	705
All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	182,912	622	647	683	731	776	690
FHA	98,952	615	639	666	700	738	671
VA	74,369	633	667	715	765	793	714
Other	9,591	641	661	696	736	770	700

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 December 2019.*

December 2019 Credit Box at a Glance

In December 2019, the median loan-to-value ratio (LTV) was 96.5 percent for Ginnie Mae, 75 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, 98.6 for VA and 100.8 for other programs.

Purchase LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	280,309	71.4	80.0	95.0	96.5	100.0	87.4
Fannie	88,252	62.0	76.0	80.0	95.0	97.0	81.9
Freddie	88,145	65.0	80.0	80.0	95.0	95.0	82.3
Ginnie	103,912	92.7	96.5	96.5	100.0	101.4	96.4
Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	343,402	49.0	63.0	75.0	84.2	95.6	73.0
Fannie	141,700	45.0	58.0	70.0	79.0	85.0	67.2
Freddie	111,980	46.0	60.0	72.0	80.0	84.0	68.4
Ginnie	89,722	71.9	81.4	90.0	97.9	100.0	87.9
All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	623,711	55.0	70.0	80.0	95.0	97.1	79.5
Fannie	229,952	49.0	63.0	75.0	84.0	95.0	72.8
Freddie	200,125	51.0	67.0	79.0	85.0	95.0	74.6
Ginnie	193,634	79.7	89.7	96.5	98.8	101.0	92.5

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	103,912	92.7	96.5	96.5	100.0	101.4	96.4
FHA	63,828	92.6	96.5	96.5	96.5	96.5	95.1
VA	30,928	91.1	100.0	100.0	102.2	103.2	98.3
Other	9,156	95.0	98.9	100.9	101.0	101.0	99.0
Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	89,722	71.9	81.4	90.0	97.9	100.0	87.9
FHA	39,879	71.9	81.4	86.6	96.8	98.2	86.3
VA	49,316	71.8	83.0	92.0	99.4	101.0	89.2
Other	527	82.7	92.2	98.6	101.0	102.0	94.7
All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	193,634	79.7	89.7	96.5	98.8	101.0	92.5
FHA	103,707	80.4	89.9	96.5	96.5	97.0	91.7
VA	80,244	76.6	88.3	98.6	100.0	102.2	92.7
Other	9,683	94.3	98.6	100.8	101.0	101.0	98.8

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

December 2019 Credit Box at a Glance

In December 2019, the median Ginnie Mae debt-to-income ratio (DTI) was 42.1 percent, considerably higher than the 36.0 percent median DTI for both Freddie Mac and Fannie Mae. The 90th percentile for Ginnie Mae was 54.2 percent, also much higher than the 47.0 percent DTI for Fannie Mae and Freddie Mac, respectively. Within the Ginnie Mae market, the median FHA DTI ratio was 44.1 percent, versus 40.2 percent for VA and 35.8 percent for other lending programs.

Purchase DTI

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	279,931	24.0	31.0	39.0	45.0	49.9	37.9
Fannie	88,247	22.0	29.0	37.0	43.0	47.0	35.7
Freddie	88,142	22.0	29.0	37.0	43.0	47.0	35.5
Ginnie	103,542	28.7	35.4	42.5	49.2	54.3	41.9

Refi DTI

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	295,007	21.0	28.0	36.0	43.0	47.9	35.2
Fannie	141,694	21.0	27.0	35.0	42.0	46.0	34.4
Freddie	111,965	21.0	28.0	36.0	42.0	46.0	34.5
Ginnie	41,348	25.0	32.0	40.7	48.5	54.1	39.9

All DTI

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	574,938	23.0	29.3	37.6	44.0	49.0	36.5
Fannie	229,941	21.0	28.0	36.0	43.0	47.0	34.9
Freddie	200,107	22.0	28.0	36.0	43.0	47.0	35.0
Ginnie	144,890	27.7	34.4	42.1	49.0	54.2	41.3

Purchase DTI: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	103,542	28.7	35.4	42.5	49.2	54.3	41.9
FHA	63,776	30.7	37.4	44.3	50.4	54.7	43.3
VA	30,640	26.9	34.0	41.5	48.5	54.2	41.0
Other	9,126	25.6	30.7	35.9	40.1	42.9	35.0

Refi DTI: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	41,348	25.0	32.0	40.7	48.5	54.1	39.9
FHA	22,320	27.8	34.5	43.1	49.9	54.6	41.8
VA	18,659	22.9	30.4	37.8	46.3	53.0	37.9
Other	369	15.0	21.2	29.8	37.5	42.6	29.4

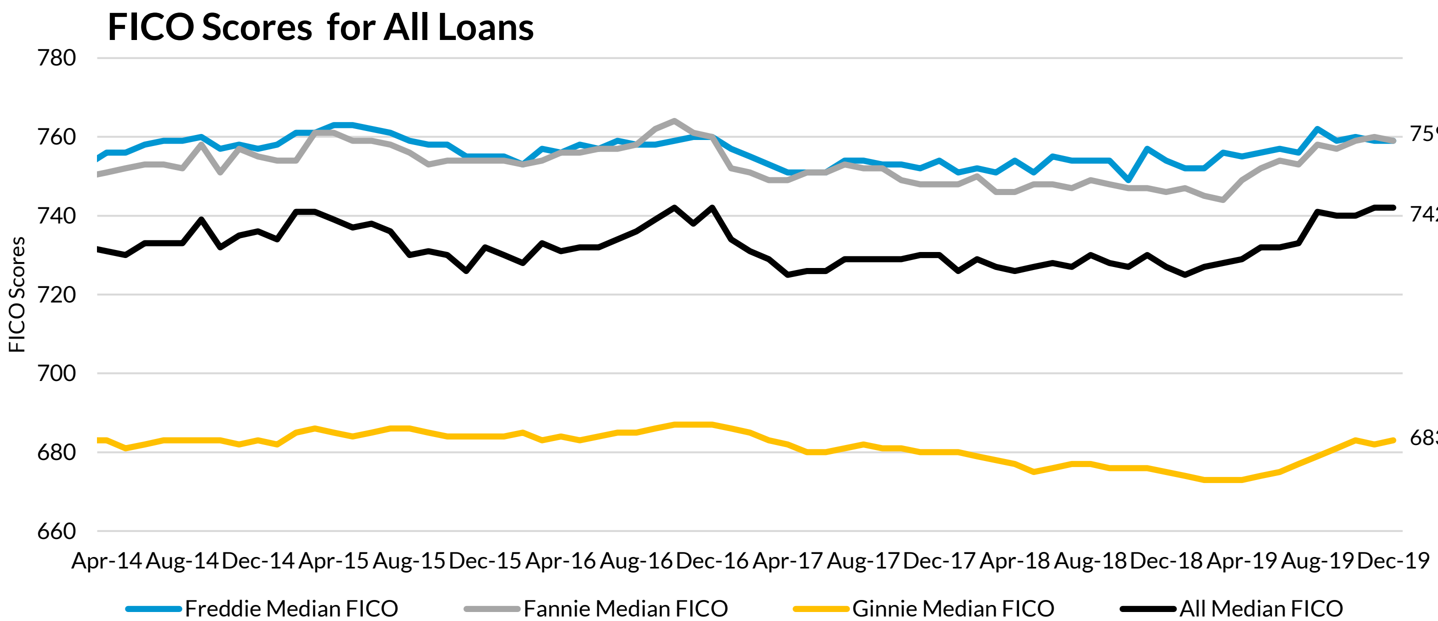
All DTI: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	144,890	27.7	34.4	42.1	49.0	54.2	41.3
FHA	86,096	29.9	36.7	44.1	50.2	54.7	42.9
VA	49,299	25.3	32.0	40.2	47.8	53.7	39.8
Other	9,495	25.1	30.3	35.8	40.1	42.9	34.8

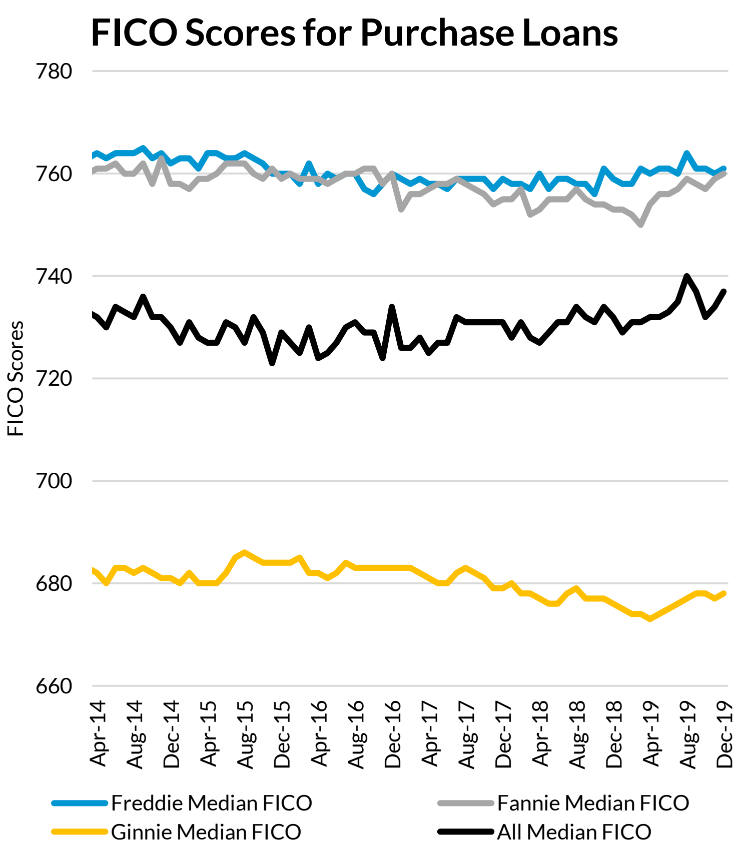
Sources: *eMBS and Urban Institute.* **Note**: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of December 2019.*

Credit Box: Historical

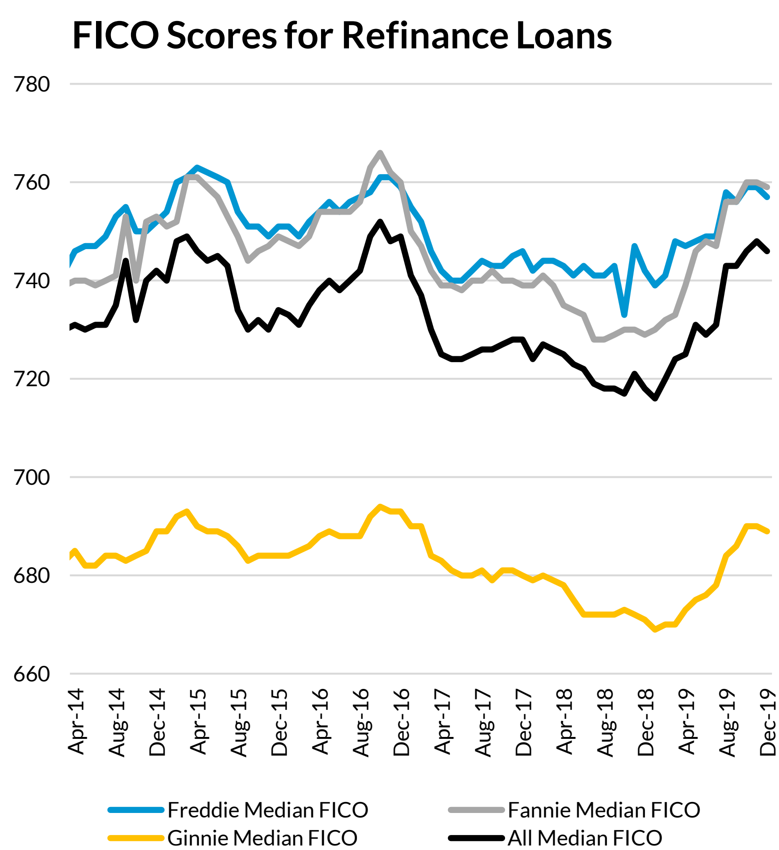
The median FICO score for all agency loans originated in December 2019 was 742, up considerably since the start of 2019, owing to the refinance wave, which higher FICO borrowers take advantage of with greater frequency. The figures show that the median FICO score for Ginnie Mae borrowers has always been 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 December 2019.*



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

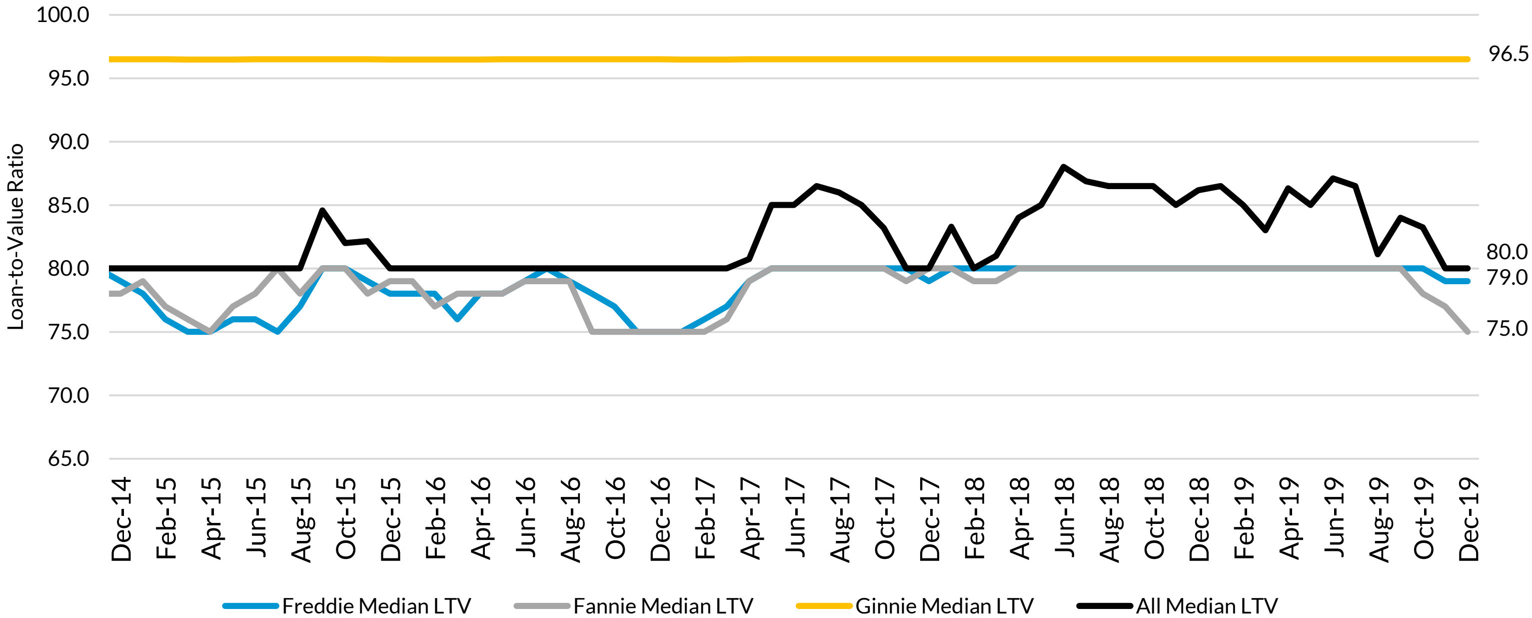


Sources: *eMBS and Urban Institute.* **Note:** *Data as of December 2019.*

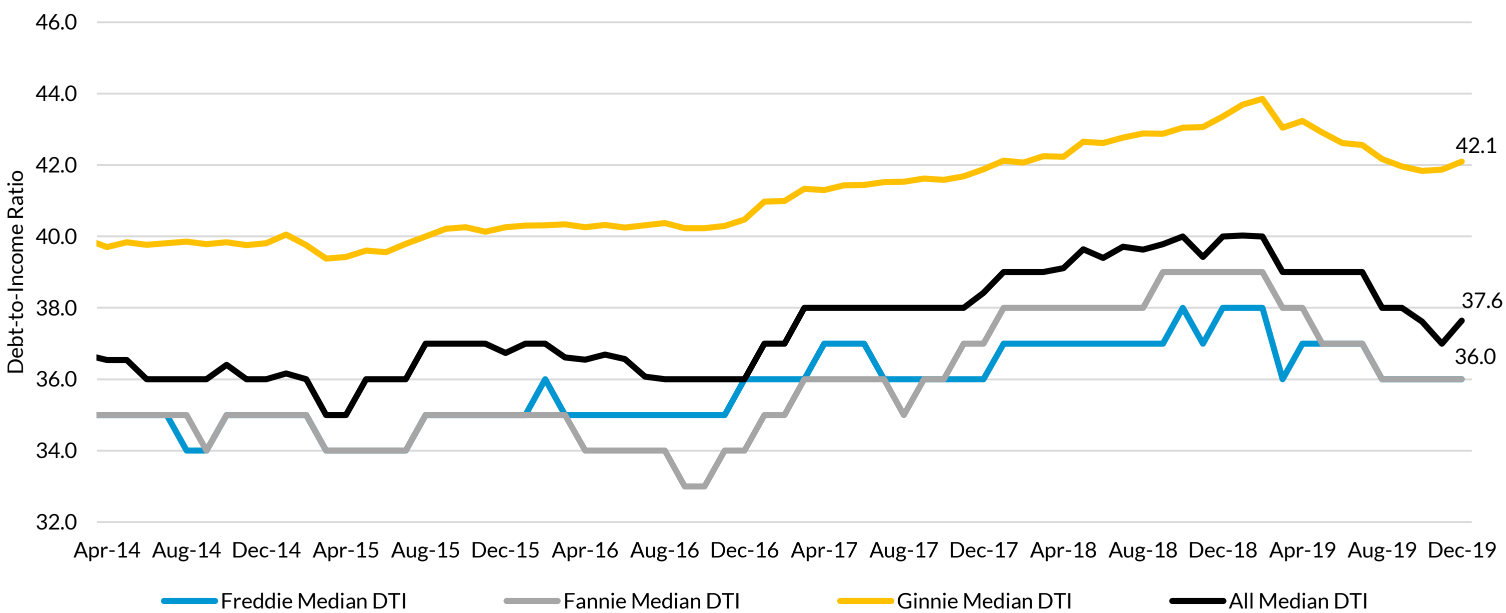
Credit Box: Historical

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

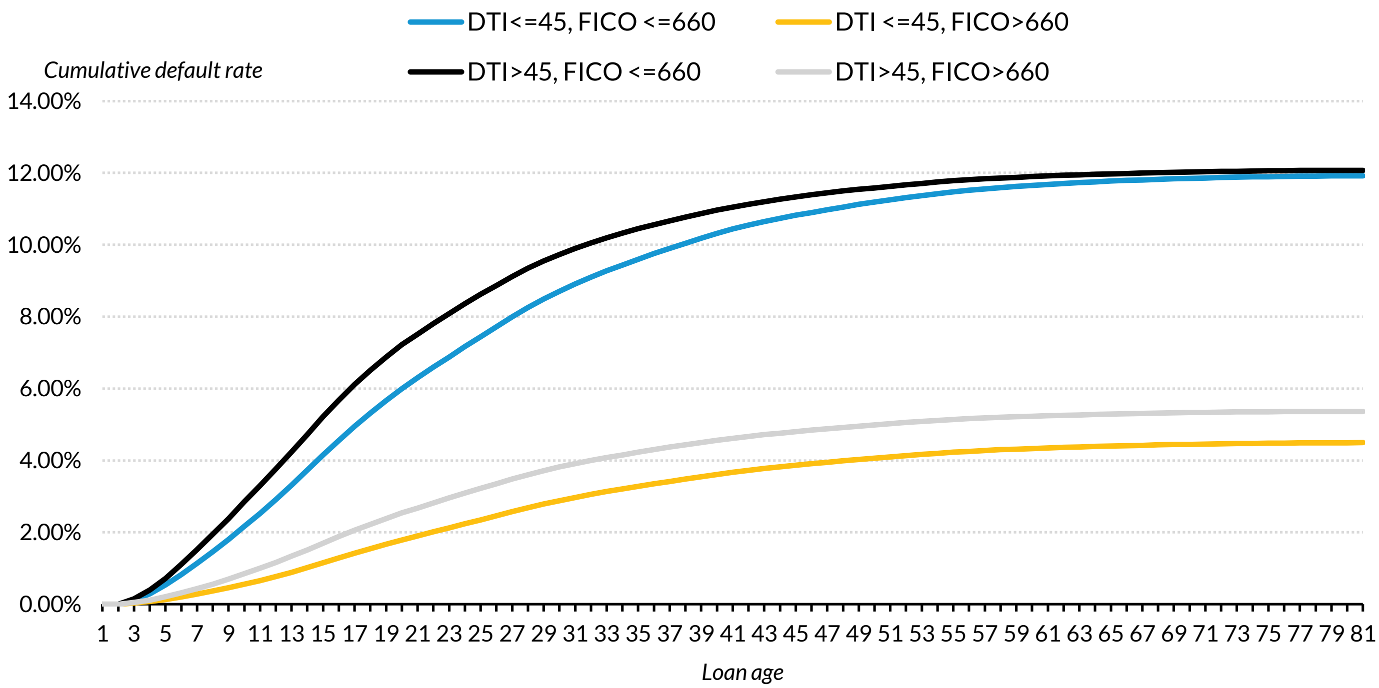


Sources: *eMBS and Urban Institute.* **Note:** *In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium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

Credit Box: Historical

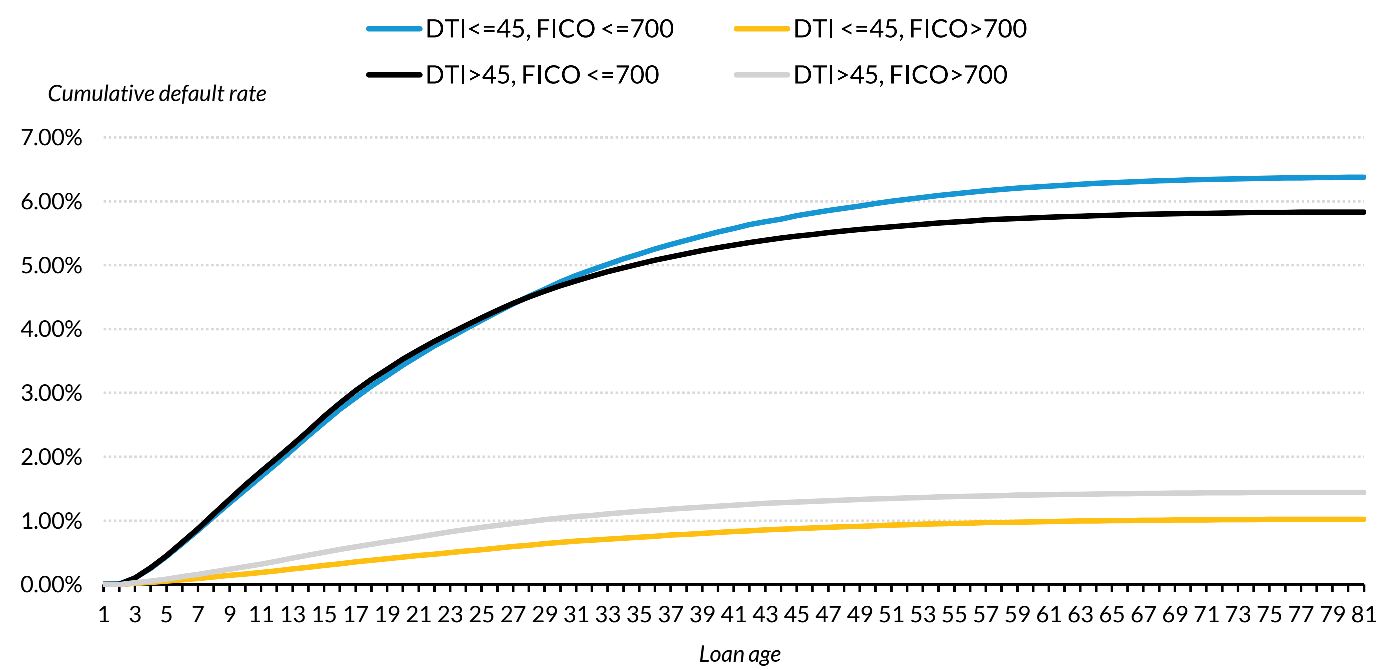
DTI is a much weaker predictor of performance than FICO score. The top chart shows FHA borrowers with higher DTIs do default more than those with lower DTIs, but the differences are modest, as evidenced by the fact that the black line is very close to the blue line and the grey line is not that much 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 December 2019.*

VA Cumulative Default Rate by DTI and FICO



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

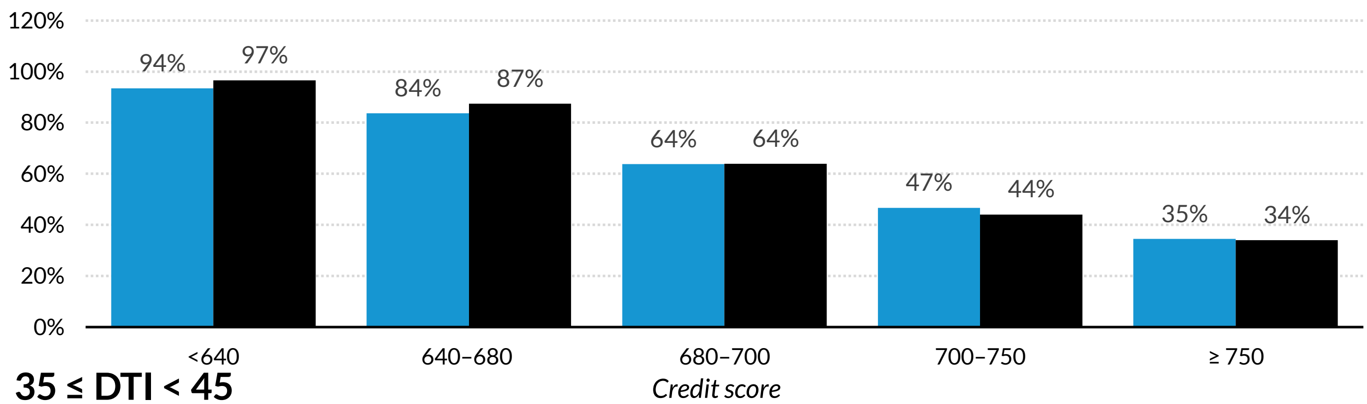
Credit Box: Historical

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 October 2019- December 2019, Ginnie Mae accounted for 97 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 October 2019– December 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 85 percent; it was 62-64 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 for borrowers with FICOs of 700 or more, taking a small amount of market share in high LTV/higher FICO borrowers from Ginnie Mae.

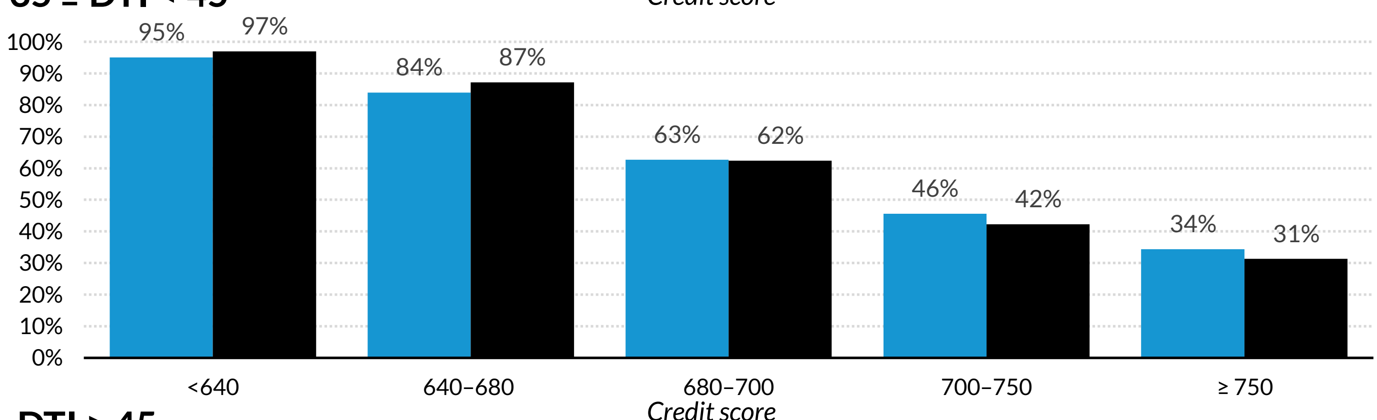
Ginnie Mae Share of Agency Market by DTI and FICO for Loans with LTV ≥ 95

DTI < 35

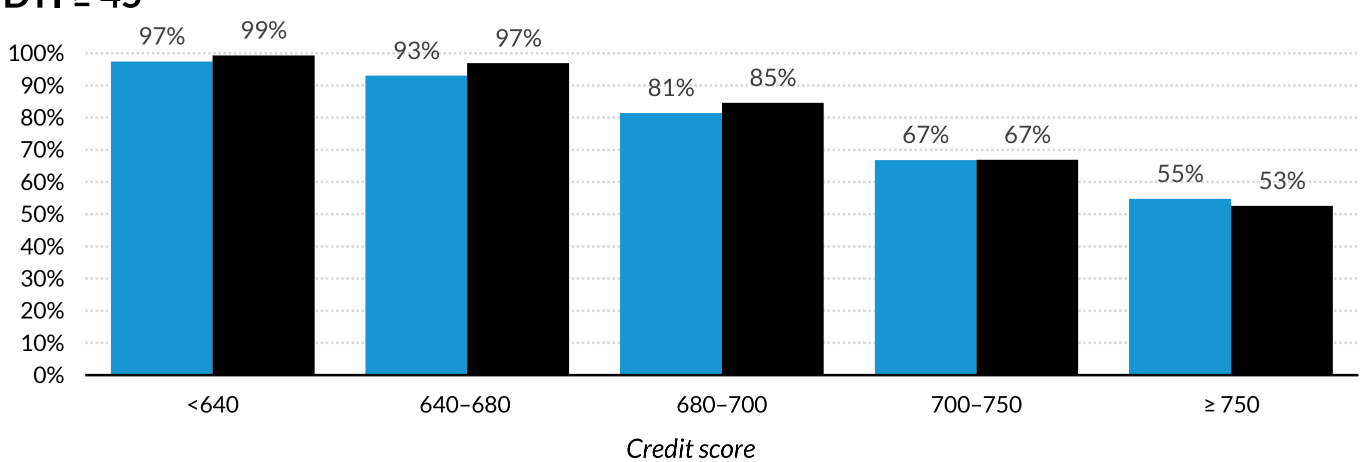
■ October 2017- December 2017 ■ October 2019- December 2019



35 ≤ DTI < 45



DTI ≥ 45



Sources: *eMBS and Urban Institute.*

High LTV Loans: Ginnie Mae vs. GSEs

Ginnie Mae dominates high-LTV lending, with 66.1 percent of its issuances in the October 2019-December 2019 period having LTVs of 95 or above, compared to 14.0 percent for the GSEs. The GSEs have decreased their high-LTV lending share from 16.7 percent in October 2017–December 2017. Ginnie Mae's high-LTV lending is down just slightly over the same period from 68.6 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
October 2017- December 2017	68.6%	16.7%	32.5%
October 2019- December 2019	66.1%	14.0%	28.0%

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

October 2017-December 2017

	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.9%	5.4%	3.1%	7.8%	9.7%	28.9%
35 –45	5.1%	9.5%	5.1%	11.7%	10.1%	41.4%
≥ 45	4.0%	8.2%	4.0%	8.0%	5.4%	29.6%
All	12.0%	23.1%	12.2%	27.5%	25.2%	100.0%

October 2019-December 2019

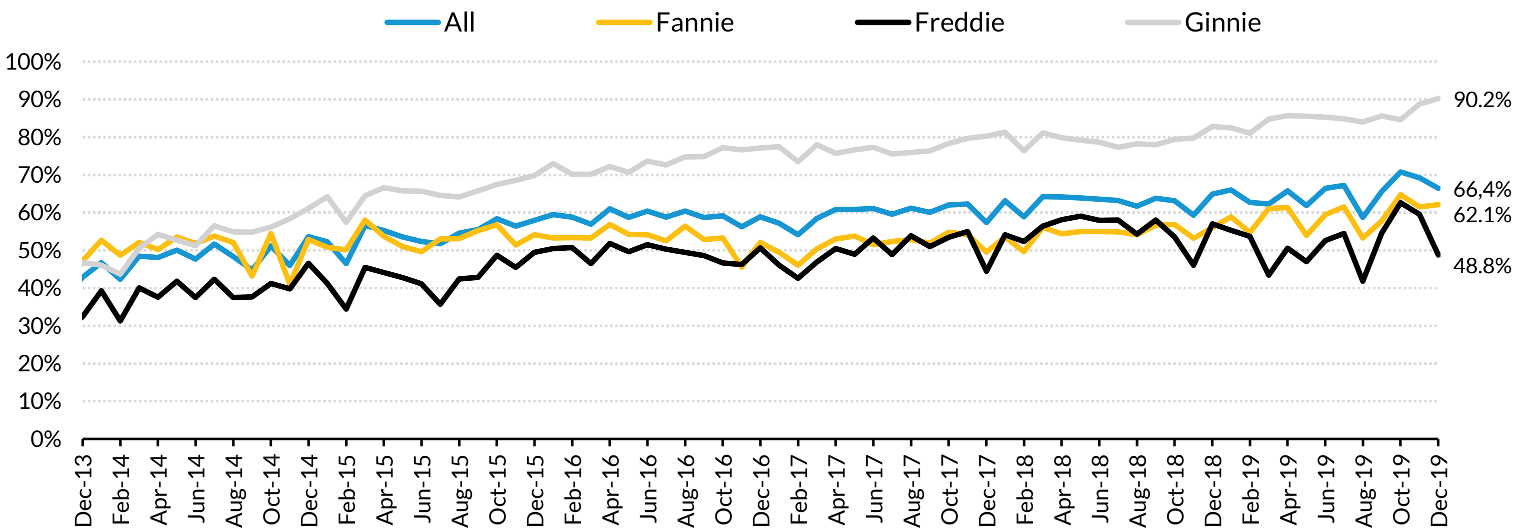
	FICO					
DTI	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.9%	4.8%	2.8%	7.7%	10.6%	28.9%
35 –45	5.0%	8.5%	4.6%	11.6%	10.6%	40.4%
≥ 45	4.5%	8.1%	3.9%	8.3%	6.0%	30.7%
All	12.4%	21.4%	11.3%	27.6%	27.3%	100.0%

***Sources:** eMBS and Urban Institute.*

Nonbank Originators

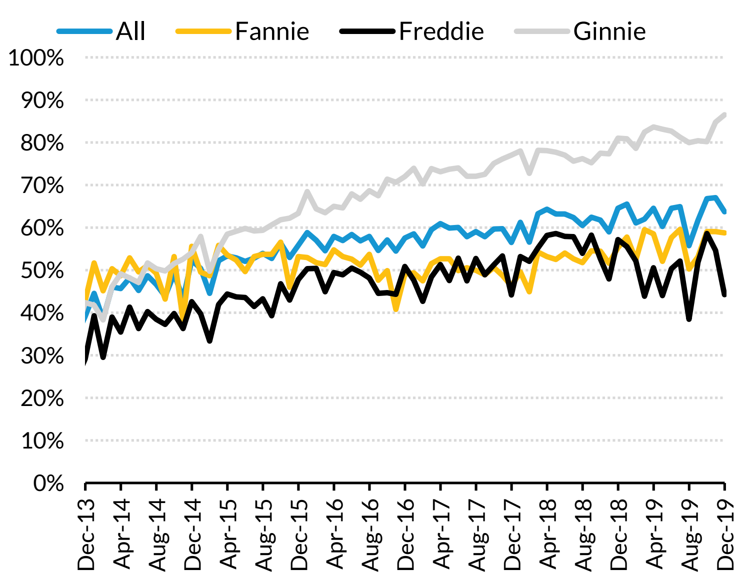
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, rising to 90.2 percent in December 2019, a record high. Freddie's nonbank share grew slightly to 62.1, while Fannie's nonbank share fell to 48.8 percent in December (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

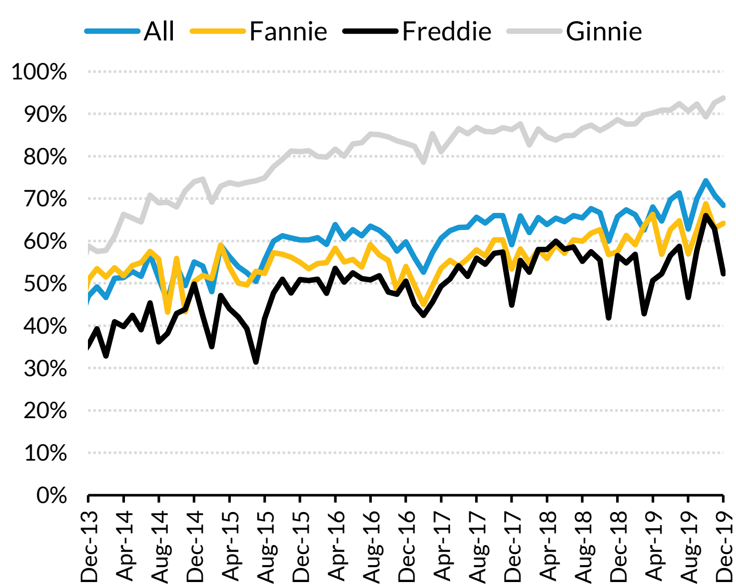


Sources: *eMBS and Urban Institute*
Note: *Data as of December 2019.*

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

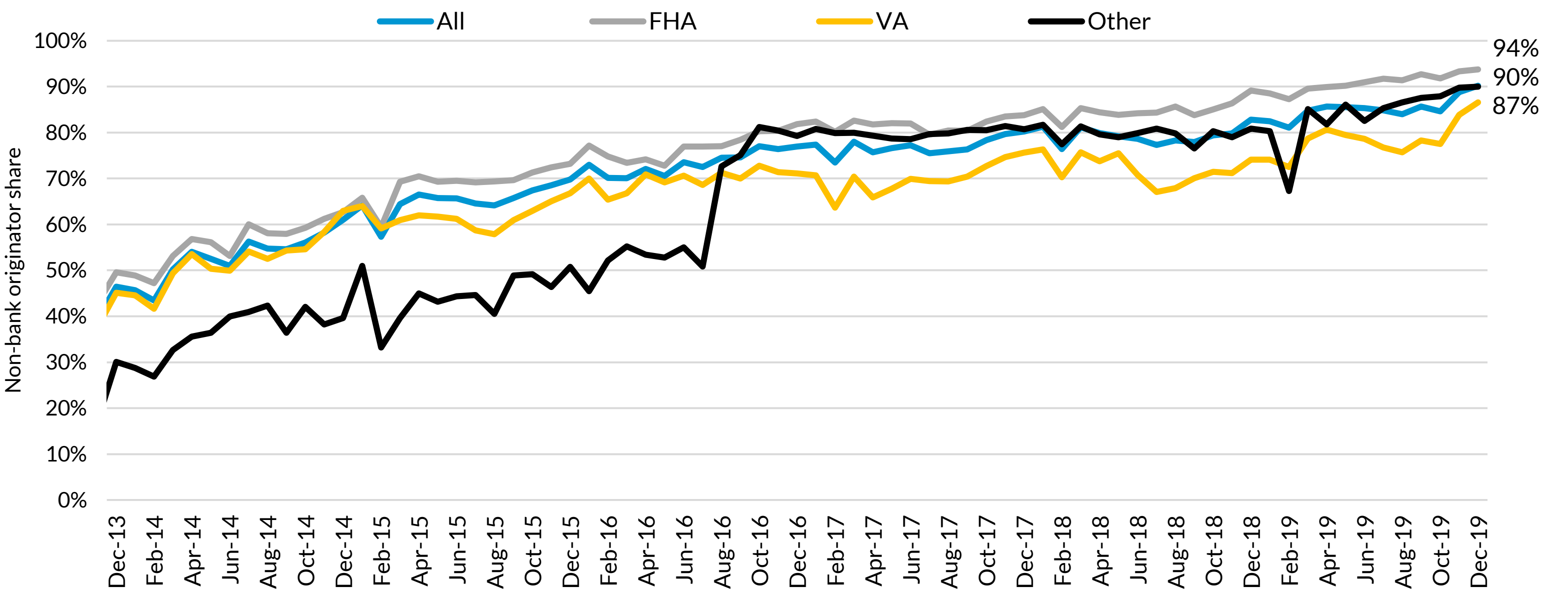


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of December 2019.*

Ginnie Mae Nonbank Originators

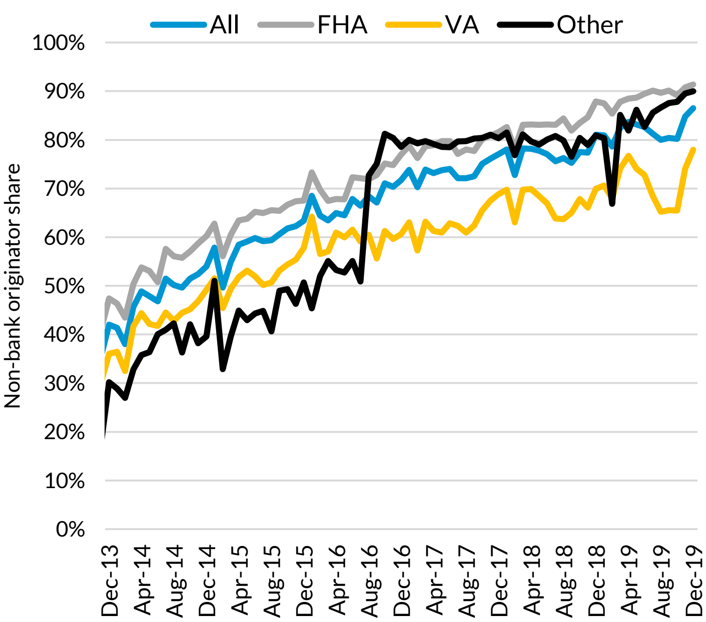
In December 2019, Ginnie Mae's nonbank share grew to 90.2 percent. The nonbank originator share for FHA rose to 94 percent in December, a new high. The nonbank originator share for VA was higher than last month at 87 percent, also a record high, and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, increased slightly to 90 percent.

Ginnie Mae Nonbank Originator Share: All Loans

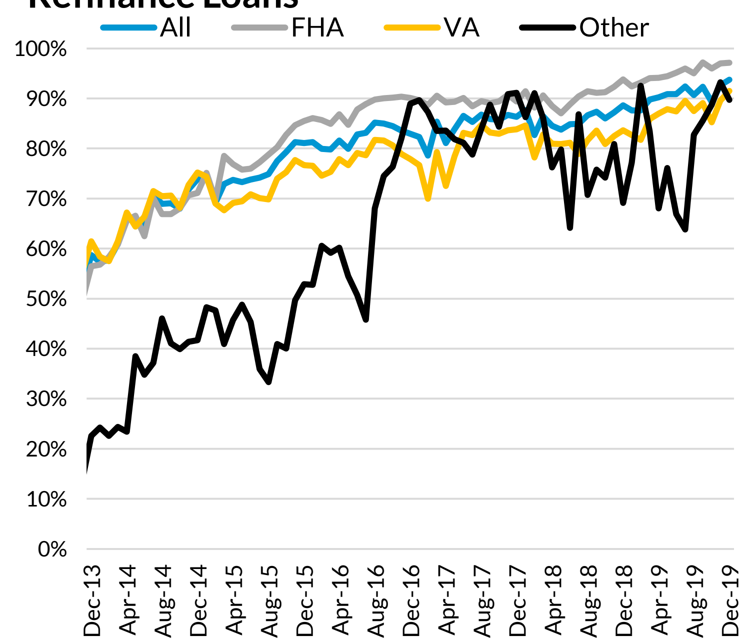


Sources: *eMBS and Urban Institute*
Note: *Data as of December 2019.*

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

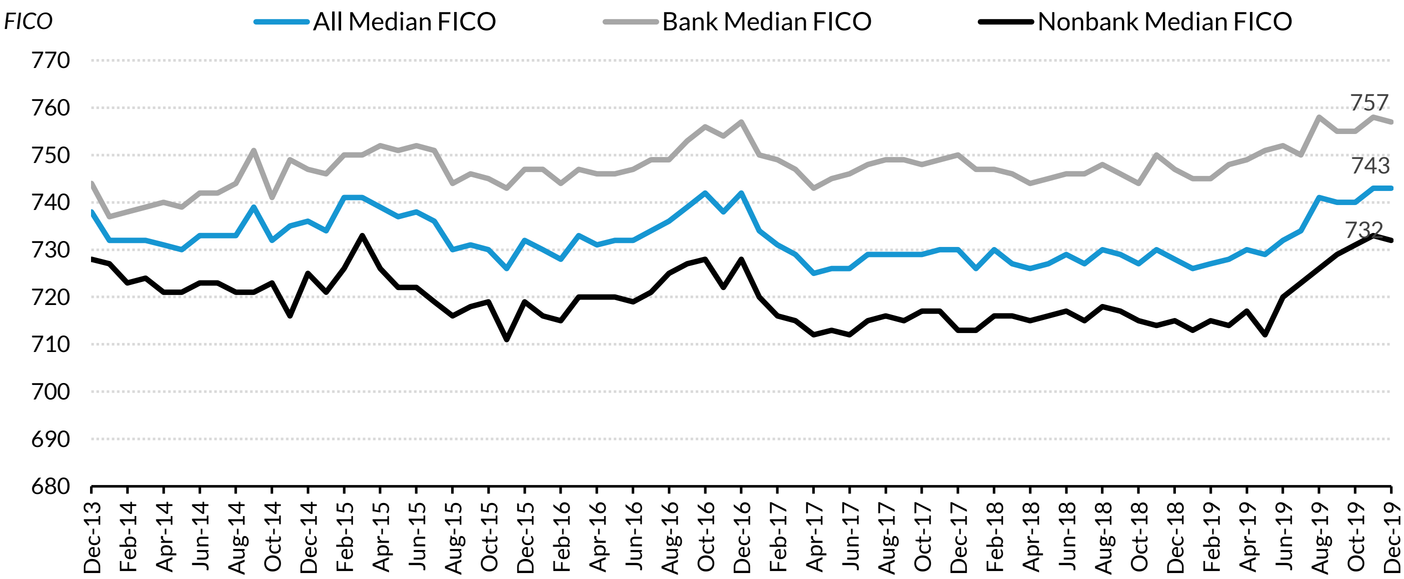


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of December 2019.*

Nonbank Credit Box

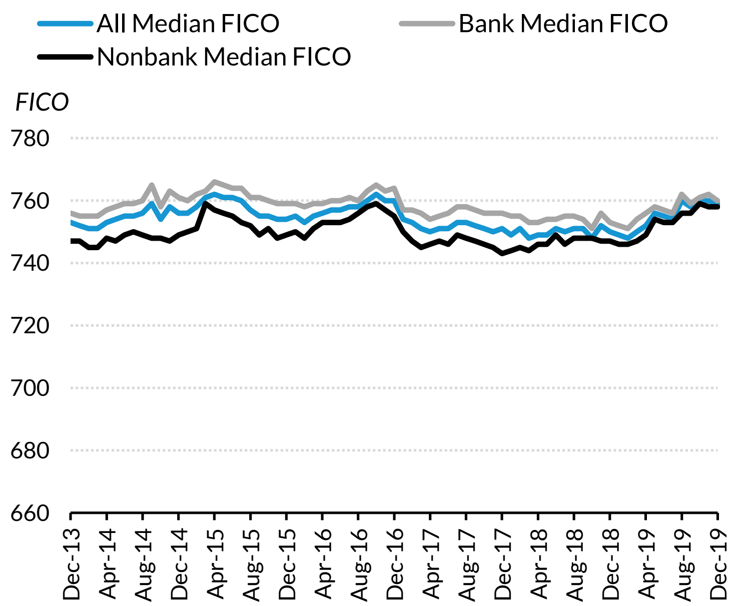
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have increased since 2014. In contrast, within the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



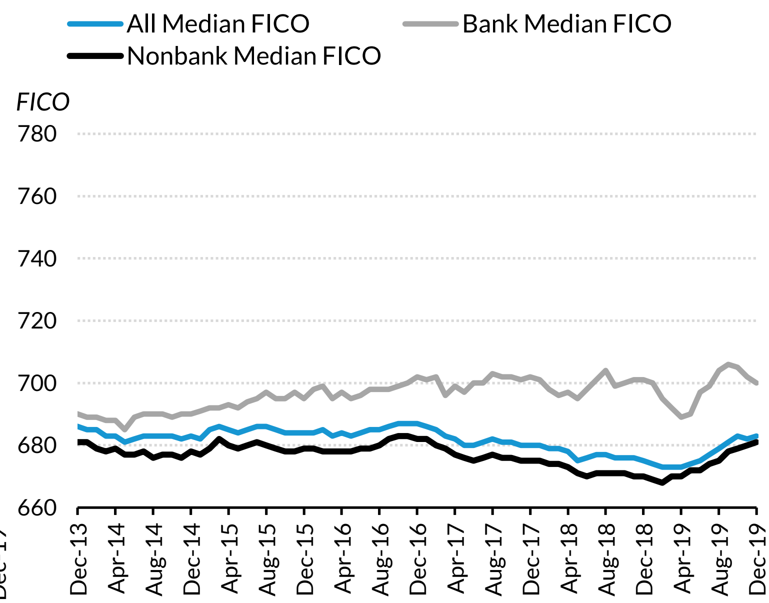
Sources: *eMBS and Urban Institute.* **Note**: *Data as of December 2019.*

GSE FICO: Bank vs. Nonbank



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

Ginnie Mae FICO: Bank vs. Nonbank

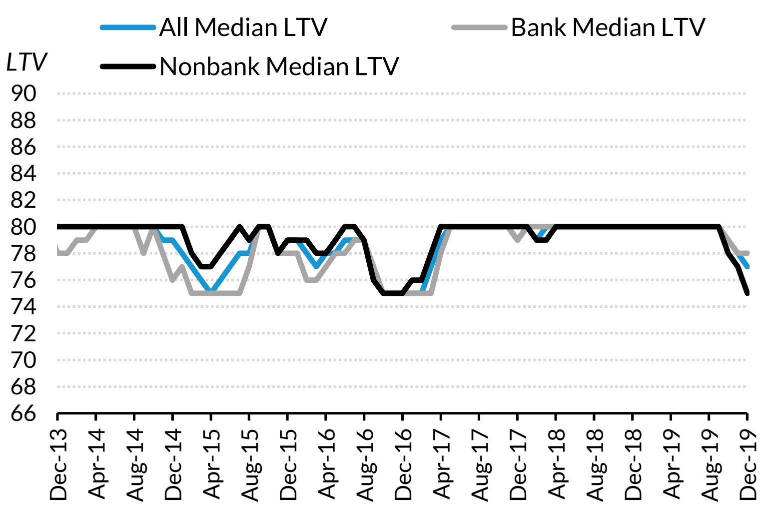


Sources: *eMBS and Urban Institute.*
Note: *Data as of December 2019.*

Nonbank Credit Box

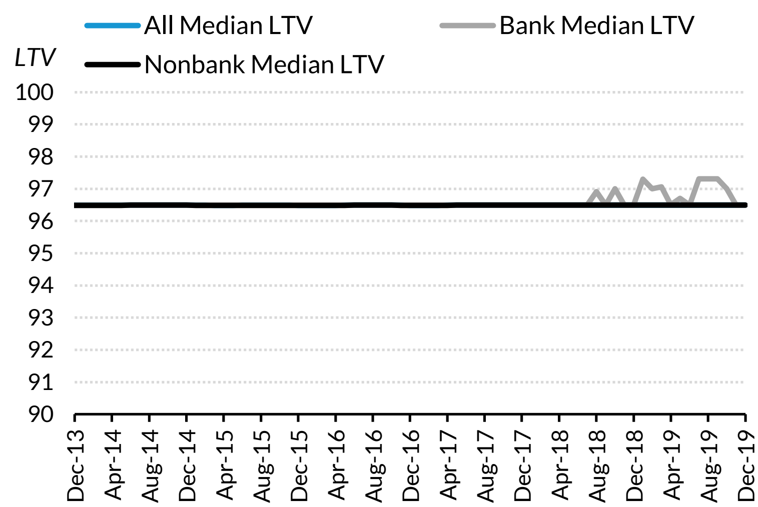
The median LTVs for nonbank and bank originations are comparable, while the median DTI for nonbank loans is higher than for bank loans, indicating that nonbanks are more accommodating in both this and the FICO dimension. Since early 2017, there has been a substantial increase in DTIs, which has mostly 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



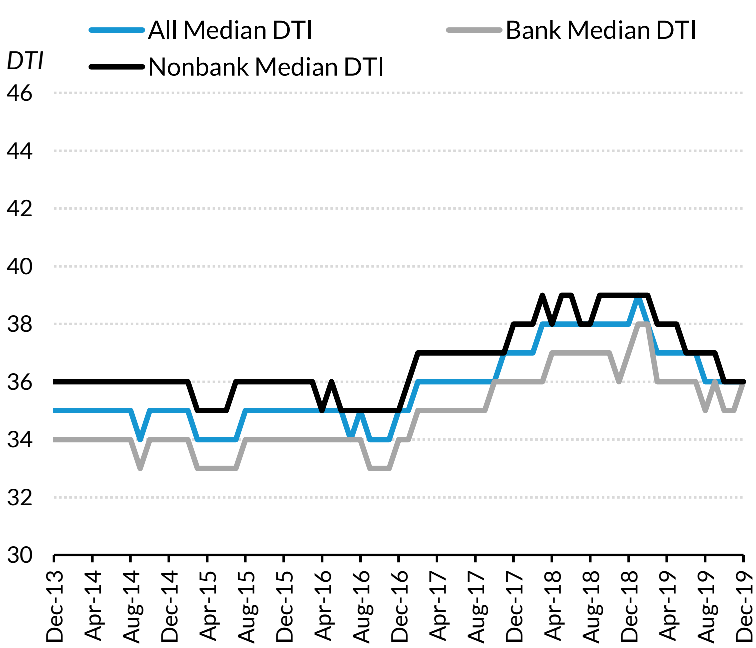
Sources: *eMBS and Urban Institute.* **Note:** *Data as of December 2019.*

Ginnie Mae LTV: Bank vs. Nonbank



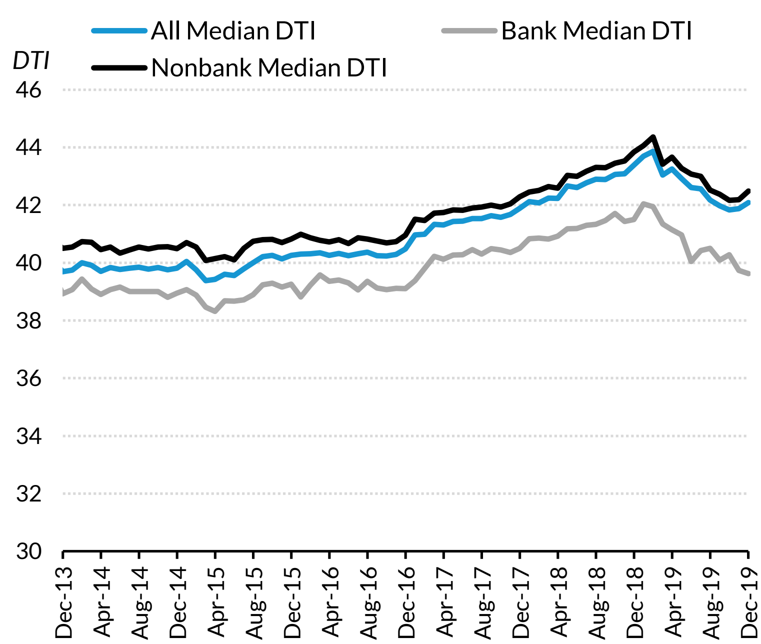
Sources: *eMBS and Urban Institute.* **Note:** *Data as of December 2019.*

GSE DTI: Bank vs. Nonbank



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

Ginnie Mae DTI: Bank vs. Nonbank

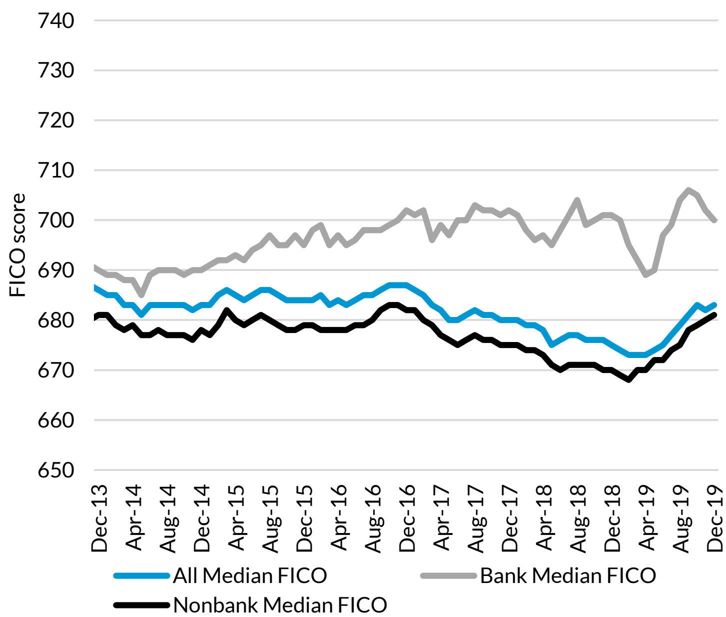


Sources: *eMBS and Urban Institute.* **Note:** *Data as of December 2019.*

Ginnie Mae Nonbank Originators: Credit Box

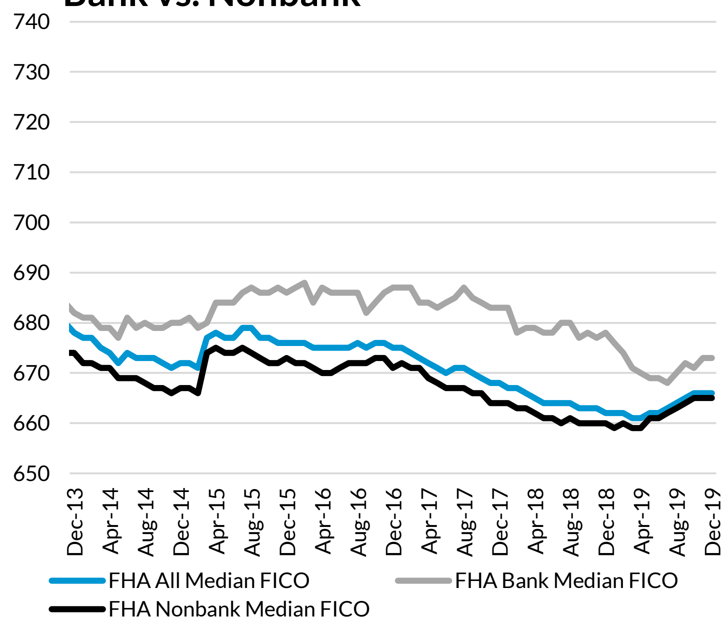
The median FICO score increased for Ginnie Mae nonbank originators and decreased for bank originators in December 2019. This is contrary to the longer term trend in which FICO spreads between banks and non-banks have generally increased since 2013. The gap between banks and non-banks is very apparent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

Ginnie Mae FICO Scores: Bank vs. Nonbank



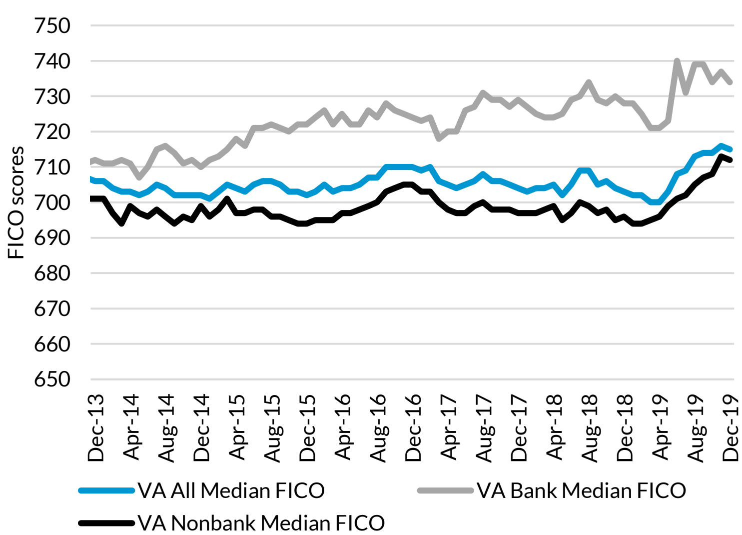
Sources: *eMBS and Urban Institute* **Note:** *Data as of December 2019.*

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



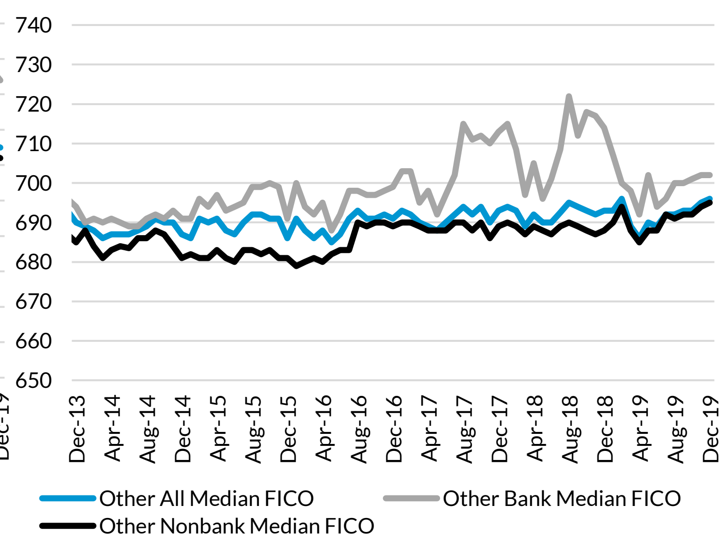
Sources: *eMBS and Urban Institute* **Note:** *Data as of December 2019.*

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



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

Ginnie Mae Other FICO Scores: Bank vs. Nonbank

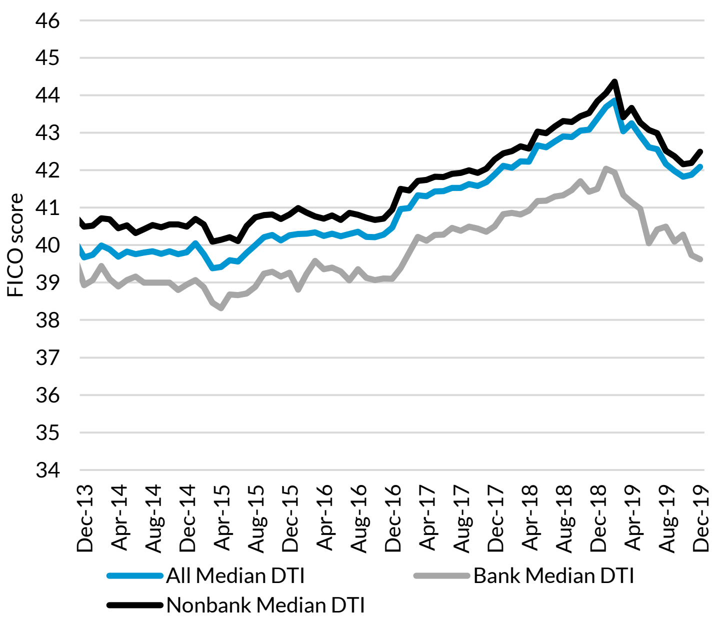


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of December 2019.*

Ginnie Mae Nonbank Originators: Credit Box

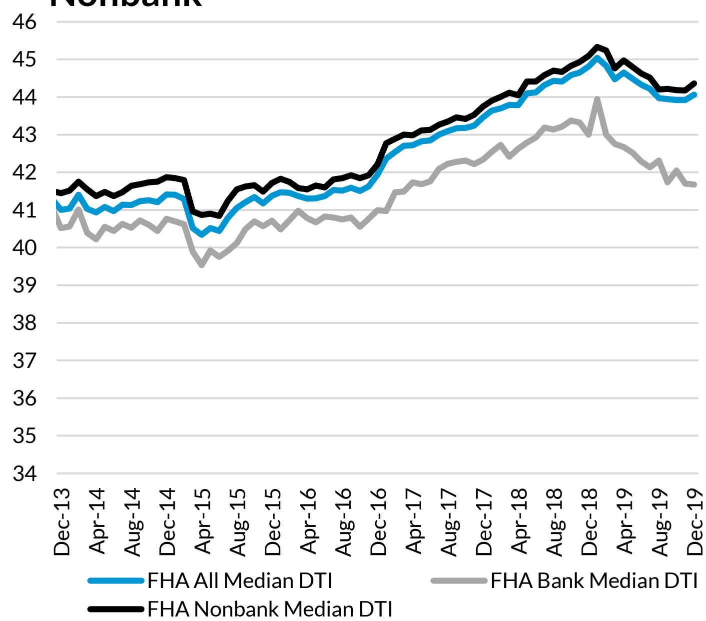
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA borrowers experienced notable increases during 2017 and 2018 for both banks and nonbank originators, while the Other origination DTIs stayed relatively 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



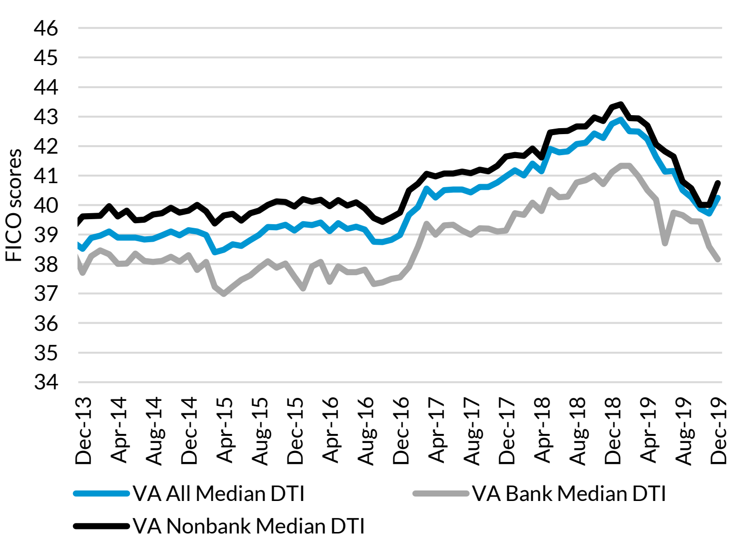
Sources: *eMBS and Urban Institute* **Note:** *Data as of December 2019.*

Ginnie Mae FHA DTI: Bank vs. Nonbank



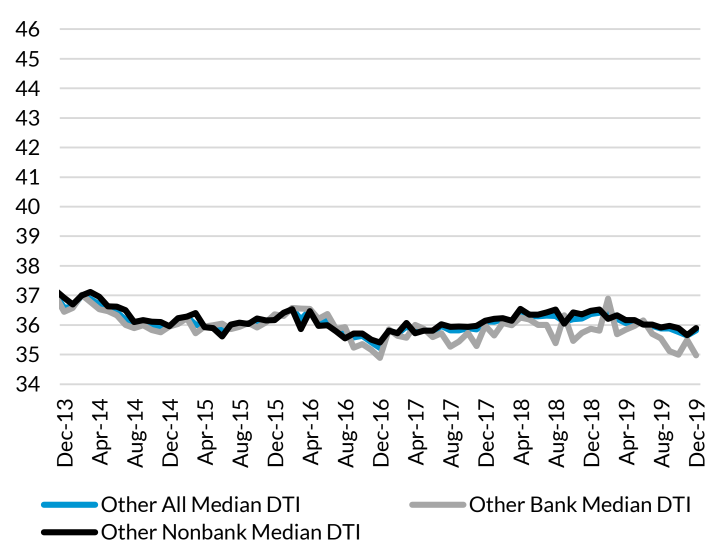
Sources: *eMBS and Urban Institute* **Note:** *Data as of December 2019.*

Ginnie Mae VA DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *Data as of December 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 December 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 December 2019, over half (53.1 percent) of the Ginnie Mae MSRs are owned by the top six firms. The top 30 firms collectively own 85.8 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

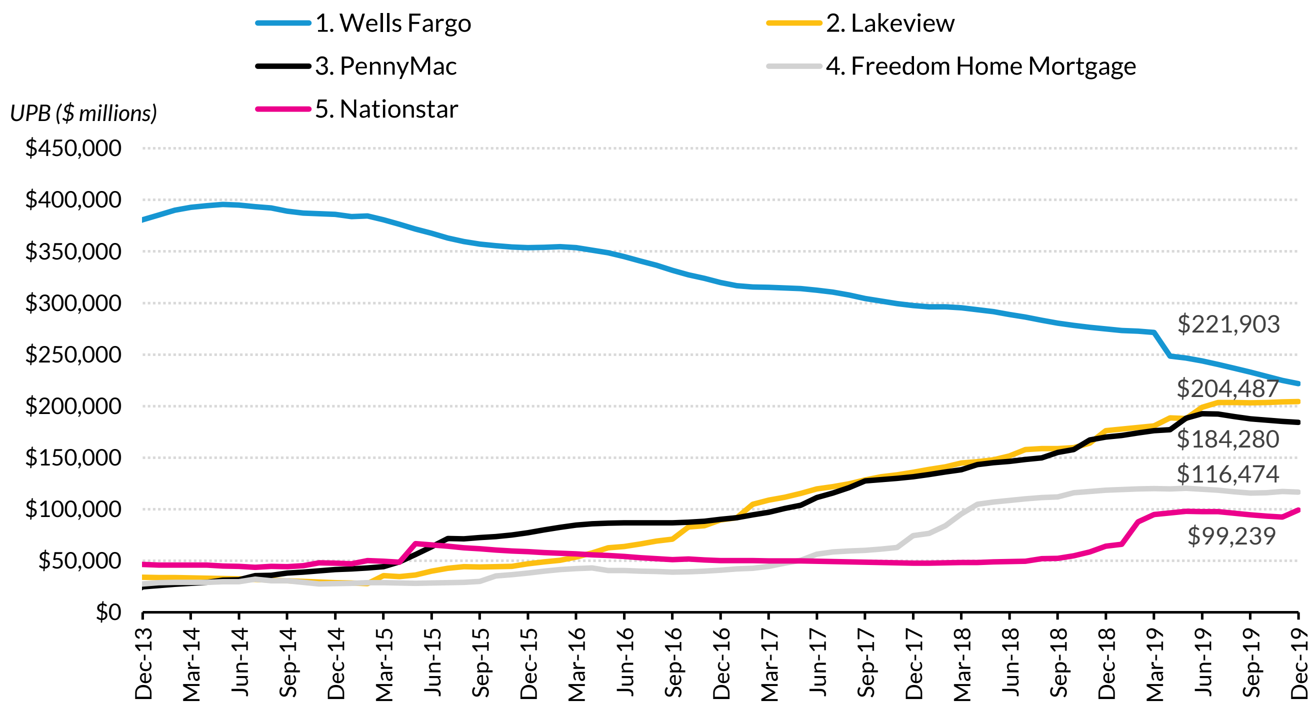
Rank	MSR Holder	UPB ($ millions)	Share	Cumulative Share
1	Wells Fargo	$221,903	13.2%	13.2%
2	Lakeview	$204,487	12.2%	25.4%
3	PennyMac	$184,280	11.0%	36.4%
4	Freedom Home Mortgage	$116,474	6.9%	43.4%
5	Nationstar	$97,684	5.9%	49.3%
6	Quicken Loans	$64,100	3.8%	53.1%
7	US Bank	$57,930	3.5%	56.6%
8	Carrington Home Mortgage	$39,701	2.4%	58.9%
9	USAA Federal Savings Bank	$37,370	2.2%	61.2%
10	Caliber Home Loans	$35,439	2.1%	63.3%
11	JP Morgan Chase	$34,221	2.0%	65.3%
12	Truist Bank	$32,431	1.9%	67.3%
13	Amerihome	$27,194	1.6%	68.9%
14	Navy Federal Credit Untion	$27,069	1.6%	70.5%
15	Newrez	$25,470	1.5%	72.0%
16	The Money Source	$21,834	1.3%	73.3%
17	Midfirst Bank	$20,794	1.2%	74.6%
18	M&T Bank	$18,580	1.1%	75.7%
19	Home Point Financial	$18,305	1.1%	76.8%
20	Ditech Financial	$18,178	1.1%	77.8%
21	Roundpoint	$17,671	1.1%	78.9%
22	Loan Depot	$15,376	0.9%	79.8%
23	Guild Mortgage	$15,260	0.9%	80.7%
24	PHH Mortgage	$13,809	0.8%	81.5%
25	Flagstar Bank	$13,790	0.8%	82.4%
26	Pingora	$12,722	0.8%	83.1%
27	Citizens Bank	$12,648	0.8%	83.9%
28	Bank of America	$10,828	0.6%	84.5%
29	Wells Fargo	$10,811	0.6%	85.2%
30	Fifth Third Bank	$10,206	0.6%	85.8%

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

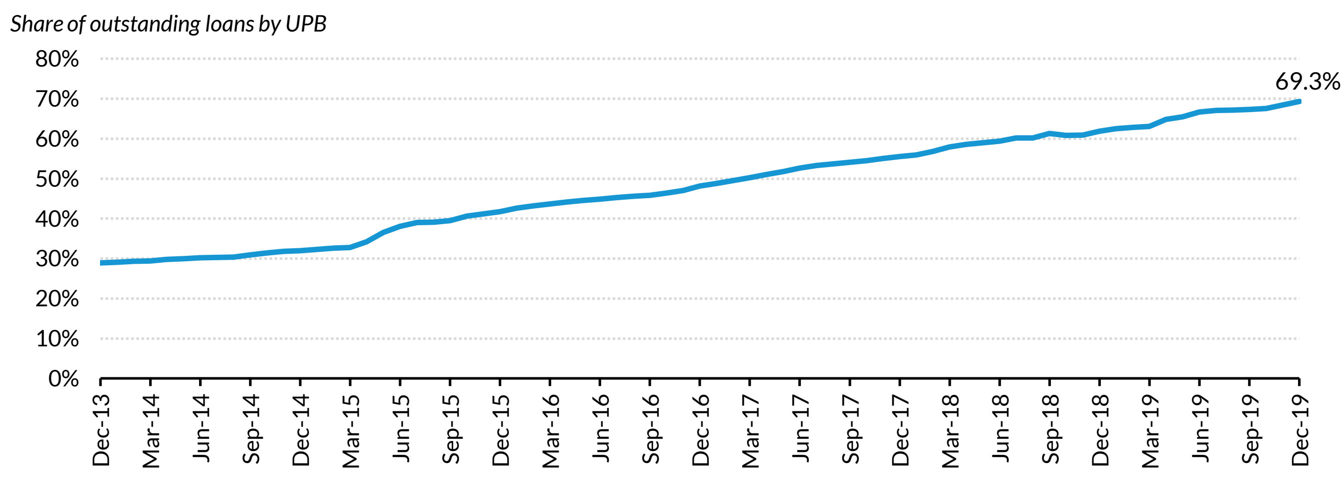
Holders of Ginnie Mae MSRs

The composition of the largest owners of Ginnie Mae MSR has evolved quite a bit over time. In December 2013, Wells Fargo and JP Morgan Chase were the two largest owners of Ginnie Mae MSRs, holding $375 billion and $139 billion in servicing UPB respectively. Although Wells Fargo is still the largest player, its portfolio has shrunk to $222 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, $184 billion, $116 billion, and $99 billion respectively as of December 2019. As of December 2019, nonbanks collectively owned servicing rights for 69.3 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



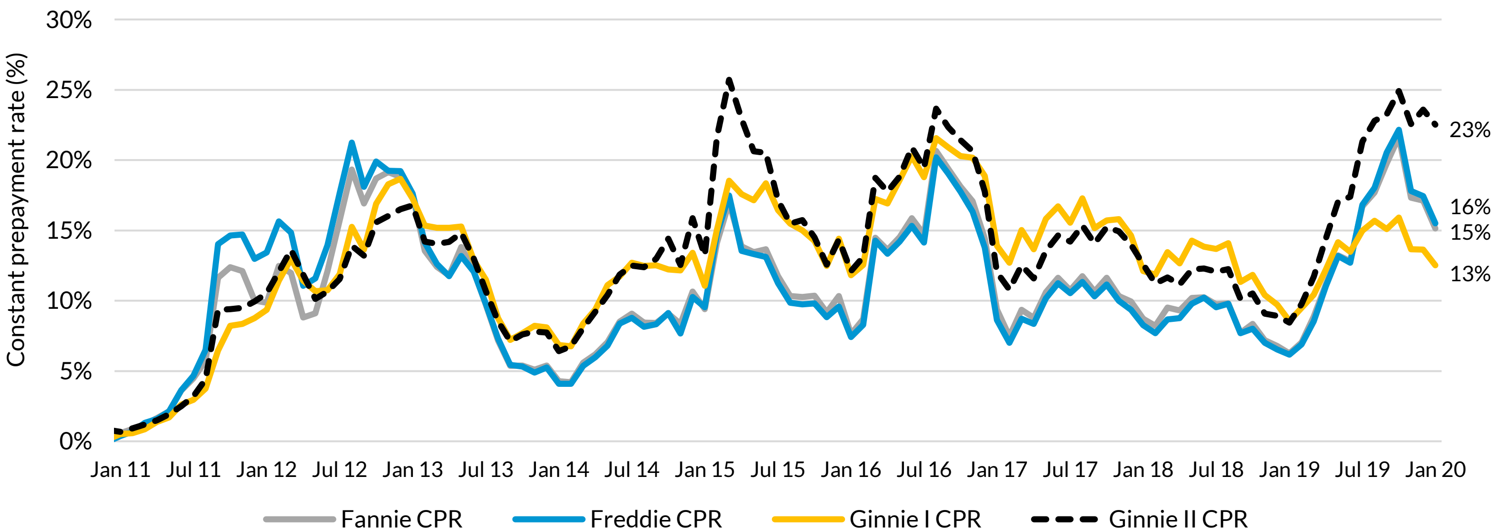
Sources: *eMBS and Urban Institute.* **Note:** *Data as of December 2019.*

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.

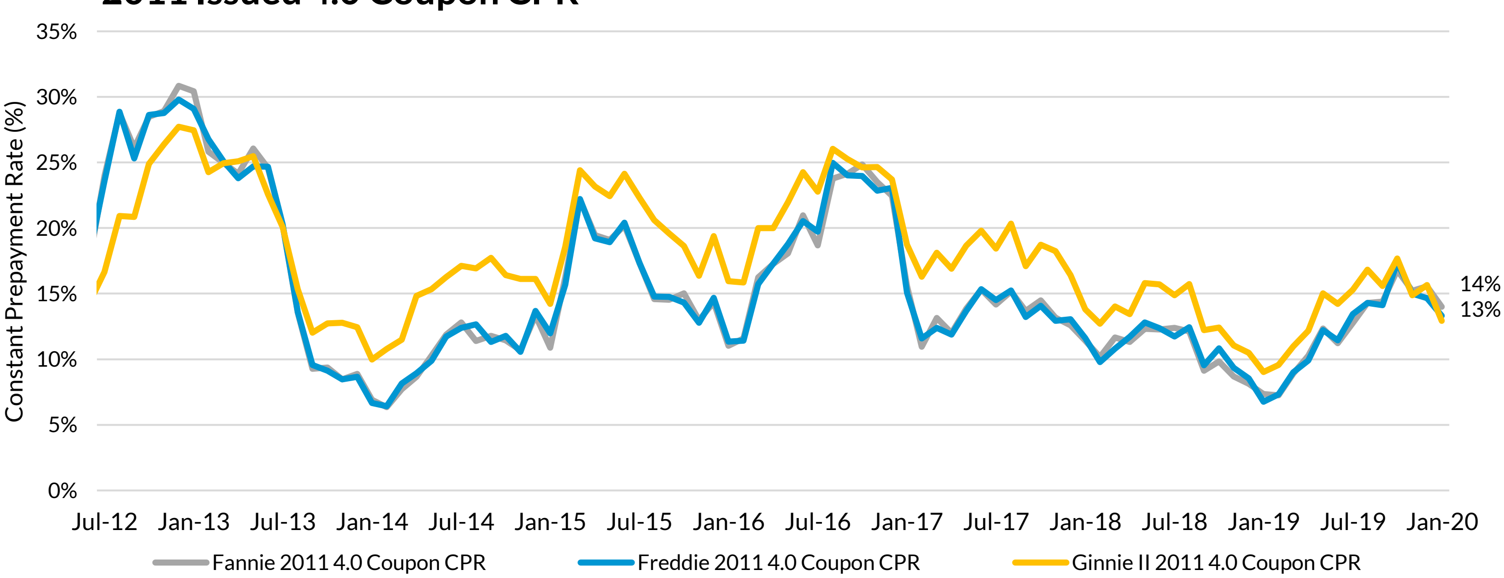
From late 2016 to later 2018, as interest rates increased, the bulk of the mortgage universe found it non-economic to refinance and the prepayment speeds for all agency MBS slowed substantially. The small month-to-month variation in speeds reflected primarily seasonality and changes in day count. With 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 slight decrease in speeds in the months ahead.

Aggregate Prepayments



Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of January 2020.*

2011 Issued 4.0 Coupon CPR



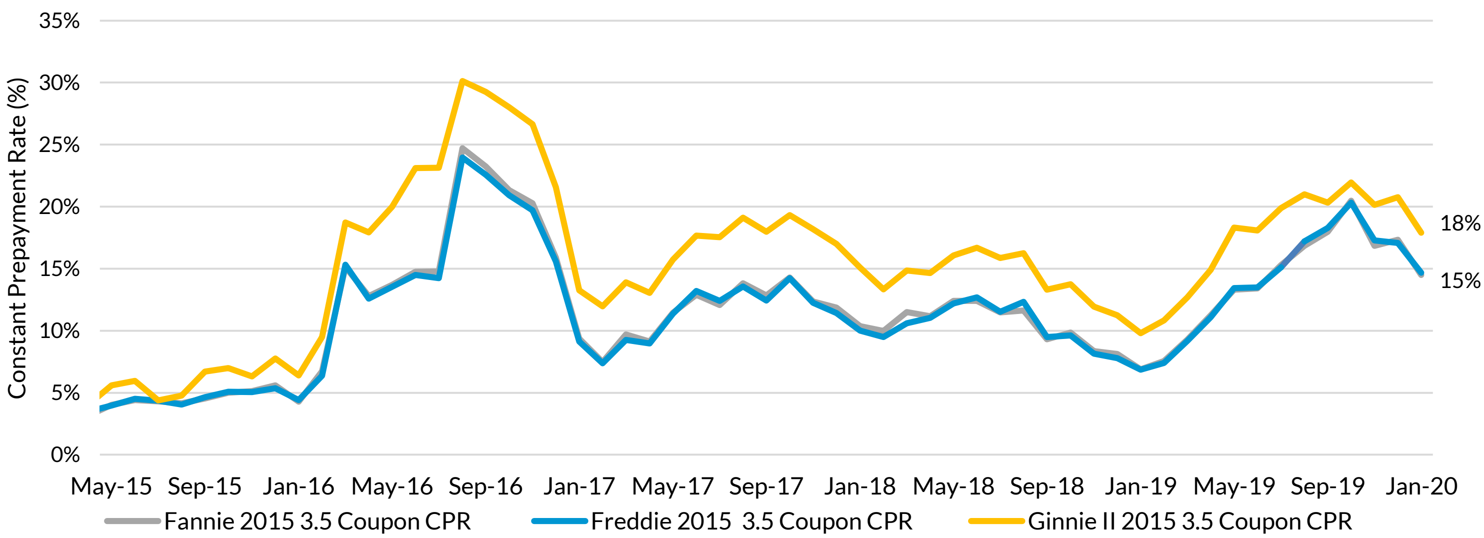
Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of January 2020.*

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.

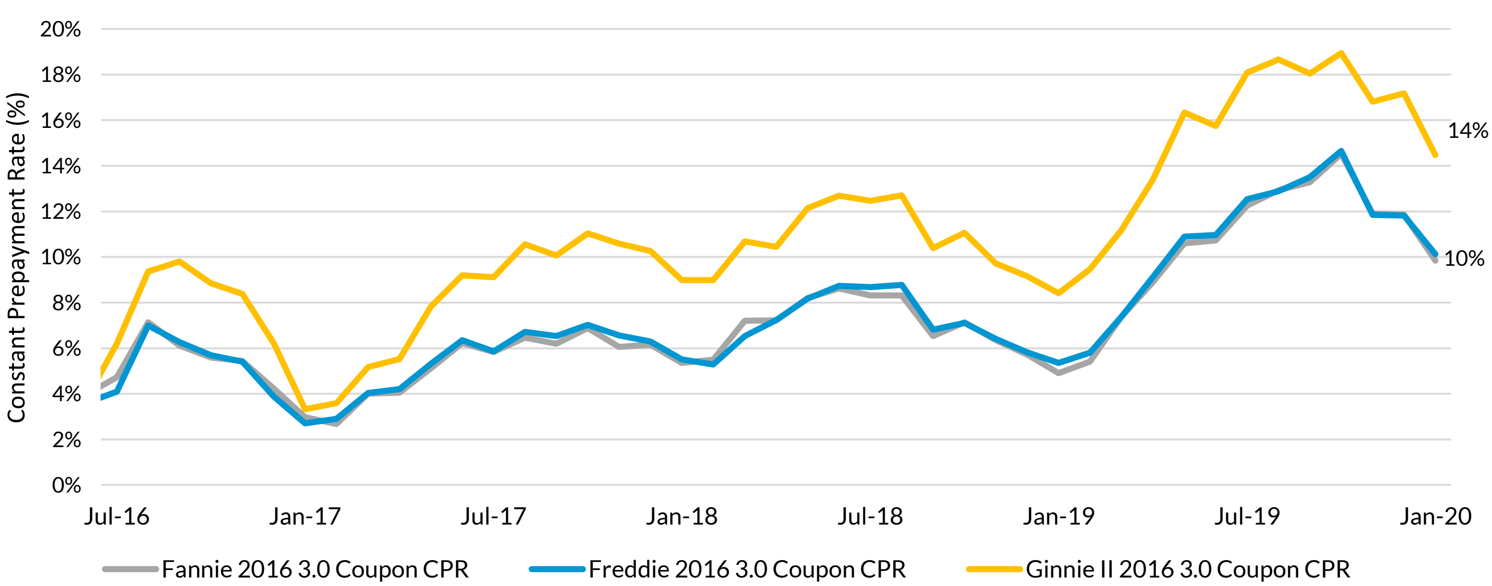
With the increase in interest rates over the 2 year period beginning in November 2016, the prepayment speeds for all agency MBS had slowed. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflected 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 slight decrease in speeds in the months ahead.

2015 Issued 3.5 Coupon CPR



Sources: *Credit Suisse and Urban Institute.* **Note:** *Data as of January 2020.*

2016 Issued 3.0 Coupon CPR

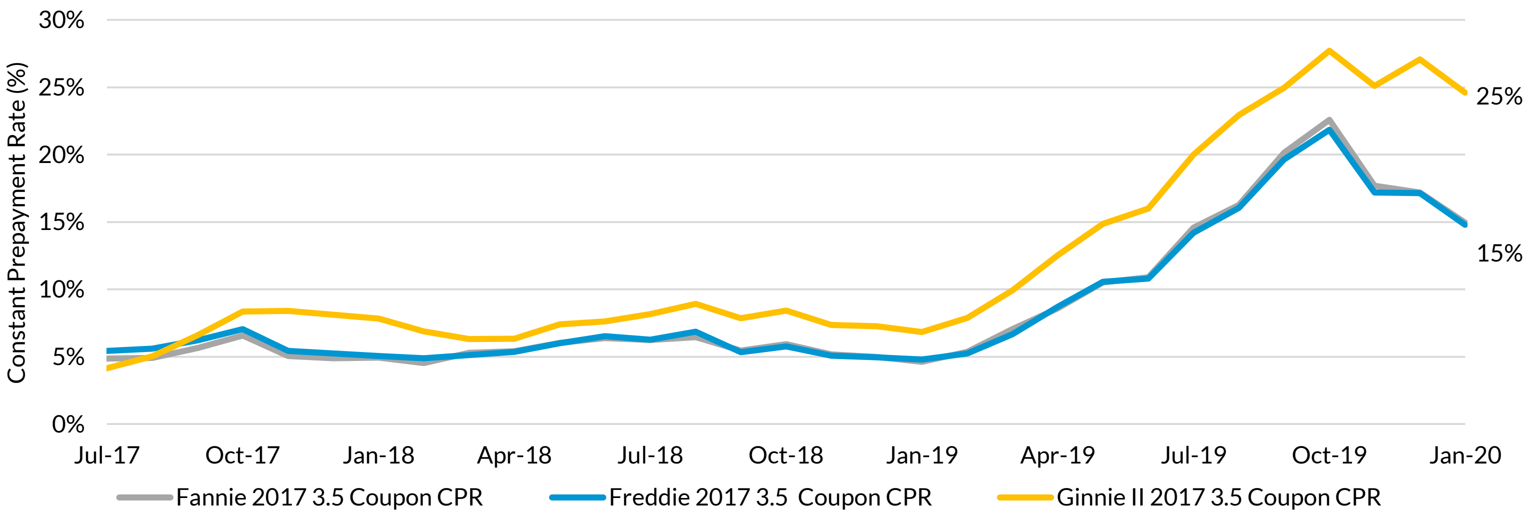


Sources: *Credit Suisse and Urban Institute.* **Note:** *Data as of January 2020.*

Prepayments

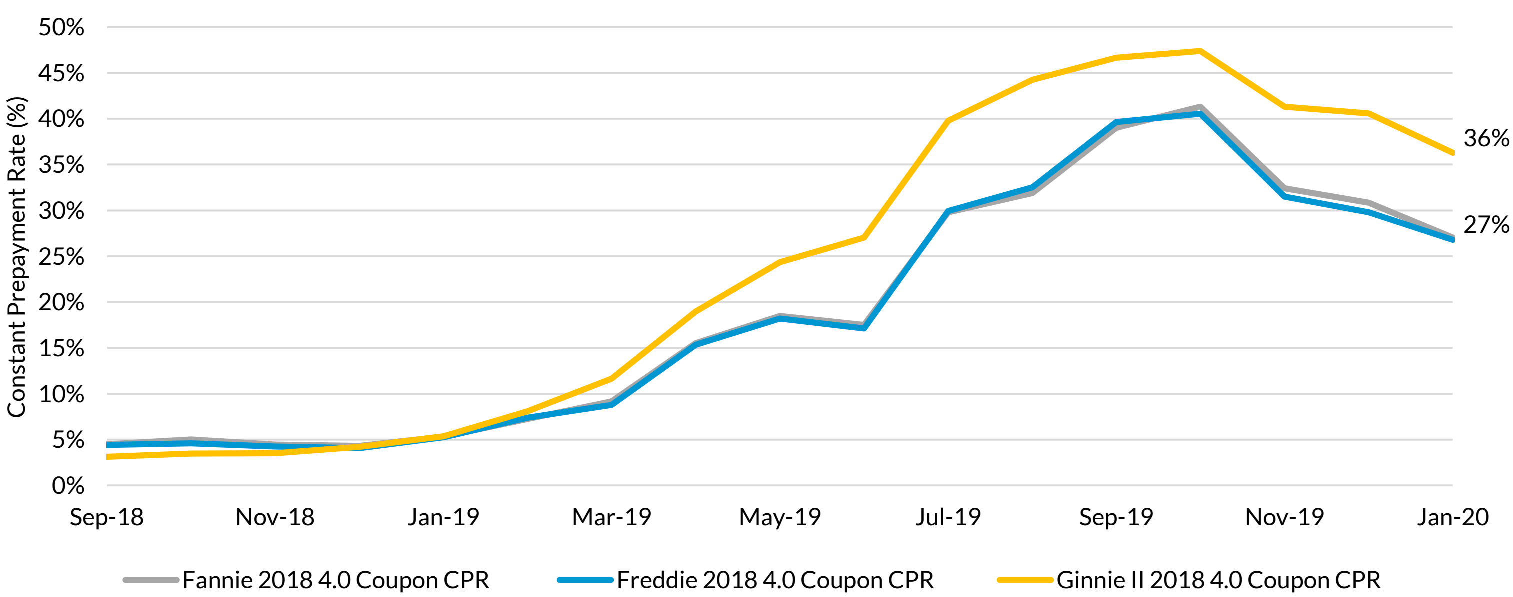
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayment in the early months but are more interest rate responsive thereafter. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of 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 January 2020.*

2018 Issued 4.0 Coupon CPR

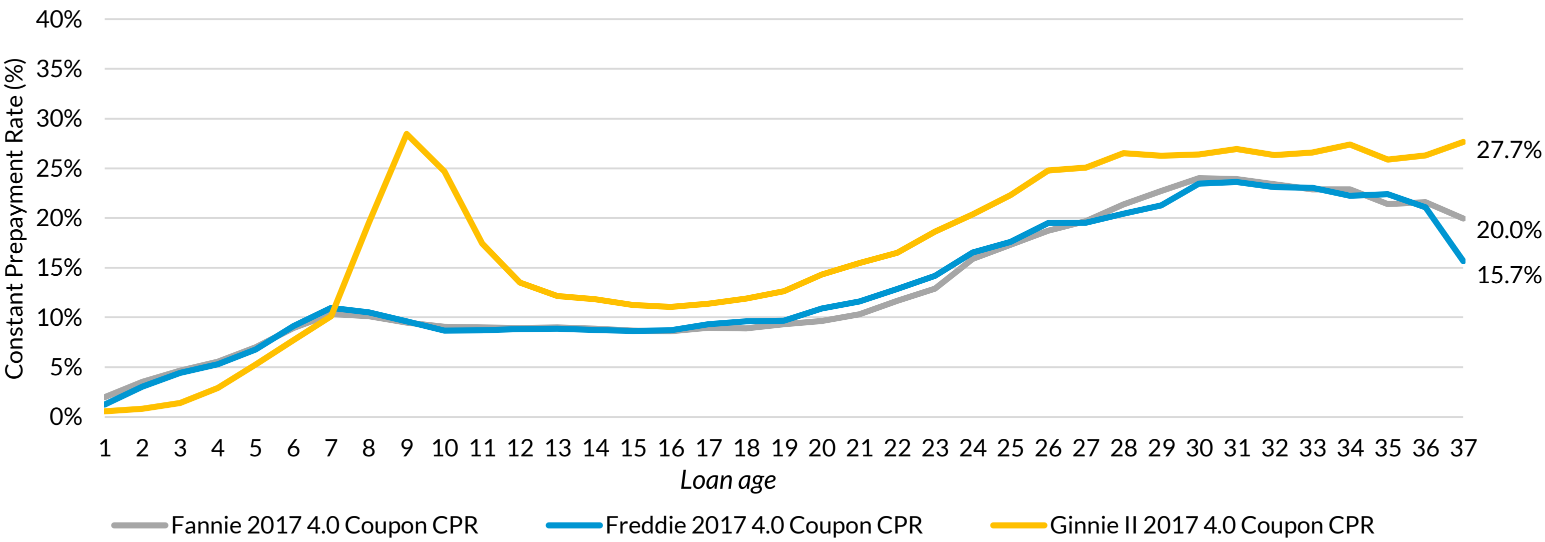


Sources: *Credit Suisse and Urban Institute.* **Note:** *Data as of January 2020.*

Prepayments

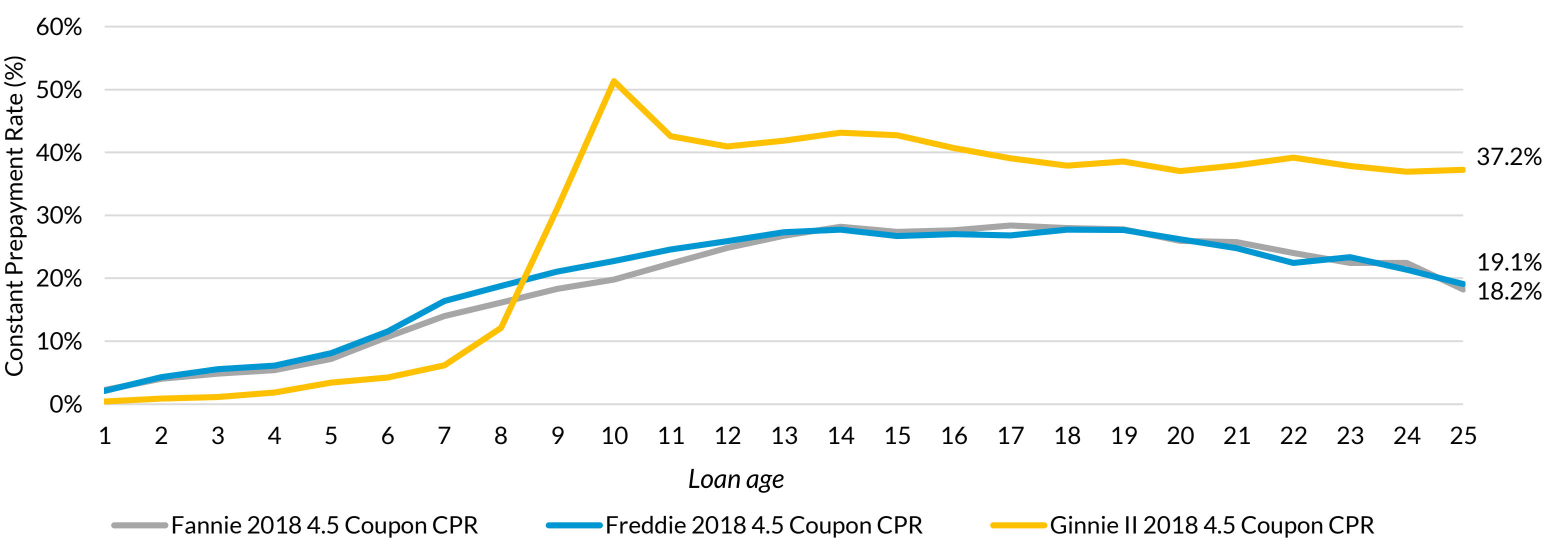
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined 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 January 2020.*

2018 Issued 4.5 Coupon CPR, by Loan Age

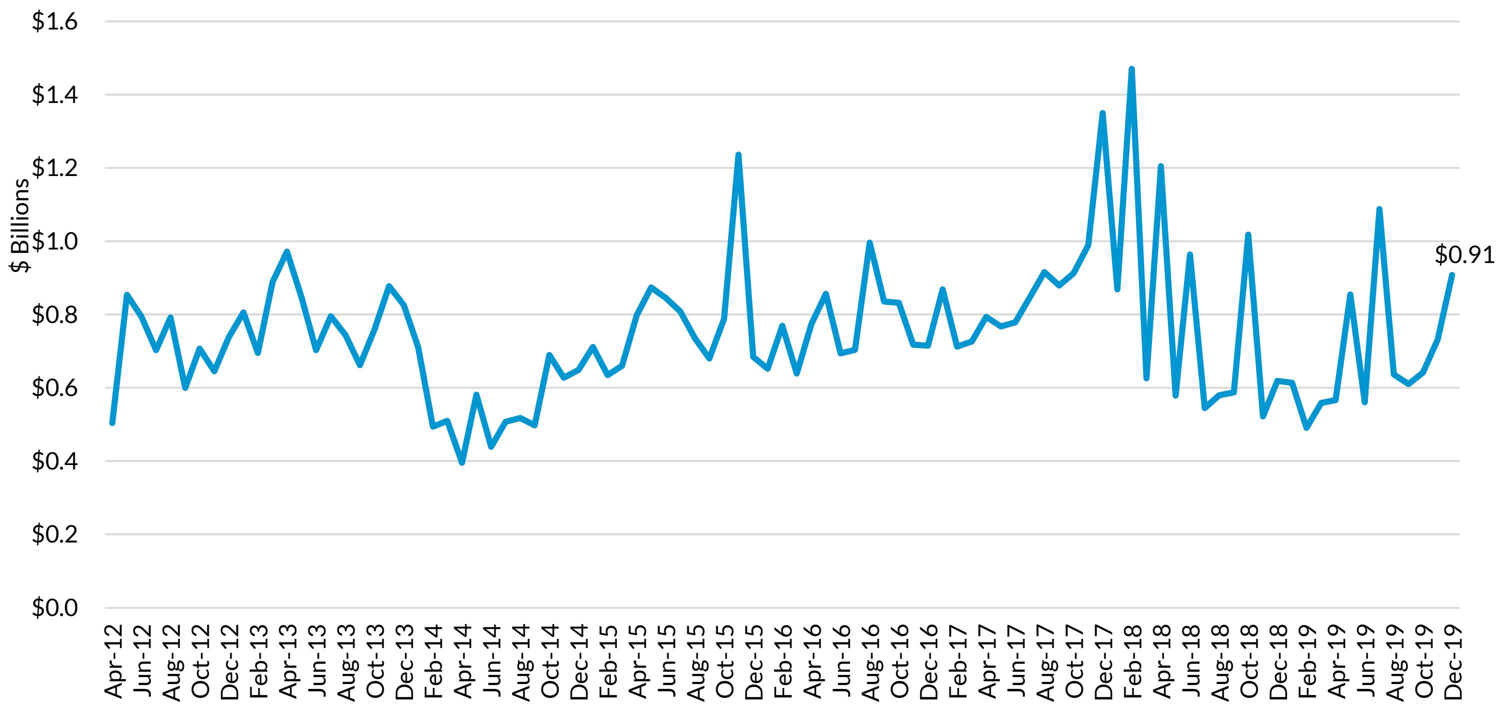


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of January 2020..*

Other Ginnie Mae Programs Reverse Mortgage Volumes

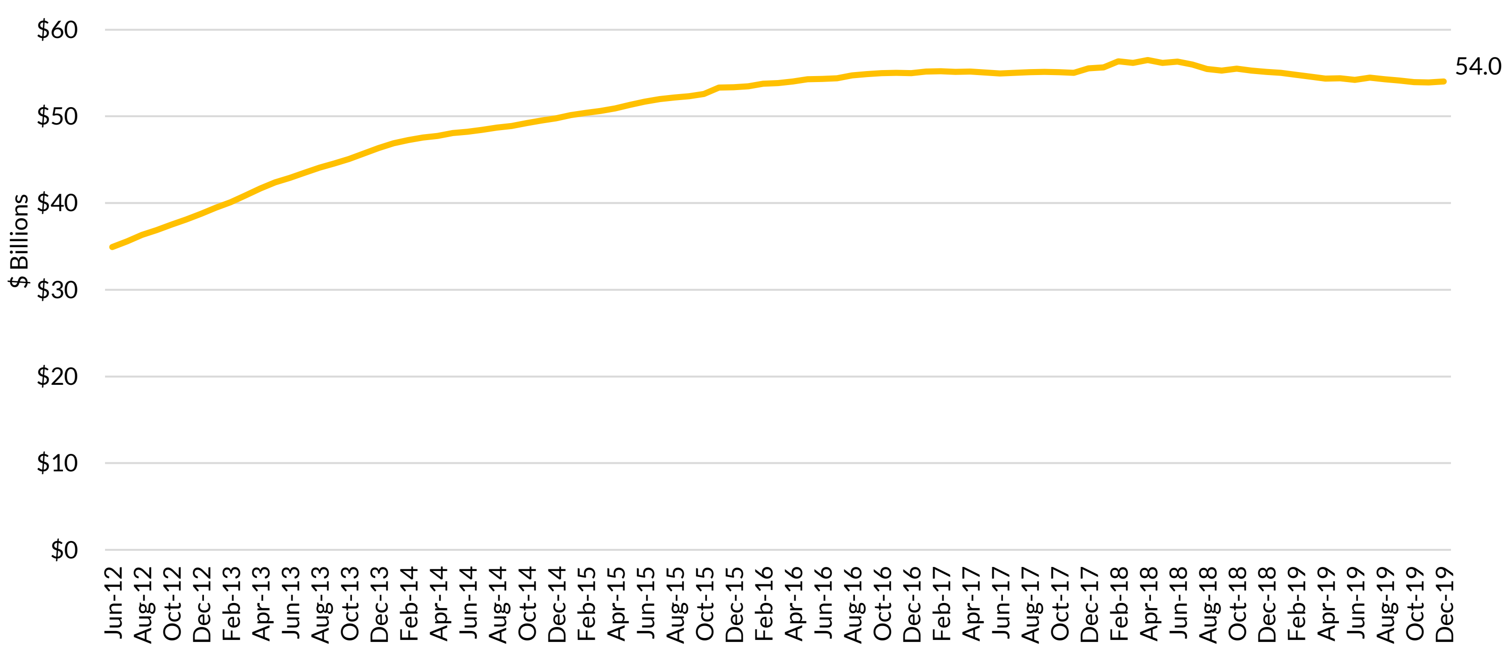
Ginnie Mae reverse mortgage issuance has been volatile in recent months; after increasing in July, volume fell consecutively in August and September 2019 but has risen since to $0.91 billion in December. Issuance has been generally declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In December 2019, outstanding reverse mortgage securities totaled $54.0 billion, lower compared to recent past, reflecting a lower volume of new issuances relative to paydowns.

HMBS Issuance Volume



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

HMBS Outstanding

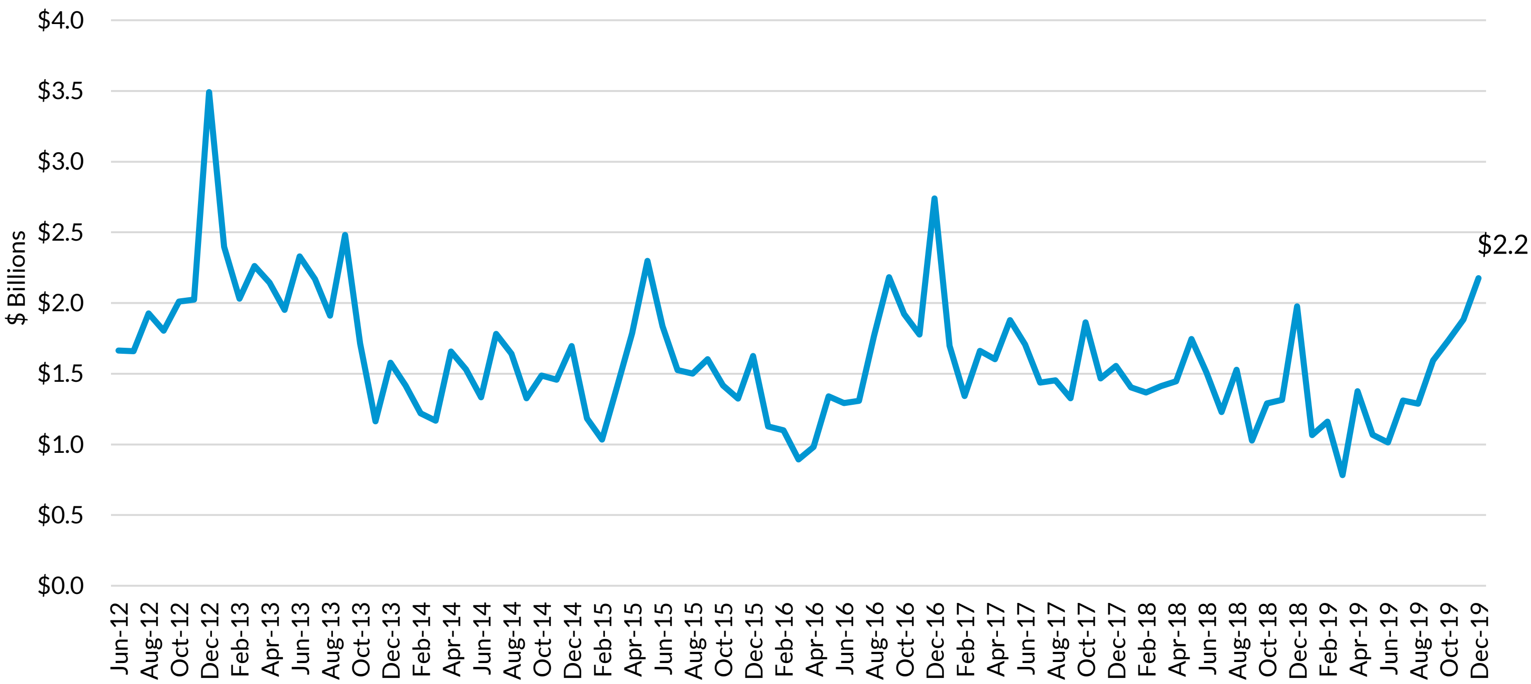


Sources: *Ginnie Mae and Urban Institute.* ***Note:*** *Data as of December 2019.*

Other Ginnie Mae Programs
Multifamily Market

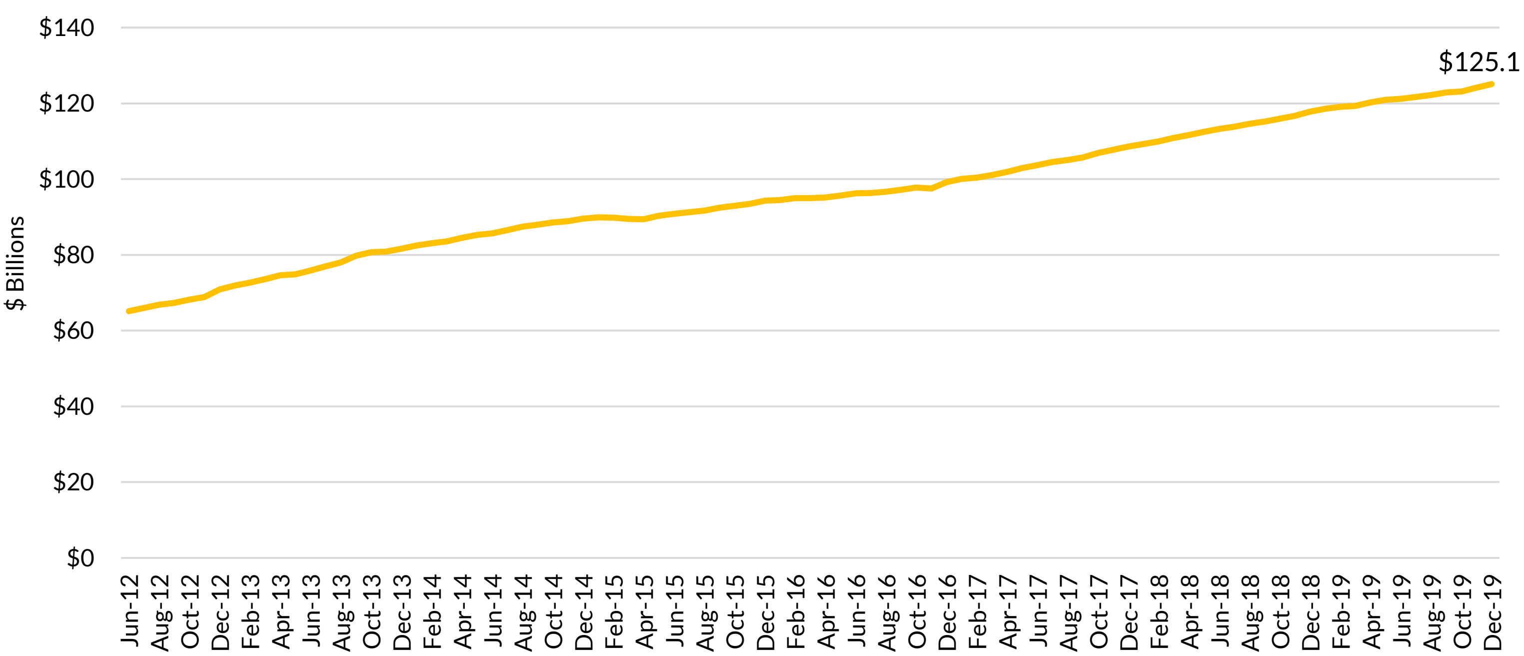
Ginnie Mae multifamily issuance volume in December 2019 totaled $2.2 billion, an increase from the past month. Outstanding multifamily securities totaled $125.1 billion in November.

Ginnie Mae Multifamily MBS Issuance



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

Ginnie Mae Multifamily MBS Outstanding

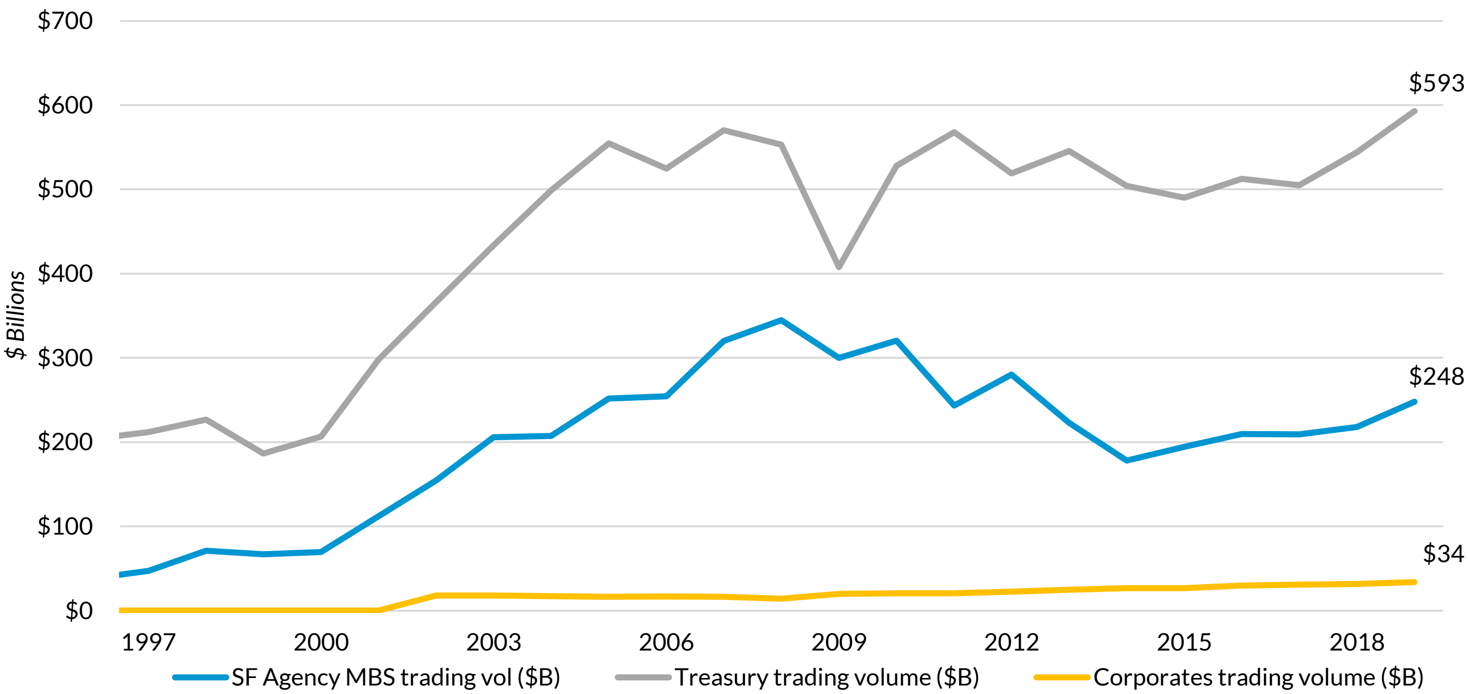


Sources: *Ginnie Mae and Urban Institute.* **Note**: *Data as of December 2019.*

Market Conditions

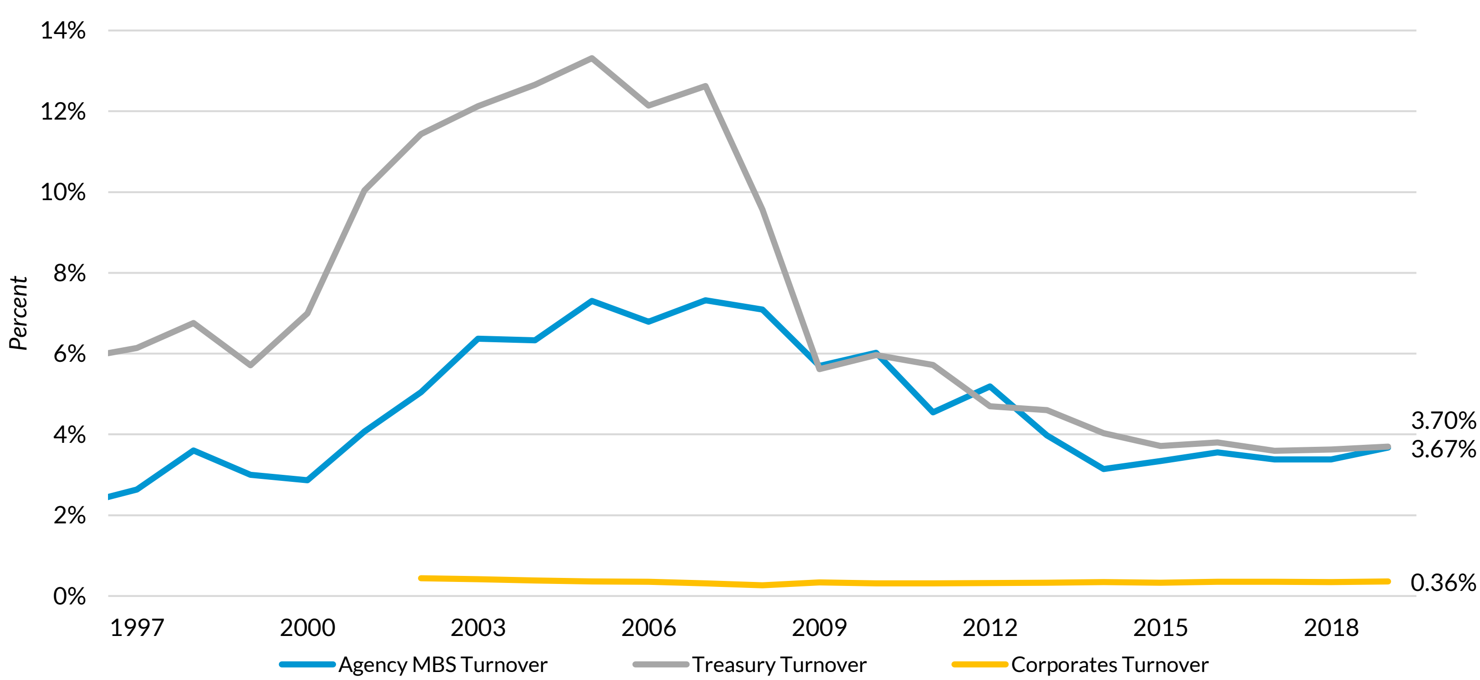
Agency MBS trading volume was $248 billion/day on average in 2019, more robust than in the 2014-2018 period, but well below the pre-crisis peak of $345 billion in 2008. In contrast, average daily trading volume for Treasuries now exceeds the pre-crisis peak. Agency MBS turnover in 2019 YTD also has been slightly higher than the 2014-2018 period; in 2019, average daily MBS turnover was 3.67 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 December 2019.*

Average Daily Turnover by Sector

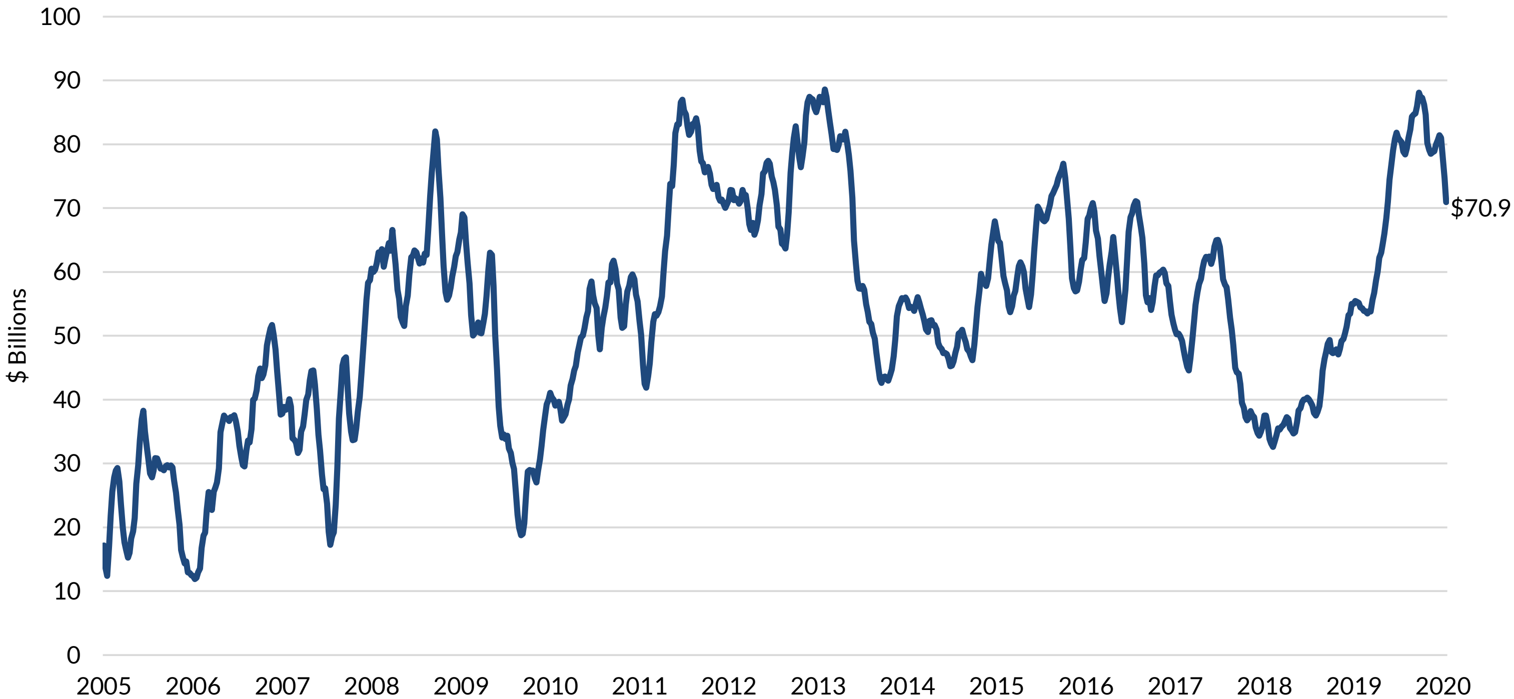


Sources: *SIFMA and Urban Institute.* ***Note:*** *Data as of December 2019.*

Market Conditions

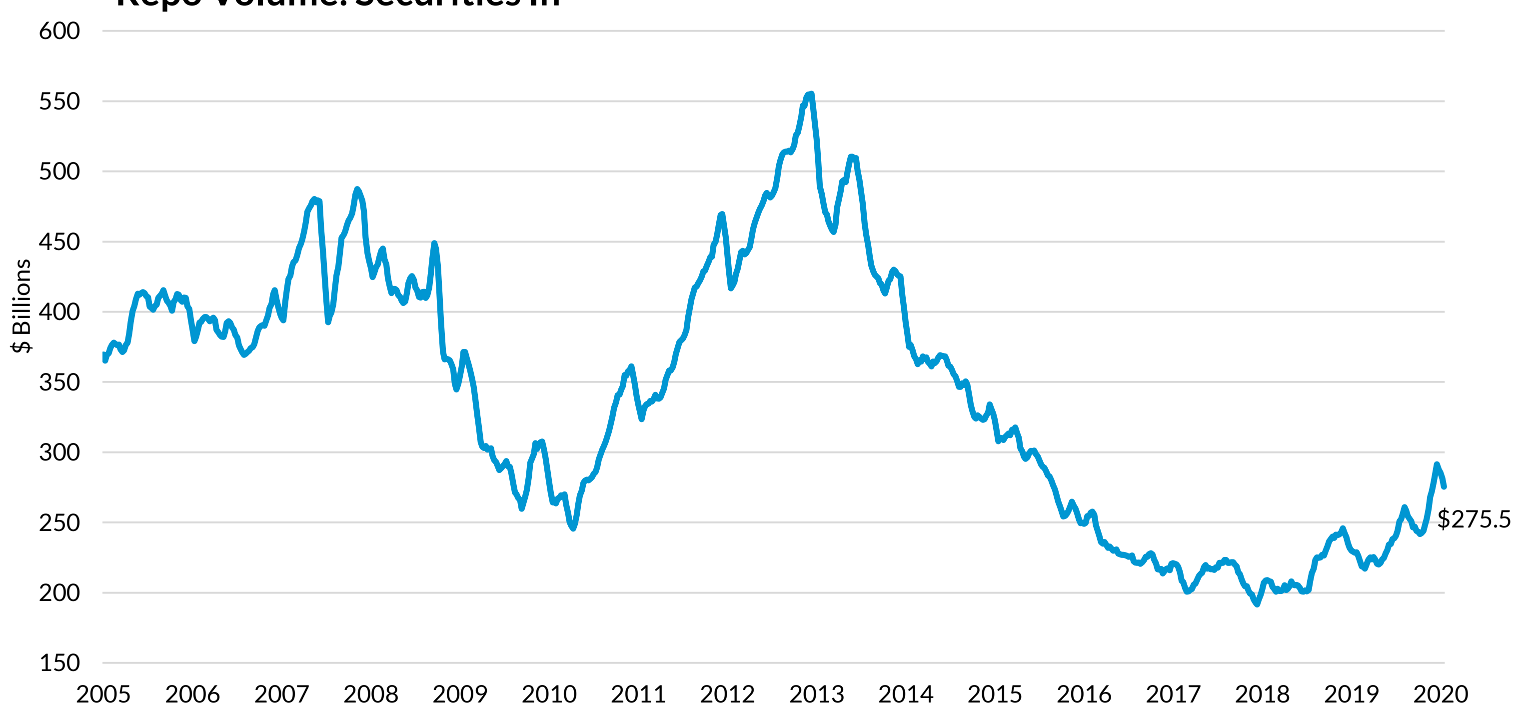
Dealer net positions are near their post-crisis highs. By contrast, dealer gross positions have fallen dramatically. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

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 January 2020.*

Repo Volume: Securities In

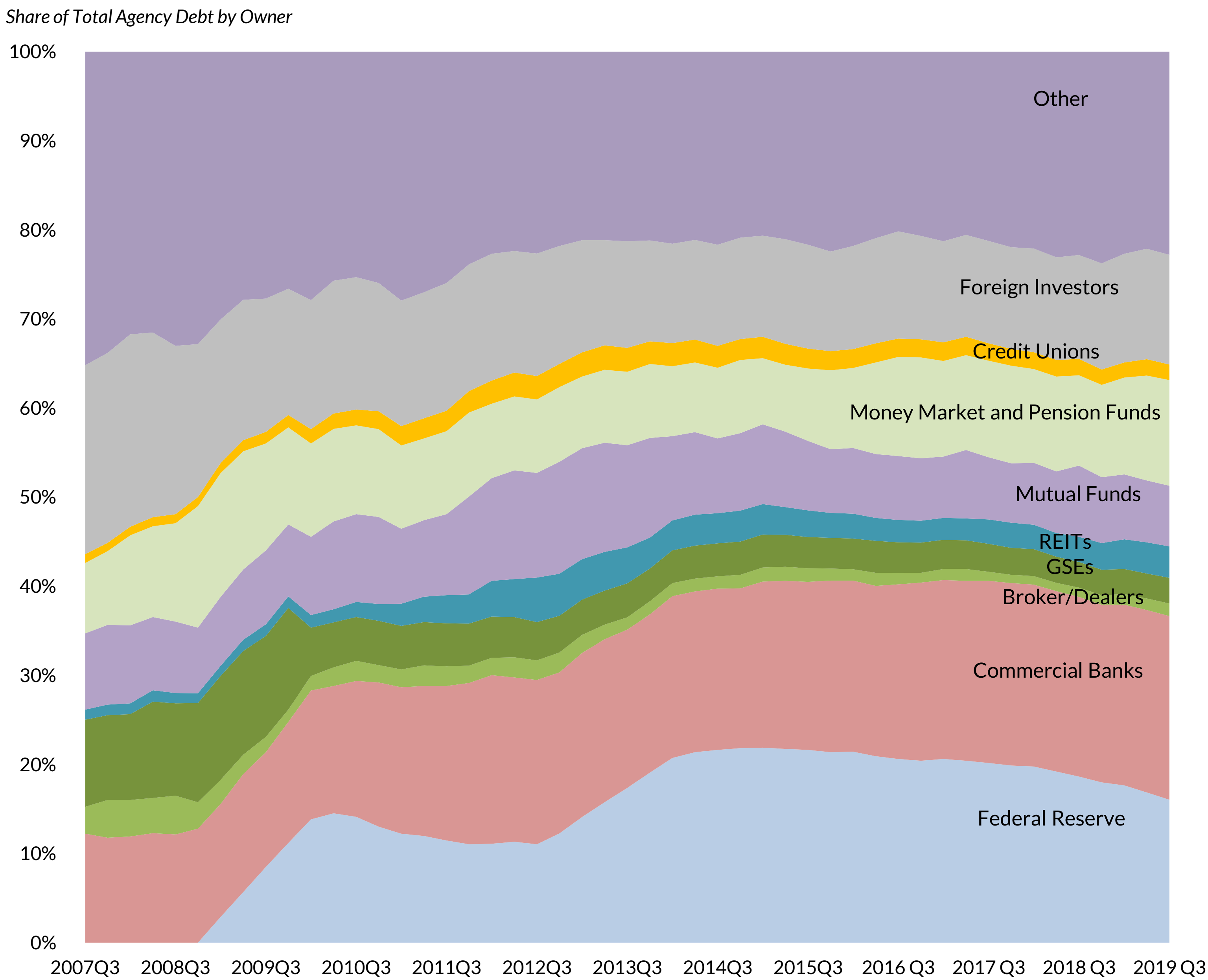


Sources: *Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute.* **Note:** *Data as of January 2019.*

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?

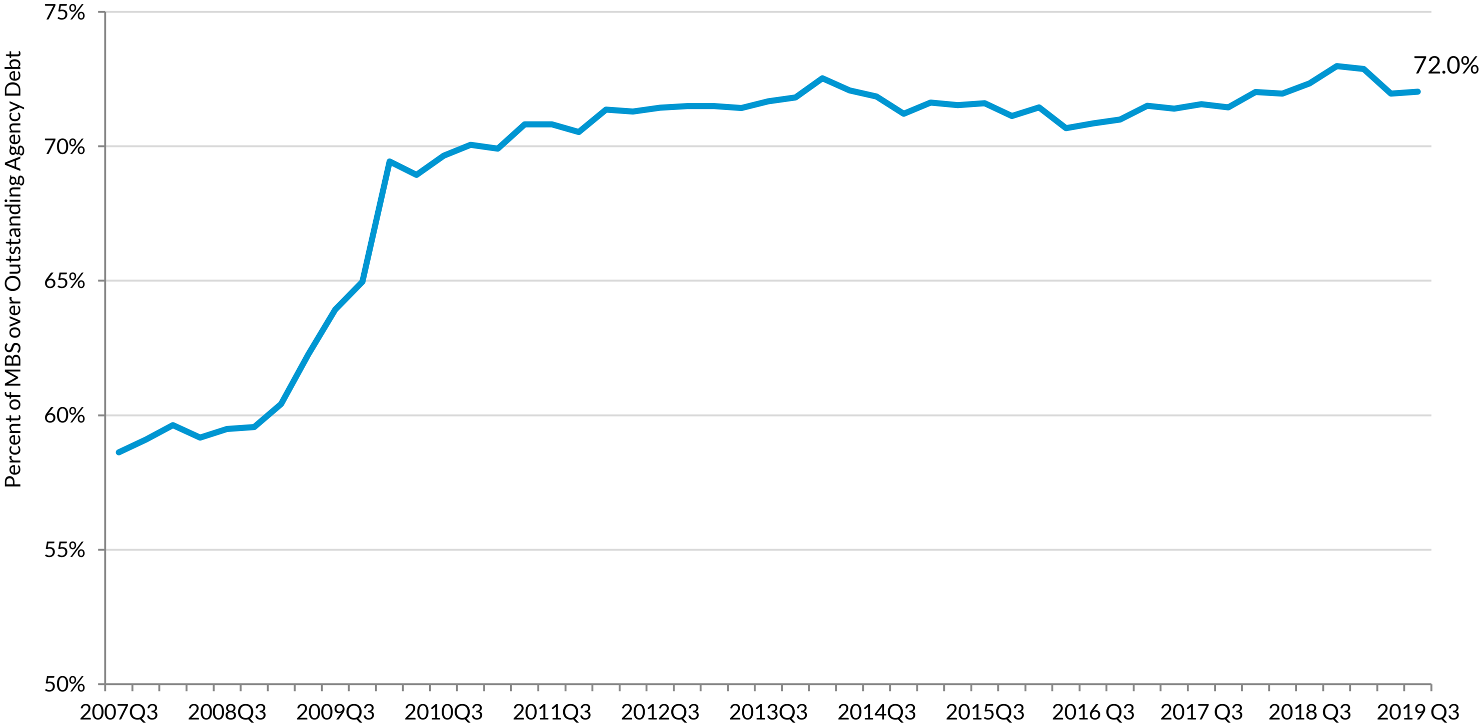


Sources: *Federal Reserve Flow of Funds and Urban Institute.* **Note:** *The "other" category includes primarily life insurance companies, state and local govts, households, and nonprofits. Data as of Q3 2019.*

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 January 2019, $1.5 trillion was held by the top 25 domestic banks.

MBS Share of Total Agency Debt



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

	Commercial Bank Holdings ($Billions)								Week Ending			
	Dec-18	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan 1	Jan 8	Jan 15	Jan 22
Largest 25 Domestic Banks	1,365.5	1,460.0	1,464.4	1,471.3	1,495.3	1,508.6	1,529.1	1,507.7	1,491.8	1,492.9	1,526.1	1,496.3
Small Domestic Banks	478.5	501.0	506.0	506.2	511.5	515.4	520.1	525.7	527.7	528.4	531.8	528.6
Foreign Related Banks	26.7	28.8	29.6	33.8	34.7	36.5	37.4	37.0	36.7	36.2	36.8	35.0
Total, Seasonally Adjusted	1,870.7	1,989.8	2,000.0	2,011.3	2,041.5	2,060.5	2,086.6	2,070.4	2,056.2	2,057.5	2,094.7	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 January 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

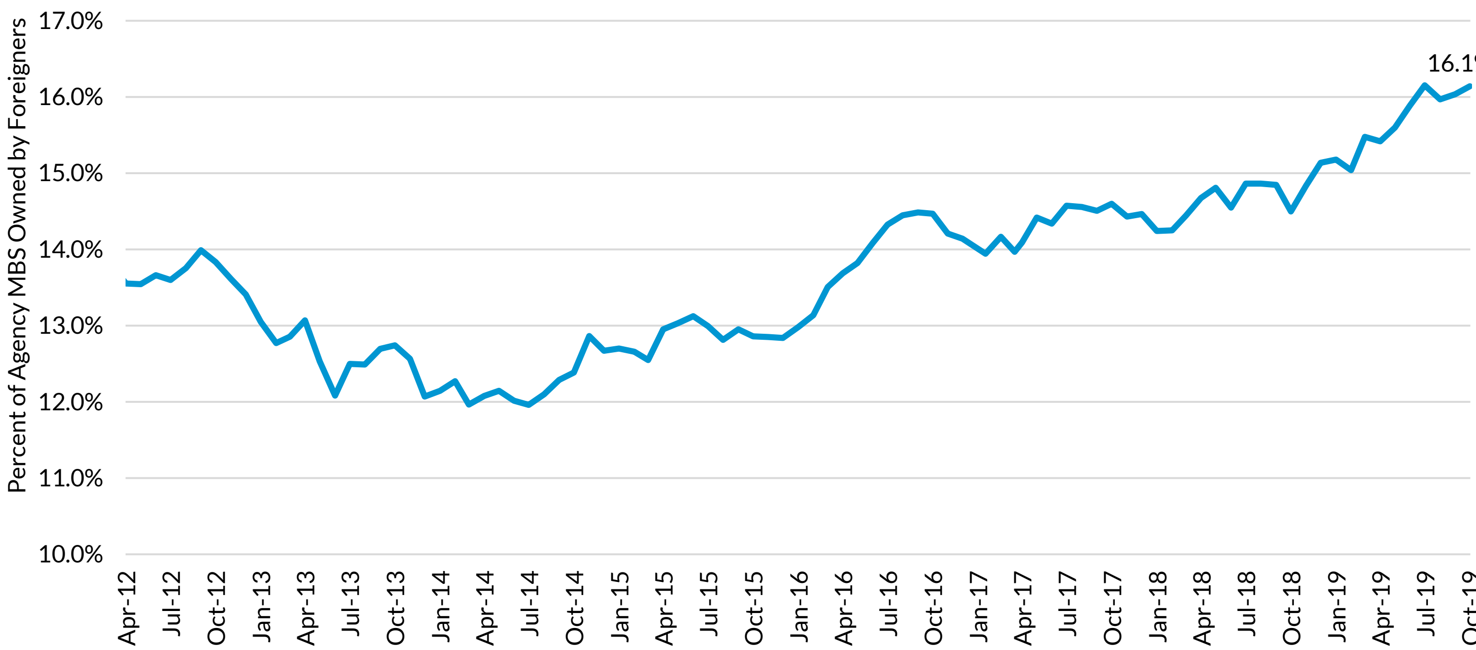
	Top Bank & Thrift Residential MBS Investors	Total ($MM)	GSE PT ($MM)	GNMA PT ($MM)	Agency REMIC ($MM)	Non-Agency ($MM)	Market Share
1	Bank of America Corporation	$321,946	$183,062	$128,029	$10,760	$95	16.3%
2	Wells Fargo & Company	$257,583	$183,897	$69,614	$3,220	$852	13.0%
3	JP Morgan Chase & Co.	$140,403	$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

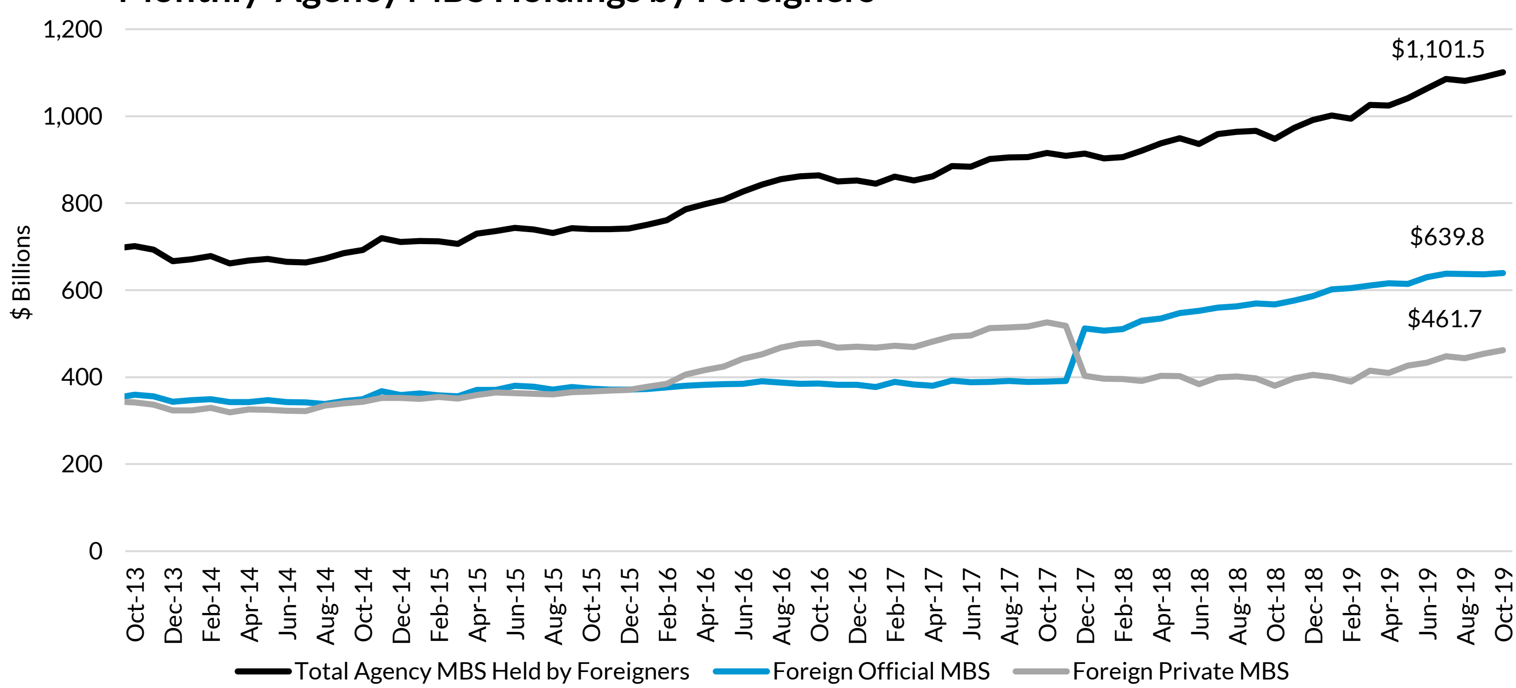
Foreign investors held 16.1 percent of agency MBS in October 2019, up from a low of 12.0 percent in July 2014. For the month of October 2019, this represents $1.10 trillion in Agency MBS, $462 billion held by foreign private institutions and $640 billion held by foreign institutions.

Foreign Share of Agency MBS



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

Monthly Agency MBS Holdings by Foreigners



***Sources**: Treasury International Capital (TIC) and Urban Institute. **Note**: Data as of October 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 over 70 percent of all foreign holdings. Between June 2018 and October 2019, we estimate Japan has increased their agency MBS holdings by $58.7 billion, China has increased their holdings by $54.5 billion and Taiwan has increased their holdings by $12.8 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	Oct-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Oct-19
Japan	257,547	254,511	271,999	284,322	296,445	311,044	315,885	-3,036	17,488	12,323	12,123	14,599	4,842
Taiwan	250,009	250,639	261,262	265,992	265,520	263,013	262,781	630	10,623	4,730	-472	-2,507	-230
China	180,635	190,203	188,921	208,540	227,312	233,778	234,745	9,568	-1,282	19,619	18,772	6,466	967
Ireland	46,817	48,220	48,020	46,623	44,979	41,374	39,672	1,403	-200	-1,397	-1,644	-3,605	-1,702
Luxembourg	36,372	38,800	50,869	44,561	46,335	46,606	41,034	2,428	12,069	-6,308	1,774	271	-5,572
South Korea	44,039	43,944	44,794	42,604	42,669	41,309	40,917	-95	850	-2,190	65	-1,360	-392
Bermuda	27,866	27,610	28,861	28,535	29,377	29,651	28,691	-256	1,251	-326	842	274	-485
Cayman Islands	31,017	31,638	31,405	30,374	30,885	29,434	31,005	621	-233	-1,031	511	-1,451	1,572
Malaysia	12,710	12,874	12,671	12,395	12,108	15,585	16,223	164	-203	-276	-287	3,477	638
Netherlands	11,995	12,229	9,601	9,400	13,548	10,546	10,909	234	-2,628	-201	4,148	-3,002	363
Rest of World	125,197	128,807	129,130	129,987	128,056	135,504	143,846	3,610	323	857	-1,931	7,448	8,386
Total	1,024,200	1,039,475	1,077,533	1,103,333	1,137,234	1,157,844	1,165,708	15,275	38,058	25,800	33,901	20,610	8,387

Agency MBS Only (Estimates)

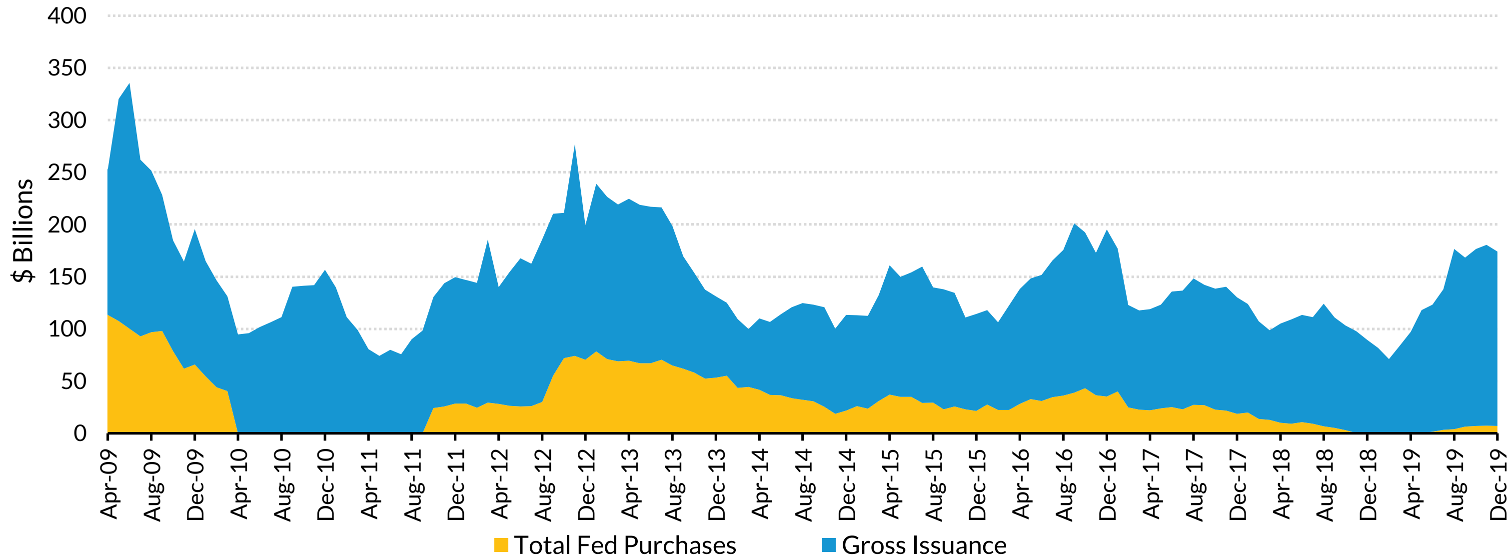
	Level of Holdings ($Millions)*							Change in Holdings ($Millions)*					
Country	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Oct-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Oct-19
Japan	253,972	250,851	268,105	280,394	292,984	307,621	312,631	-3,121	17,254	12,289	12,590	14,637	4,950
Taiwan	249,773	250,397	261,005	265,733	265,292	262,787	262,566	624	10,608	4,728	-441	-2,504	-223
China	176,345	185,811	184,249	203,827	223,159	229,671	230,840	9,466	-1,562	19,578	19,332	6,512	1,097
Ireland	37,832	39,021	38,234	36,751	36,281	32,772	31,493	1,189	-787	-1,483	-471	-3,509	-1,430
Luxembourg	34,012	36,384	48,299	41,968	44,050	44,347	38,886	2,372	11,915	-6,331	2,082	296	-5,501
South Korea	33,064	32,708	32,841	30,546	32,044	30,802	30,926	-356	133	-2,295	1,498	-1,242	-60
Bermuda	24,969	24,644	25,706	25,352	26,572	26,877	26,054	-325	1,062	-354	1,220	305	-397
Cayman Islands	24,384	24,847	24,181	23,086	24,464	23,084	24,967	463	-667	-1,094	1,377	-1,380	1,773
Malaysia	12,319	12,474	12,245	11,965	11,729	15,211	15,867	155	-229	-280	-236	3,481	650
Netherlands	11,437	11,658	8,993	8,787	13,008	10,012	10,401	221	-2,664	-206	4,221	-2,996	380
Rest of World	95,510	98,414	96,797	97,370	99,317	107,082	116,822	2,904	-1,617	574	1,946	7,766	9,284
Total	953,612	967,209	1,000,653	1,025,779	1,068,899	1,090,265	1,101,452	13,597	33,444	25,126	43,120	21,366	10,523

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 October 2019.*

MBS Ownership

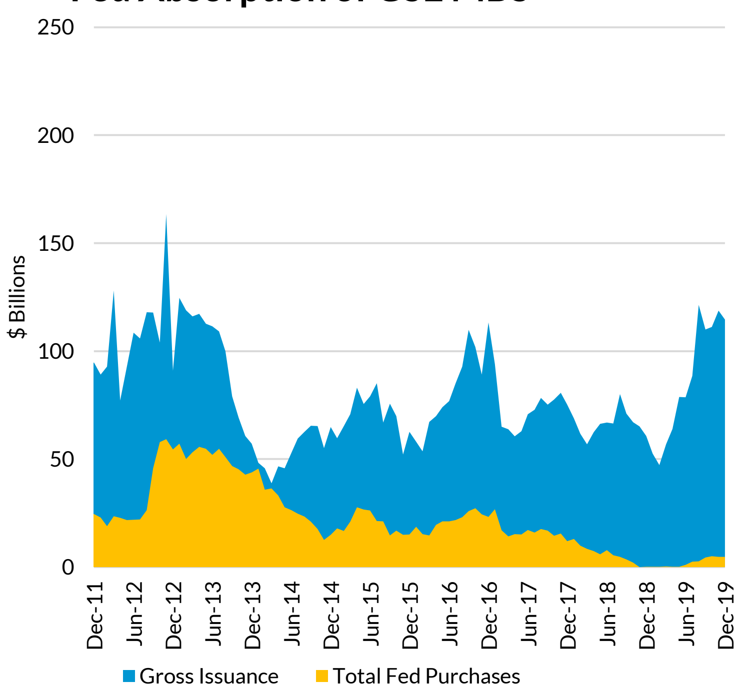
The Federal Reserve is actively winding down its mortgage portfolio; MBS purchases are very low. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross 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 4.07 percent in December.

Total Fed Absorption



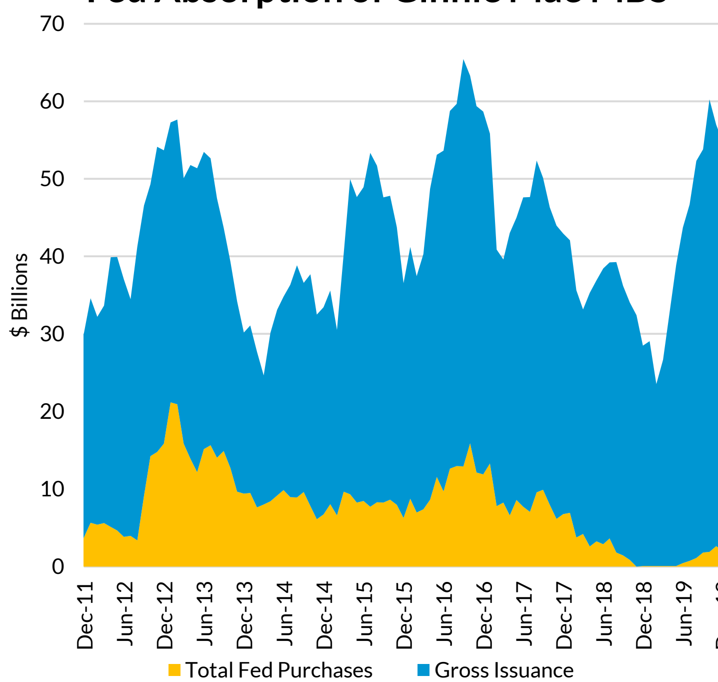
***Sources**: eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note:** Data as of December 2019.*

Fed Absorption of GSE MBS



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

Fed Absorption of Ginnie Mae MBS



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

Disclosures

Tracking Code: 2960732.1.1.GBL.INST
Expiration Date: 02/29/2021