Global Markets Analysis Report

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

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Ginnie Mae
Our Guaranty Matters

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

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HIGHLIGHTS

The impact of CARES Act Forbearance on the US mortgage market.

The recently enacted Coronavirus Aid, Relief, and Economic Security Act (CARES Act) permits borrowers with federally-backed, i.e. Ginnie Mae, Fannie Mae, and Freddie Mac mortgages, to seek up to 12-months of mortgage payment forbearance, if they are experiencing financial hardship due, directly or indirectly, to COVID-19. Under the program, forbearance is available to borrowers of federally-backed mortgages, which represent roughly 70 percent of all outstanding single-family mortgages with an unpaid principal balance of $6.9 trillion.

How many GSE and Ginnie Mae borrowers will take advantage of forbearance?

According to Black Knight, 7.6 percent of Ginnie Mae loans, totaling 922,000 were in forbearance as of April 16th compared to 4.9 percent of GSE loans, totaling 1.37 million loans. Higher forbearance take-up rate for Ginnie Mae loans is consistent with its mission of financing homes for low- and moderate-income homebuyers and first-time homebuyers, whose credit profile is less strong compared to GSE borrowers.

Agency Loans in forbearance as of April 16th

	Ginnie Mae	**Fannie Mae and Freddie Mac**
Estimated loans in forbearance	922,000	1,374,000
Forbearance take-up rate	7.6%	4.9%

Source: Black Knight Financial Services

Although, these numbers provide valuable insight into the financial impact of forbearance, we caution they are very preliminary and likely to rise in the coming weeks as more unemployed borrowers request forbearance. If the take-up rate were to peak at 15 percent for Ginnie Mae (i.e. double the current level), that would equate to 1.8 million loans; a 10 percent take-up rate for GSEs, would equate to 2.8 million loans. The eventual financing needed for cover forbearances will depend on both the take-up rate and the duration of forbearance.

How will forbearance impact the mortgage market?

The CARES Act forbearance will provide immediate relief to impacted borrowers. Although borrowers must eventually repay these funds, in the interim, mortgage servicers (or issuers in the case of Ginnie Mae) are contractually obligated to keep advancing principal and interest payments to MBS investors, as well as real estate taxes and homeowners insurance premiums to relevant entities. This obligation could create major liquidity problems for issuers, as they were never set up, nor expected, to finance nationwide forbearances. In light of this, Ginnie Mae recently announced COVID-19 Pass-Through Assistance Program (PTAP/C19) to assist its issuers in covering any shortfall in the P&I owed to holders of Ginnie Mae securities.

HIGHLIGHTS

At the same time, the GSEs or the Federal Housing Finance Agency (FHFA) haven't yet announced any facility to fund forbearances for GSE loans. Most large servicers service both Ginnie and GSE loans, with the latter accounting for two-thirds of agency loans outstanding. Thus, absent a liquidity facility for GSE loans, the risk is that GSE book will become the main source of financial stress in the servicing market. If a servicer were to become insolvent, it is possible that both Ginnie Mae and GSE may need to transfer servicing to a different entity.

A related issue is that PTAP/C19 won't cover advances servicers have to make for real estate taxes and insurance payments. While these account for a smaller share of the monthly payment (under 30 percent), this issue could present liquidity risk if forbearance take-up rates were to skyrocket.

In any event, financial stress in the servicing market will not impact payments to MBS investors. Ginnie Mae MBS security holders are protected without exception by the full faith and credit guaranty of the United States of America and will be paid on time and in full.

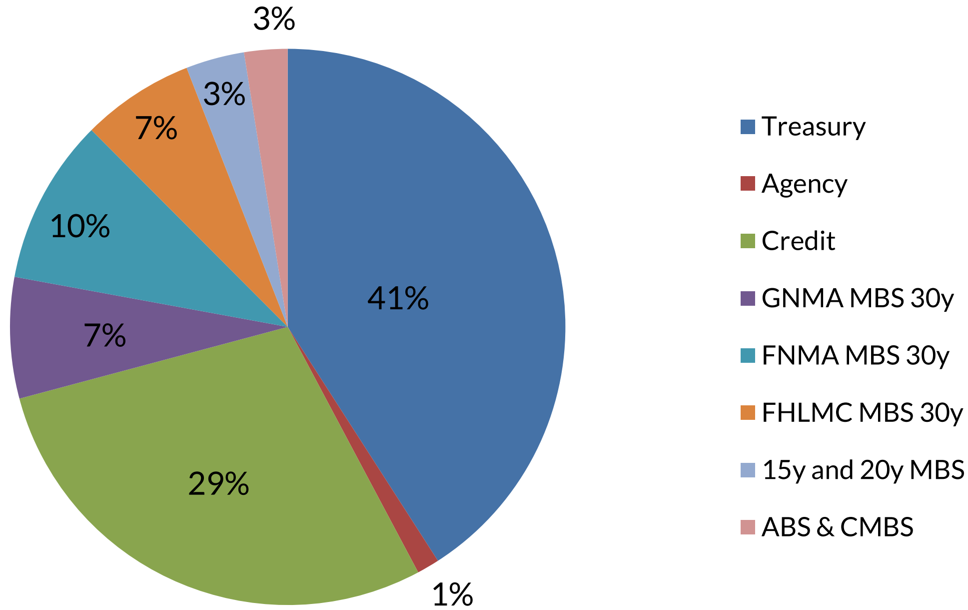
***Highlights this month*:**

- Government bond yields across the globe experienced significant volatility in March 2020 in response to the economic impact of the COVID-19 shock (page 6).
- Ginnie Mae II OAS tightened substantially in March while those on intermediate credit widened, resulting in Ginnies significantly outperforming corporates in March (page 18).
- Agency gross issuance remained very robust in Jan and Feb 2020, more than doubling compared to the same period last year (page 20).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

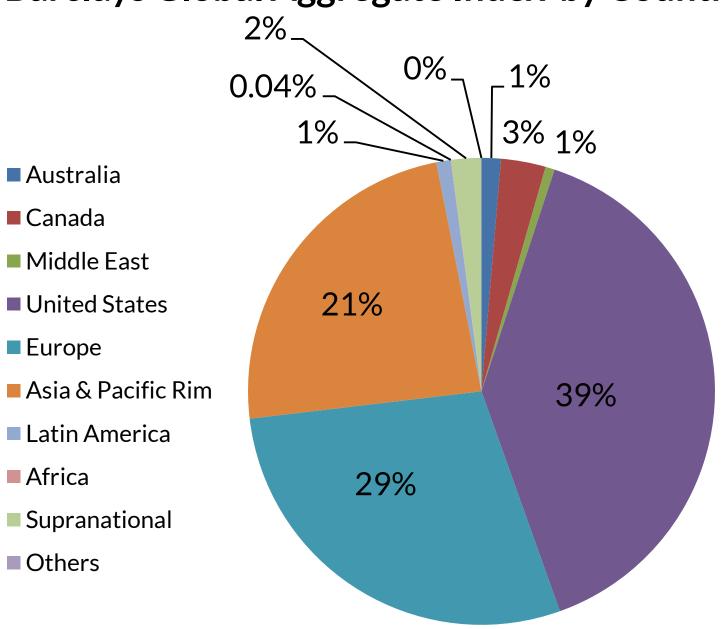
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 27 percent of the Barclays US Aggregate Index- less than either the US Treasury share (41 percent) or the US Credit share (29 percent). Fannie Mae 30-year MBS accounts for 10 percent of the overall index, the largest MBS component, while Ginnie Mae 30-year MBS and Freddie Mac 30-year MBS both comprise 7 of the market. Mortgages with terms of 15 and 20 years comprise the remaining balance (3 percent) of the Barclays US Aggregate Index. 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



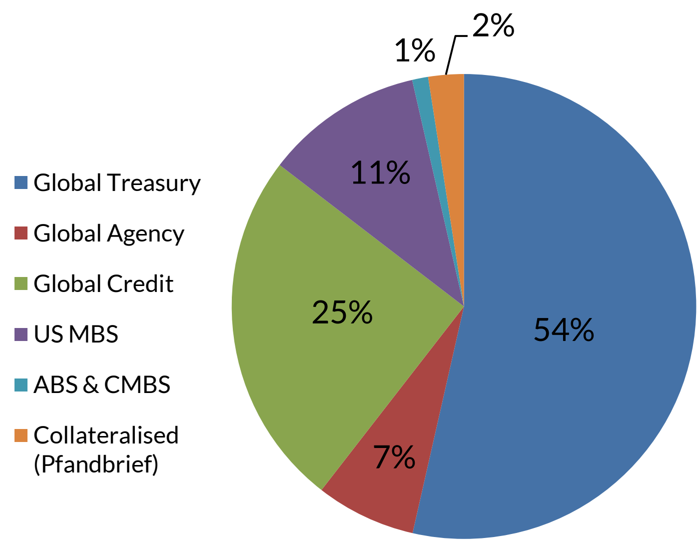
Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of March 2020.*
Note*: Numbers in chart may not add to 100 percent due to rounding.*

Barclays Global Aggregate Index by Country



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

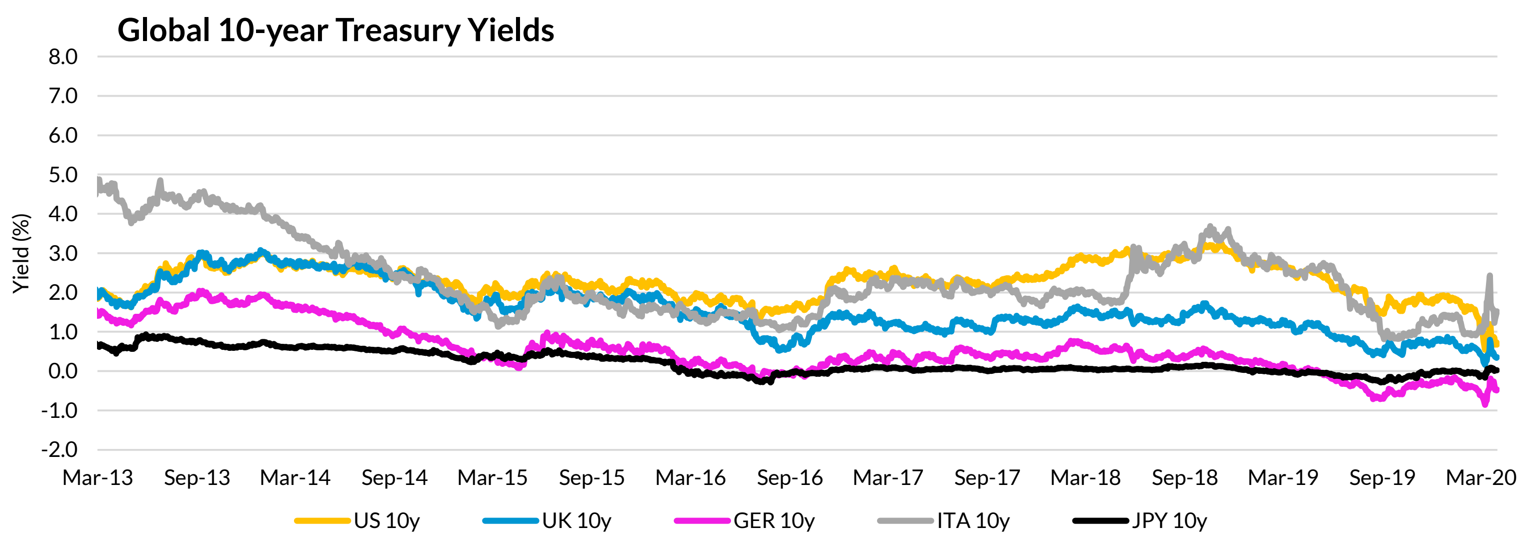
Barclays Global Aggregate Index by Sector



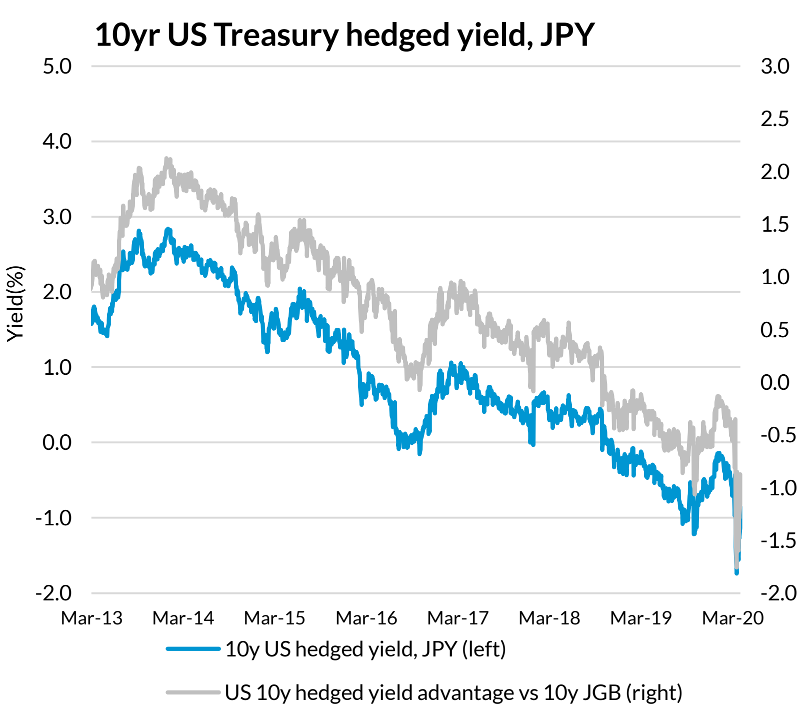
Sources: *Bloomberg and State Street Global Advisors*
Note*: Data as of March 2020.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

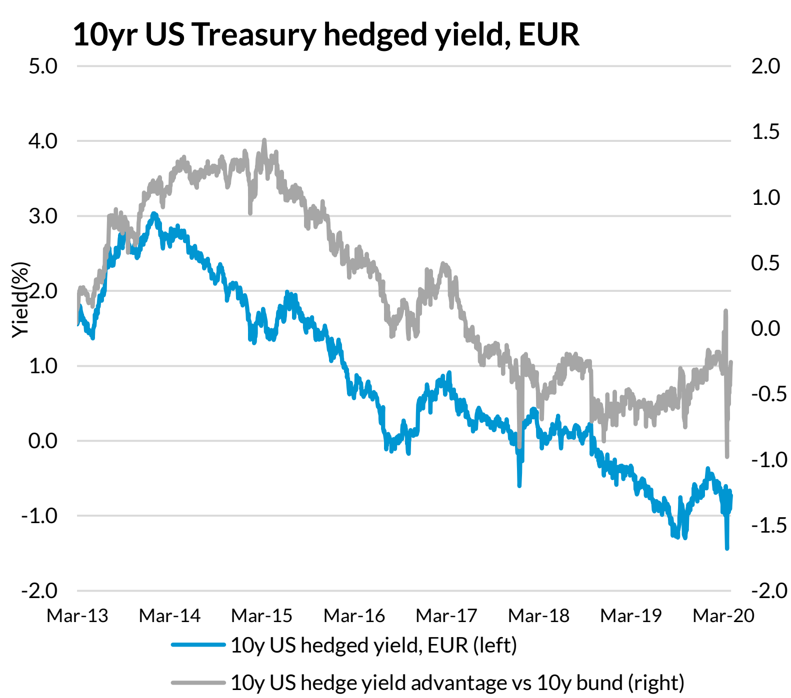
Government bond yields across the globe experienced significant volatility in March 2020 in response to the economic impact of the COVID-19 shock. The yield on the 10-year treasury fell by 48 bps to 0.67 percent. With this drop, US treasury yields fell below the yield on the Italian 10-year note, which increased by 42 basis points to 1.52 percent. The yield on the UK 10-year bond fell by 9 bps to 0.36 percent, the Japanese 10-year government bond yield increased by 18 bps to 0.02 percent, and the German 10-year yield was up by 14 bps to -0.47 percent in March. At the end of March, the hedged yield differential between the 10-year Treasury and the 10-year JGB stood at -87 bps, a decrease of 32 bps since February 2020. The hedged yield differential between the 10-year Treasury and the 10-year Bund stood at -26 bps, an increase of 9 bps since the end of February 2020.



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



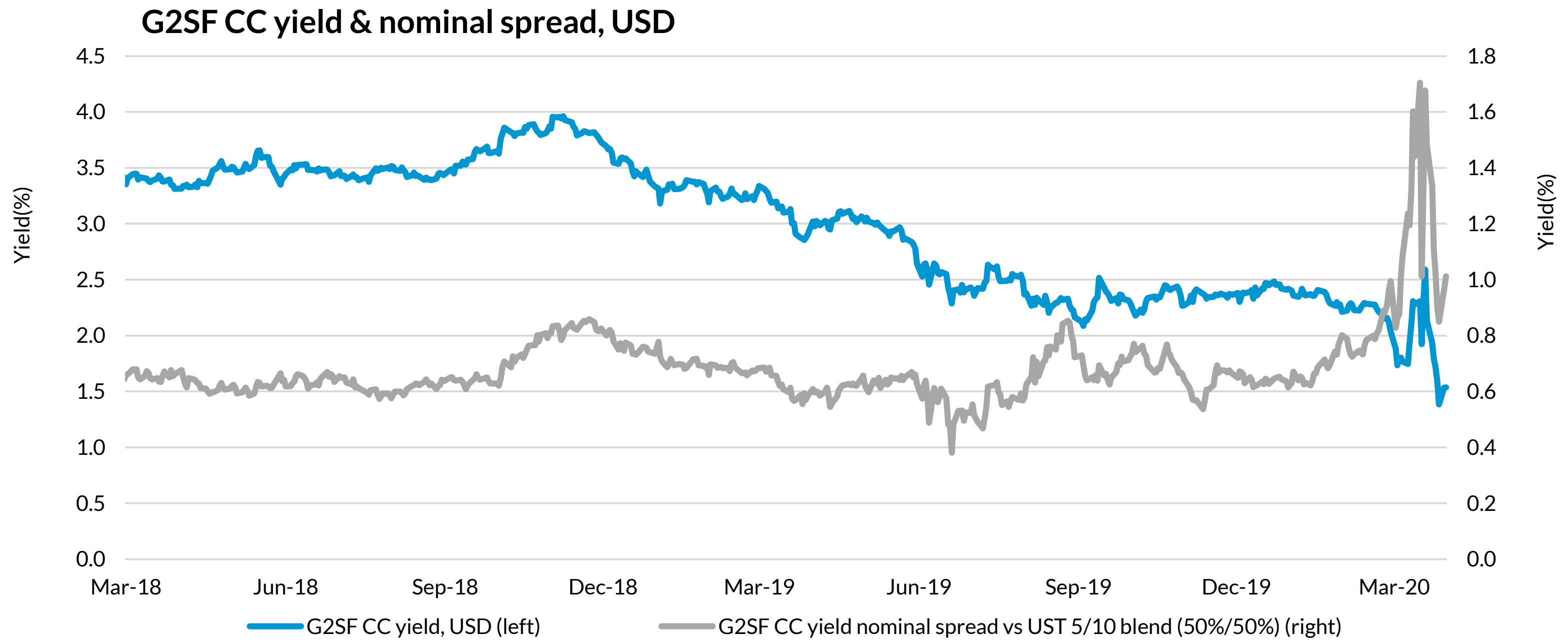
Sources: *Bloomberg and State Street Global Advisors.*
Note: *Data as of March 2020.*



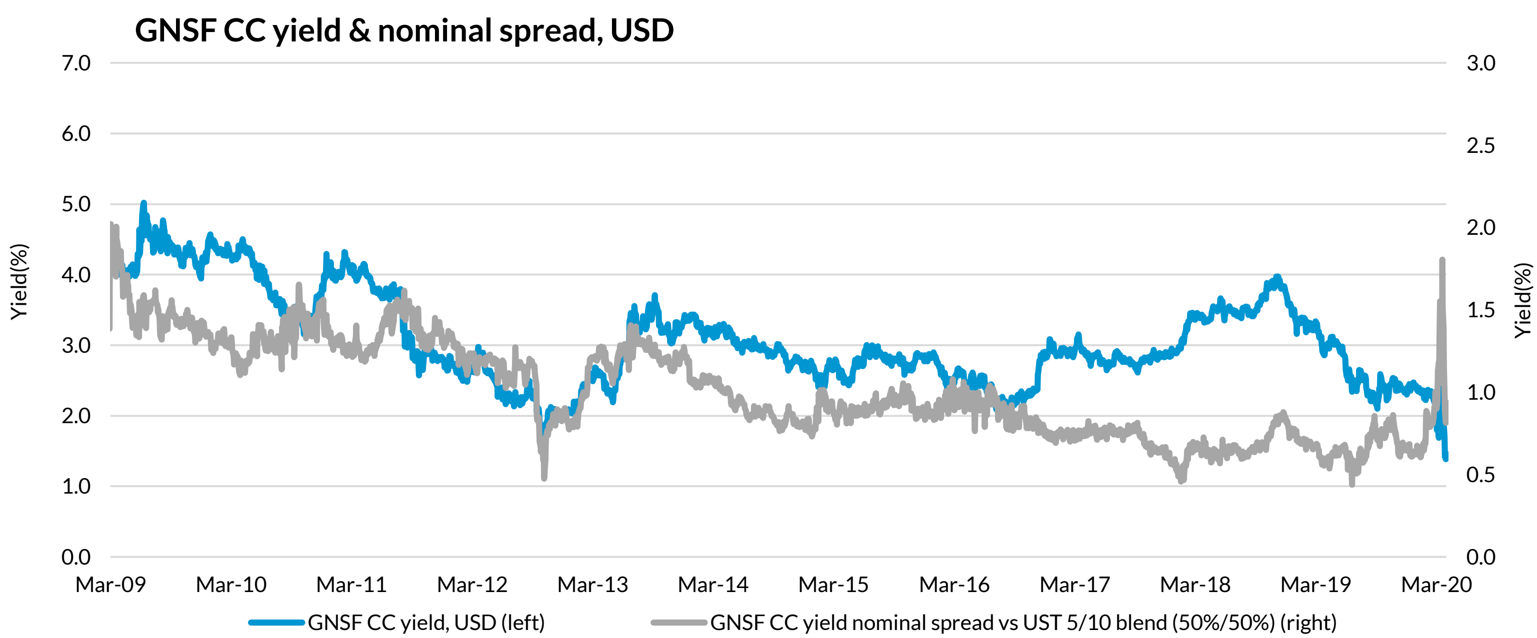
Sources: *Bloomberg and State Street Global Advisors*
Note*: Data as of March 2020.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

Nominal yields fell in March 2020, with GNMA II yields declining 50 bps to 1.54% and GNMA I yields declining 58 bps to 1.46% respectively. The spread between agency mortgages and U.S. Treasuries widened dramatically in the first half the month, then ended the month largely unchanged after extensive Federal Reserve purchases of the agency MBS and other actions to stabilize the markets. At the end of March, current coupon Ginnie Mae securities outyield their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 101 bps on the G2SF and 94 bps on the GNSF, an increase of 2 and a decrease of 6 bps respectively since last month.



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

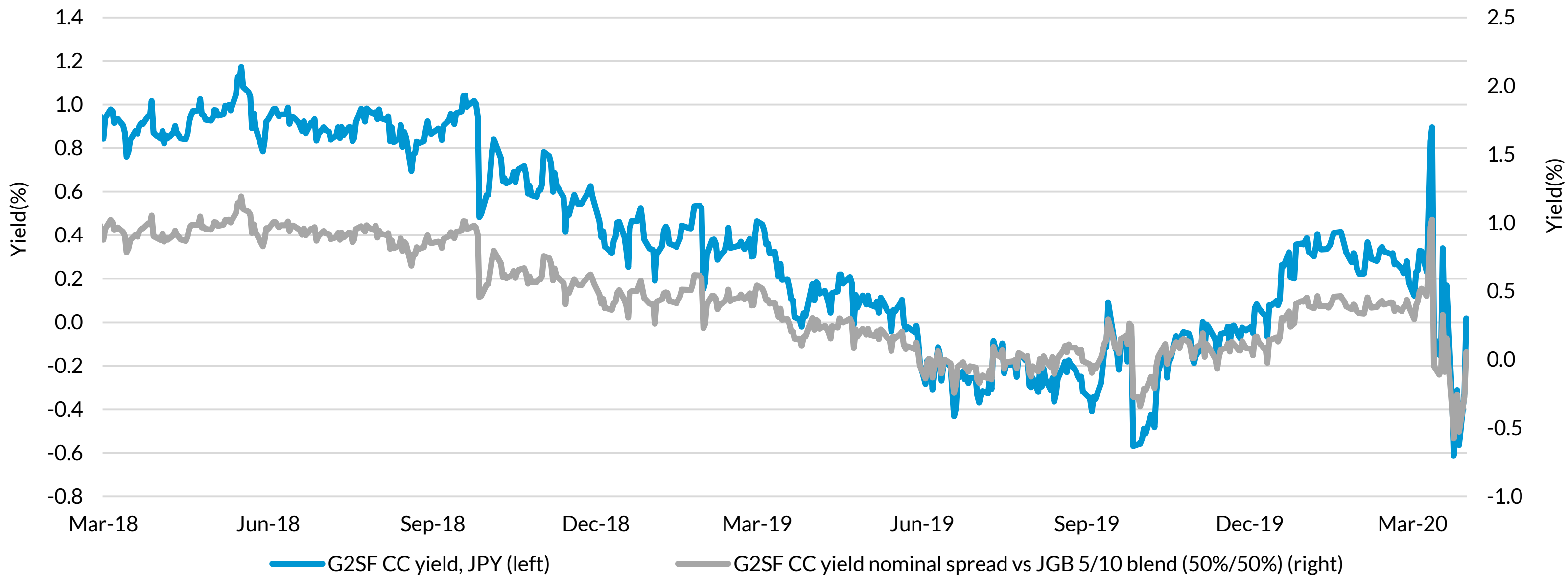


Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of March 2020.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

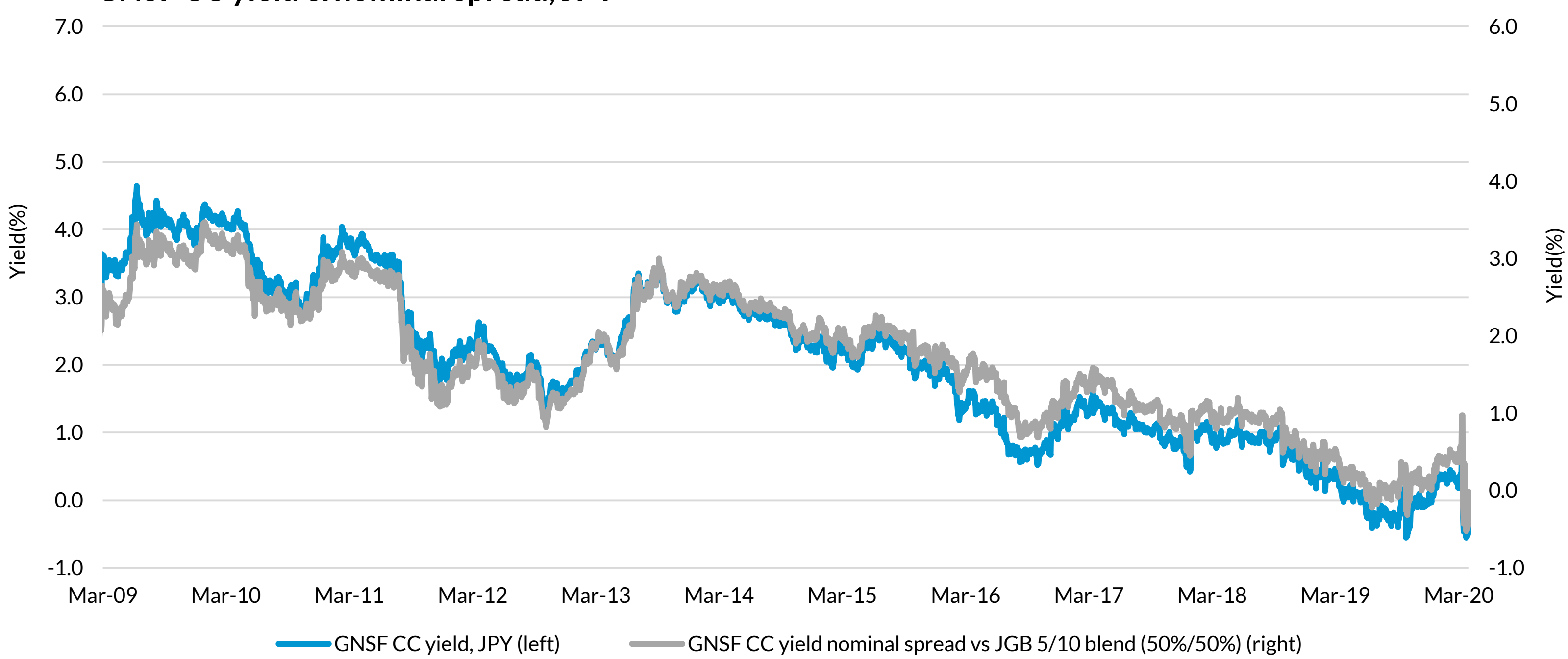
If Ginnie Mae securities are hedged into Japanese Yen, they look fair to poor on a yield basis versus the JGB 5/10 blend. More precisely, hedged into Japanese yen, the G2SF and GNSF have a 5 and -2 bp yield versus the JGB 5/10 blend. This represents a 33 and 41 bp narrowing for G2SF and GNSF, respectively, since the end of February 2020.

G2SF CC yield & nominal spread, JPY



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

GNSF CC yield & nominal spread, JPY

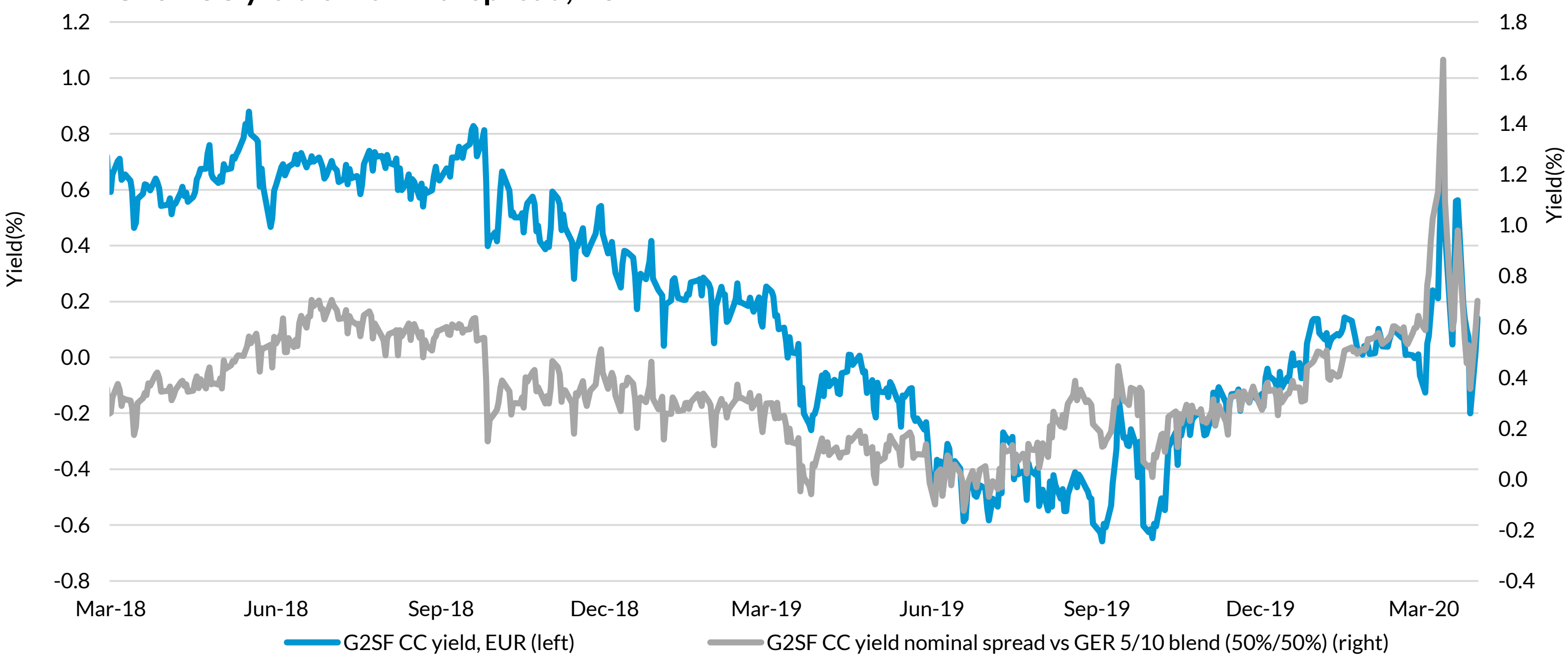


***Sources:** Bloomberg and State Street Global Advisors. **Note:** Data as of March 2020.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

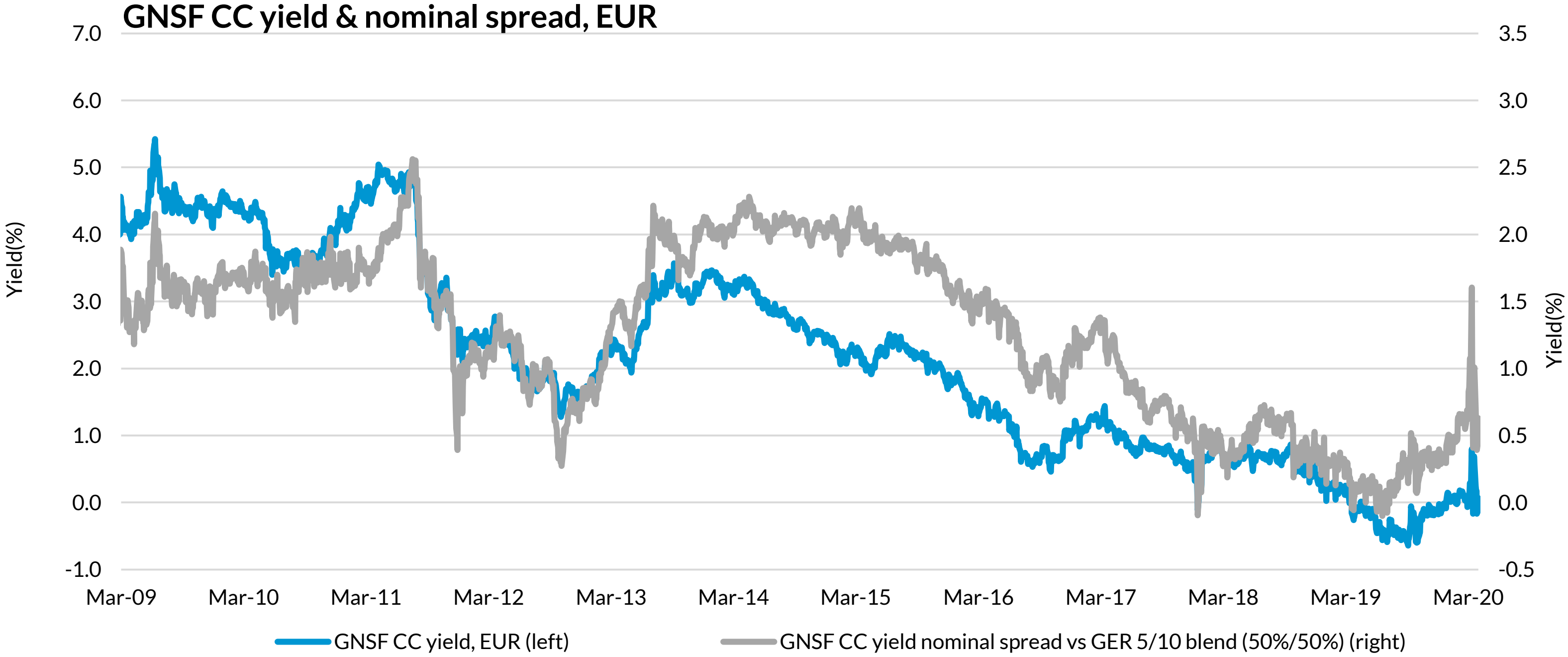
If Ginnie Mae securities are hedged into Euros, they look favorable on a yield basis versus the German 5/10 Blend. The figures below show that at the end of March, the current coupon G2SF and GNSF hedged into euros have a 70 and 63 bp higher yield than the average of the German 5/10, respectively. This represents an 8 bp increase for the G2SF and a 1 bp increase for the GNSF since the end of February 2020.

G2SF CC yield & nominal spread, EUR



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

GNSF CC yield & nominal spread, EUR

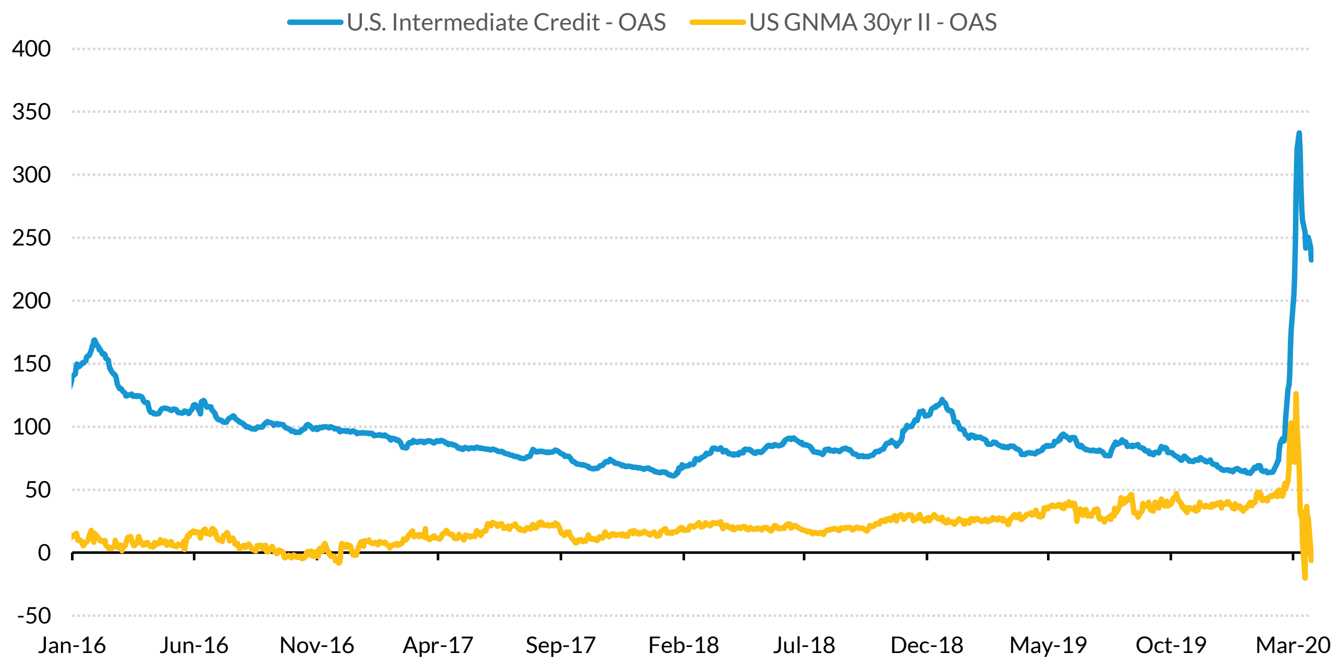


Sources: *Bloomberg and State Street Global Advisors.* ***Note:*** *Data as of March 2020.*

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 tightened steadily through Jan 2020. OAS on intermediate credit fell while on GNMA II, it increased. In February and March 2020, the spread on both GNMA and corporates initially widened in response to the COVID-19 panic, followed by subsequent tightening, much more so for Ginnies, resulting in a substantial widening of the spread differentials between the securities. In the event COVID-19 leads to an economic downturn, we would expect Ginnie Mae securities to continue to outperform as investor concern about corporate credit risk moves front and center.

G2 30 MBS versus Intermediate Credit



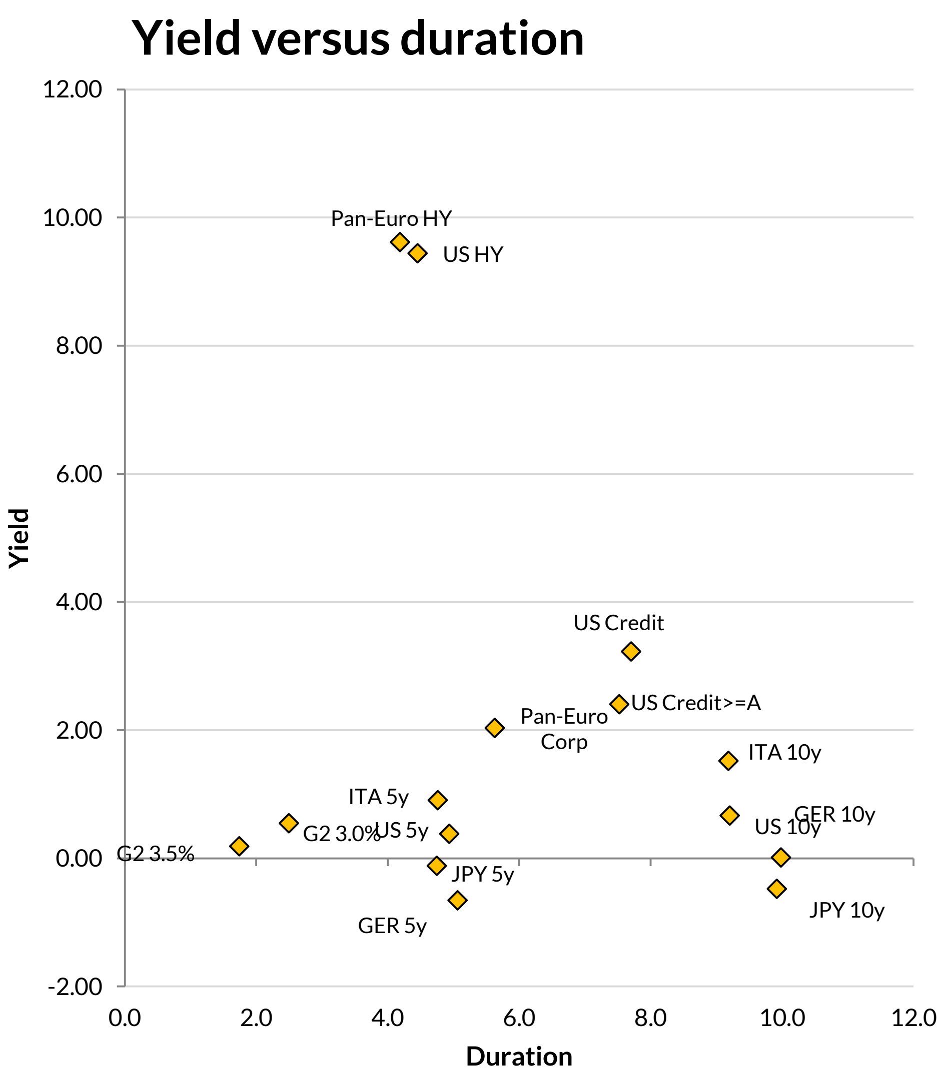
***Sources:** State Street Global Advisors. **Note:** Data as of March 2020.*

G2 30 MBS and Intermediate Credit OAS

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

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

US MBS yields are about the same or higher than most government securities with the same or longer durations. The only asset class with significantly more yields are the US and Pan-Euro high yield and credit 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, which has moved front and center in light of COVID-19.



Security	Duration	Yield
US 5y	4.9	0.38
US 10y	9.2	0.67
GNMA II 3.0%	2.5	0.55
GNMA II 3.5%	1.7	0.19
JPY 5y	4.7	-0.12
JPY 10y	10.0	0.01
GER 5y	5.1	-0.66
GER 10y	9.9	-0.47
ITA 5y	4.8	0.91
ITA 10y	9.2	1.52
US credit	7.7	3.23
US credit >= A	7.5	2.41
US HY	4.5	9.44
Pan-Euro Corp	5.6	2.04
Pan-Euro HY	4.2	9.62

***Sources:** Bloomberg and State Street Global Advisors. **Note**: Yields are in base currency of security and unhedged. Data as of March 2020.*

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The average return on the Ginnie Mae index over the past decade is less than other indices. However, the standard deviation of the Ginnie Mae index is the lowest of any sector, as it has the least price volatility over a 1, 3, 5 and 10 year horizon. The result: The Sharpe Ratio, or excess return per unit of risk for the Ginnie Mae index is highest among all indices over a 1, 5 and 10-year horizon, and second only to the US Treasury Index over a 3-year horizon.

	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	0.55	1.05	0.44	-0.24	-0.53	-0.78
3 year	0.32	0.48	0.36	0.03	0.09	-0.09
5 year	0.23	0.30	0.29	0.03	0.25	0.06
10 year	0.27	0.32	0.41	0.32	0.48	0.46

	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	0.42	0.92	0.30	-0.18	-0.67	-0.73
3 year	0.18	0.34	0.22	0.09	-0.05	-0.03
5 year	0.14	0.21	0.20	0.09	0.16	0.12
10 year	0.23	0.27	0.36	0.34	0.43	0.49

	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	0.57	1.59	2.57	2.38	3.57	4.23
3 year	0.67	1.21	1.67	1.44	2.29	2.58
5 year	0.60	1.13	1.49	1.35	2.15	2.25
10 year	0.66	1.07	1.37	1.34	2.00	2.00

	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	0.74	0.58	0.12	-0.08	-0.19	-0.17
3 year	0.27	0.28	0.13	0.06	-0.02	-0.01
5 year	0.23	0.19	0.13	0.07	0.08	0.05
10 year	0.34	0.25	0.26	0.26	0.22	0.24

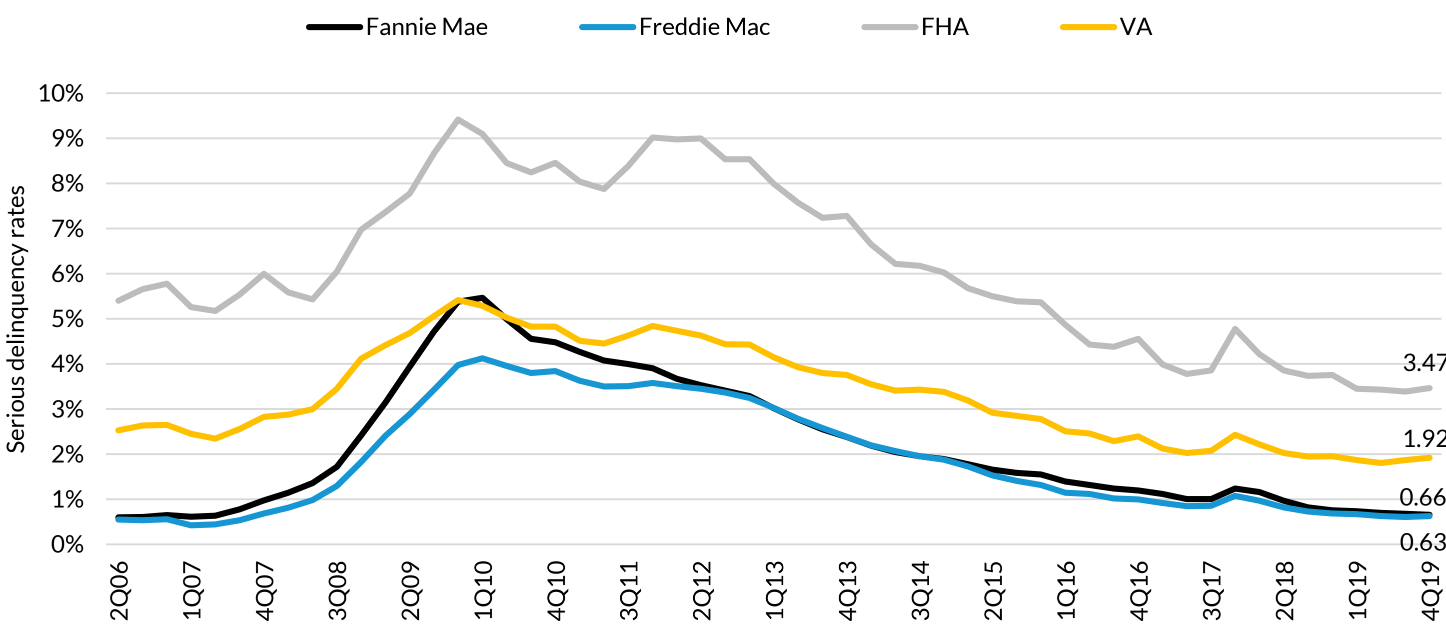
**Assumes 2% capitalization max per issuer on high yield indices*

***Sources:** Barclays Indices, Bloomberg and State Street Global Advisors* ***Note:** Data as of March 2020.*

State of the US Housing Market

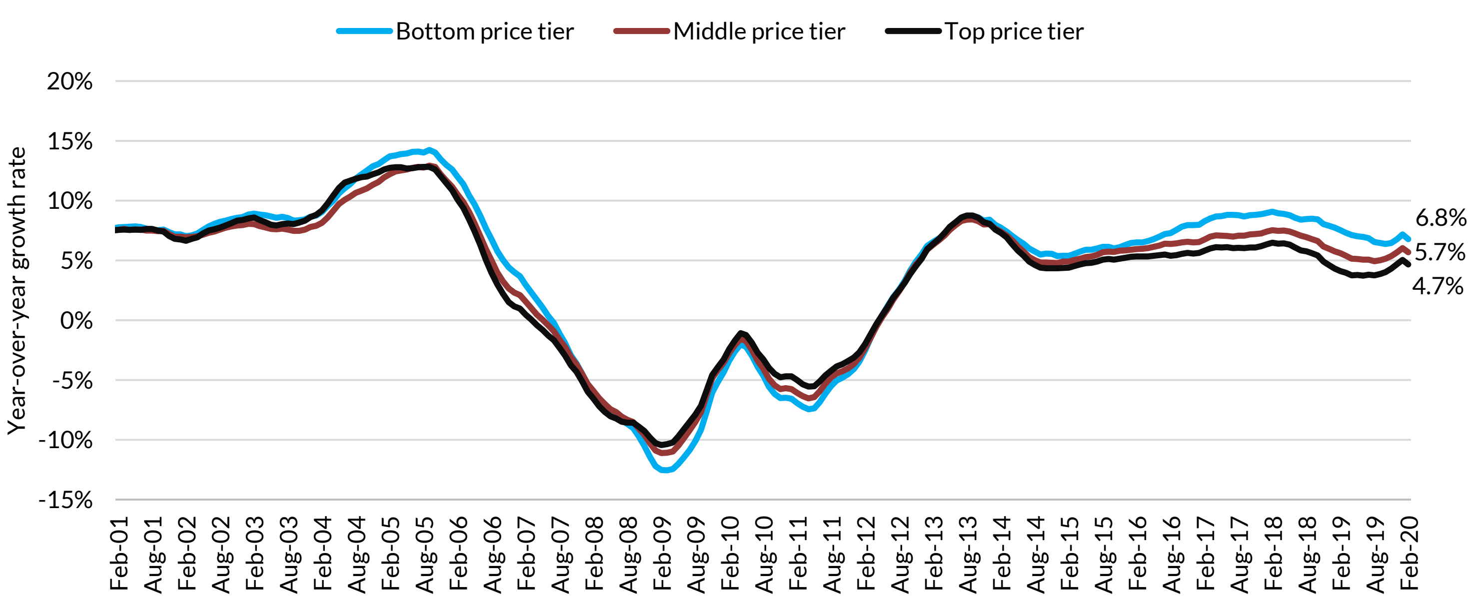
Serious delinquencies rates for single-family GSE loans, FHA loans and VA loans grew slightly in Q4 2019. GSE delinquencies remain just above their 2006-2007 level, while FHA and VA delinquencies (which are higher than their GSE counterparts) are well below 2006-2007 levels. The bottom chart shows nationwide 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. Prices at the lower end of the market rose by 6.8 percent for 12 months ended February 2020, much higher than the 4.7 percent for the top end of the market. Year-over-year price growth in February was lower than January for all price tiers.

Serious Delinquency Rates: Single-Family Loans



Sources: *Fannie Mae, Freddie Mac, MBA Delinquency Survey and Urban Institute.*
Note: *Serious delinquency is defined as 90 days or more past due or in the foreclosure process. Data as of Q4 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 February 2020.*

State of the US Housing Market

Nationally, nominal home prices have increased by 55.6 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 16.1 percent. The picture is very different across states, with many states well in excess of the prior peak, while two states remain 9 percent or more below peak levels: Connecticut (12.8% below) and Illinois (9.5% below).

	HPI Changes				
State	**2000 to Peak**	**Peak to Trough**	**Trough to Current**	**YOY**	**Current HPI % Above Peak**
National	75.3%	-25.4%	55.6%	4.8%	16.1%
Alabama	43.9%	-15.2%	33.6%	6.5%	13.2%
Alaska	69.4%	-3.0%	23.6%	3.3%	19.8%
Arizona	110.0%	-47.9%	87.1%	7.3%	-2.6%
Arkansas	41.4%	-10.4%	26.8%	4.1%	13.7%
California	155.0%	-43.3%	93.4%	4.4%	9.6%
Colorado	40.3%	-12.8%	81.0%	4.3%	57.8%
Connecticut	92.3%	-24.7%	15.8%	3.4%	-12.8%
Delaware	94.9%	-23.9%	32.4%	5.1%	0.7%
District of Columbia	174.4%	-13.6%	56.8%	2.7%	35.4%
Florida	128.7%	-46.9%	74.4%	4.9%	-7.4%
Georgia	38.3%	-31.8%	68.5%	5.9%	14.9%
Hawaii	162.8%	-22.5%	50.0%	1.6%	16.3%
Idaho	71.8%	-28.7%	93.5%	12.2%	37.9%
Illinois	61.4%	-34.5%	38.1%	2.2%	-9.5%
Indiana	21.3%	-7.8%	37.8%	6.6%	27.0%
Iowa	28.3%	-4.7%	26.8%	4.0%	20.8%
Kansas	34.6%	-9.2%	47.2%	7.7%	33.7%
Kentucky	29.7%	-7.5%	34.2%	5.2%	24.1%
Louisiana	48.8%	-5.1%	24.1%	3.0%	17.7%
Maine	82.1%	-12.4%	45.6%	11.2%	27.6%
Maryland	129.3%	-28.6%	27.8%	3.4%	-8.8%
Massachusetts	92.4%	-22.9%	56.9%	5.4%	20.9%
Michigan	23.9%	-39.5%	77.5%	4.6%	7.3%
Minnesota	66.4%	-27.8%	56.0%	4.6%	12.7%
Mississippi	41.1%	-13.7%	29.1%	5.9%	11.5%
Missouri	42.7%	-14.9%	36.6%	5.2%	16.2%
Montana	81.6%	-11.2%	51.8%	6.5%	34.8%
Nebraska	26.6%	-6.6%	43.4%	5.1%	33.9%
Nevada	126.9%	-59.2%	124.3%	3.8%	-8.4%
New Hampshire	90.7%	-23.6%	44.3%	7.7%	10.2%
New Jersey	117.9%	-28.0%	28.4%	4.4%	-7.5%
New Mexico	67.0%	-16.2%	27.1%	7.5%	6.4%
New York	98.2%	-15.1%	42.8%	4.9%	21.2%
North Carolina	40.7%	-15.7%	38.7%	5.2%	16.9%
North Dakota	53.4%	-3.8%	55.9%	4.1%	49.9%
Ohio	21.1%	-18.4%	38.3%	6.1%	12.9%
Oklahoma	37.5%	-2.4%	21.4%	5.4%	18.5%
Oregon	82.0%	-28.0%	80.5%	4.9%	29.9%
Pennsylvania	70.0%	-11.7%	25.8%	4.7%	11.1%
Rhode Island	130.7%	-34.6%	56.4%	8.5%	2.4%
South Carolina	44.9%	-19.5%	38.1%	5.5%	11.2%
South Dakota	45.1%	-3.8%	47.3%	4.4%	41.7%
Tennessee	35.2%	-11.9%	47.8%	6.8%	30.2%
Texas	33.4%	-5.7%	53.2%	4.2%	44.4%
Utah	54.6%	-21.9%	79.2%	7.9%	39.9%
Vermont	83.5%	-7.5%	35.8%	7.8%	25.6%
Virginia	99.4%	-22.8%	29.1%	4.5%	-0.3%
Washington	85.3%	-28.7%	90.9%	6.6%	36.1%
West Virginia	42.7%	-6.6%	28.5%	4.4%	20.1%
Wisconsin	44.7%	-16.3%	35.8%	4.4%	13.6%
Wyoming	77.4%	-5.7%	32.7%	7.2%	25.2%

***Sources:** Black Knight and Urban Institute. **Note:** HPI data as of January 2020. Negative sign indicates that state is above earlier peak. Peak refers to the month when HPI reached the highest level for each state/US during the housing boom period, ranging from 09/2005 to 09/2008. Trough represents the month when HPI fell to the lowest level for each state/US after the housing bust, ranging from 01/2009 to 03/2012. Current is 01/2020, the latest HPI data period.*

State of the US Housing Market

Ginnie Mae MBS constitute 28.4 percent of outstanding agency issuance by loan balance and 32.5 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 14.3 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.

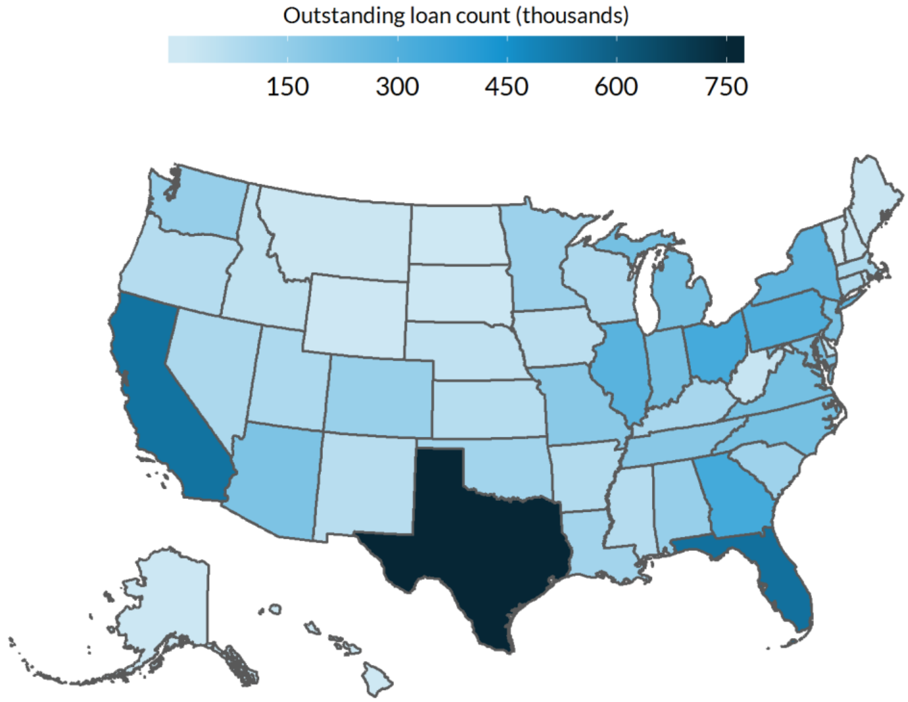
	Agency Issuance (past 1 year)				Agency Outstanding			
State	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)
National	32.5%	2,179,767	241.1	260.6	28.4%	11,472,513	163.7	191.2
Alabama	44.7%	39,361	182.2	204.6	43.0%	238,818	128.4	153.9
Alaska	53.6%	6,170	300.0	267.7	49.5%	38,993	231.4	200.7
Arizona	32.7%	79,770	237.6	243.3	27.9%	320,758	165.4	183.2
Arkansas	42.7%	21,357	156.6	183.8	42.7%	140,288	111.0	139.3
California	26.6%	199,655	381.1	373.5	18.7%	792,115	265.8	272.0
Colorado	31.9%	67,674	320.7	310.3	23.9%	239,796	220.6	231.5
Connecticut	31.8%	17,802	227.2	246.5	28.3%	110,794	181.8	189.3
Delaware	38.9%	9,562	231.4	245.3	34.4%	52,483	179.0	185.9
District of Columbia	17.4%	1,701	460.2	411.4	14.3%	10,074	299.1	307.1
Florida	41.1%	189,590	231.2	228.1	33.7%	846,872	167.4	174.4
Georgia	40.7%	98,840	205.5	233.2	36.6%	520,854	143.8	172.8
Hawaii	44.5%	8,174	533.6	425.5	27.8%	31,863	382.3	319.4
Idaho	31.5%	17,429	237.8	235.3	28.2%	80,110	156.4	173.7
Illinois	24.5%	62,886	193.3	222.1	23.2%	376,178	140.2	161.6
Indiana	35.7%	53,427	161.0	179.1	35.1%	310,161	111.1	128.7
Iowa	24.5%	14,348	162.3	185.0	23.9%	87,956	113.7	133.4
Kansas	34.4%	16,770	171.7	197.6	33.7%	106,830	120.0	140.8
Kentucky	38.3%	29,810	166.2	186.5	37.1%	170,366	121.3	134.7
Louisiana	43.3%	31,668	183.4	211.3	40.5%	190,295	137.1	160.3
Maine	33.1%	7,800	202.7	221.5	30.0%	41,363	151.8	163.1
Maryland	43.5%	57,977	305.8	297.1	37.0%	307,582	230.1	221.1
Massachusetts	21.7%	27,341	320.2	322.6	17.5%	125,899	236.6	233.0
Michigan	23.5%	52,757	164.8	192.8	23.2%	312,045	113.3	137.1
Minnesota	23.1%	32,100	220.3	235.1	21.7%	192,433	156.0	173.7
Mississippi	50.9%	18,835	166.9	188.3	48.9%	116,854	120.6	143.4
Missouri	32.8%	45,403	170.0	195.4	32.8%	268,249	120.5	141.2
Montana	30.4%	6,832	240.1	243.0	27.0%	37,142	169.6	180.8
Nebraska	32.2%	11,607	185.1	189.8	30.8%	74,566	122.6	139.5
Nevada	38.4%	36,933	276.1	258.3	31.3%	143,796	189.4	197.0
New Hampshire	30.9%	9,317	257.2	250.2	26.7%	45,522	193.3	184.5
New Jersey	28.4%	46,111	274.4	296.9	25.4%	252,327	209.4	221.3
New Mexico	42.4%	15,343	199.1	209.6	40.6%	99,251	140.7	154.8
New York	24.3%	45,366	267.3	300.2	23.8%	340,008	186.6	217.6
North Carolina	35.1%	80,117	203.4	229.8	31.7%	435,185	141.4	169.1
North Dakota	28.0%	3,047	228.8	226.0	24.4%	16,989	166.7	168.7
Ohio	33.4%	71,912	159.5	176.3	33.6%	458,622	112.1	128.4
Oklahoma	45.3%	28,272	168.0	189.0	46.1%	198,249	119.5	141.8
Oregon	28.6%	30,168	285.9	285.2	21.2%	128,452	200.2	212.1
Pennsylvania	31.3%	63,493	182.9	216.7	30.7%	422,562	135.6	160.0
Rhode Island	36.6%	7,455	252.2	246.1	31.8%	37,459	189.4	185.6
South Carolina	40.6%	47,280	205.4	216.7	35.4%	230,287	147.5	163.4
South Dakota	35.4%	5,874	196.7	206.7	33.5%	31,393	143.1	152.5
Tennessee	39.2%	56,094	207.7	226.4	36.9%	300,018	139.5	168.2
Texas	35.6%	183,991	219.6	237.1	33.7%	1,096,930	144.1	178.3
Utah	26.1%	31,210	277.2	282.4	23.8%	128,222	192.6	214.7
Vermont	25.3%	2,290	207.1	221.1	19.5%	13,059	164.0	160.5
Virginia	43.9%	84,551	298.5	298.5	38.6%	455,650	219.9	219.4
Washington	30.7%	64,702	323.6	327.7	24.5%	274,539	220.2	236.0
West Virginia	50.8%	9,637	168.9	171.2	44.8%	55,665	125.9	128.0
Wisconsin	21.0%	24,711	186.7	200.4	19.1%	139,323	133.2	143.3
Wyoming	41.3%	4,976	229.4	236.0	37.7%	27,306	176.8	178.8

Sources:** eMBS and Urban Institute.* ***Note: *Ginnie Mae outstanding share are based on loan balance as of February 2020. Ginnie Mae issuance is based on the last 12 months, from February 2019 to February 2020.*

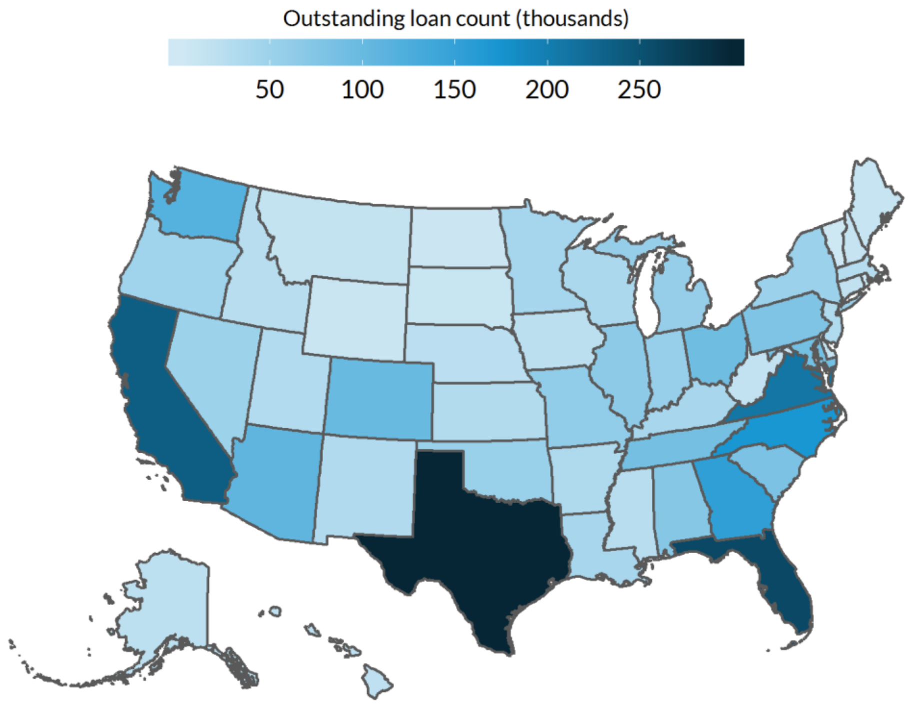
FHA and VA Outstanding Loan Count

Texas , Florida, and California are the top 3 states for FHA and VA lending as measured by the number of loans outstanding. As of February 2020, TX has 760,000 million FHA and 300,000 VA loans outstanding, FL had 550,000 FHA and 260,000 VA loans outstanding, and CA had 530,000 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

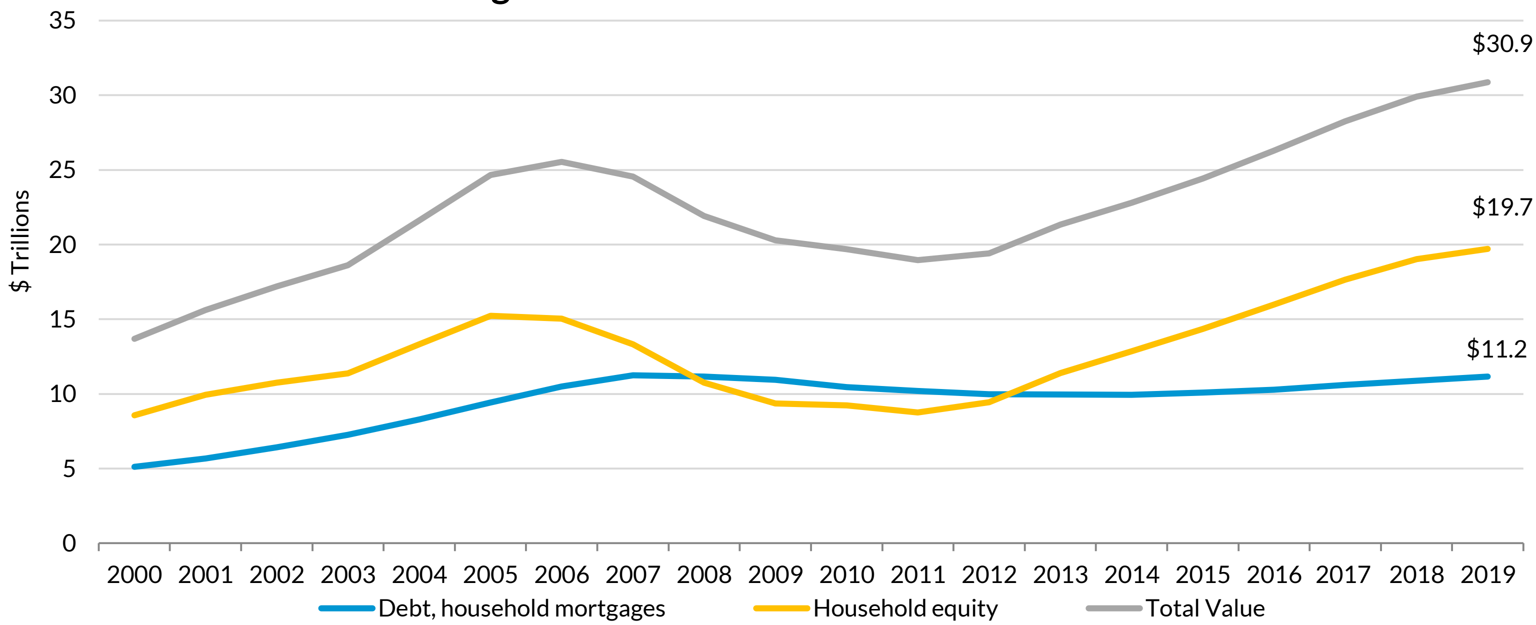


Sources: *eMBS and Urban Institute.* ***Note:*** *Ginnie Mae outstanding share are based on loan balance as of February 2020.*

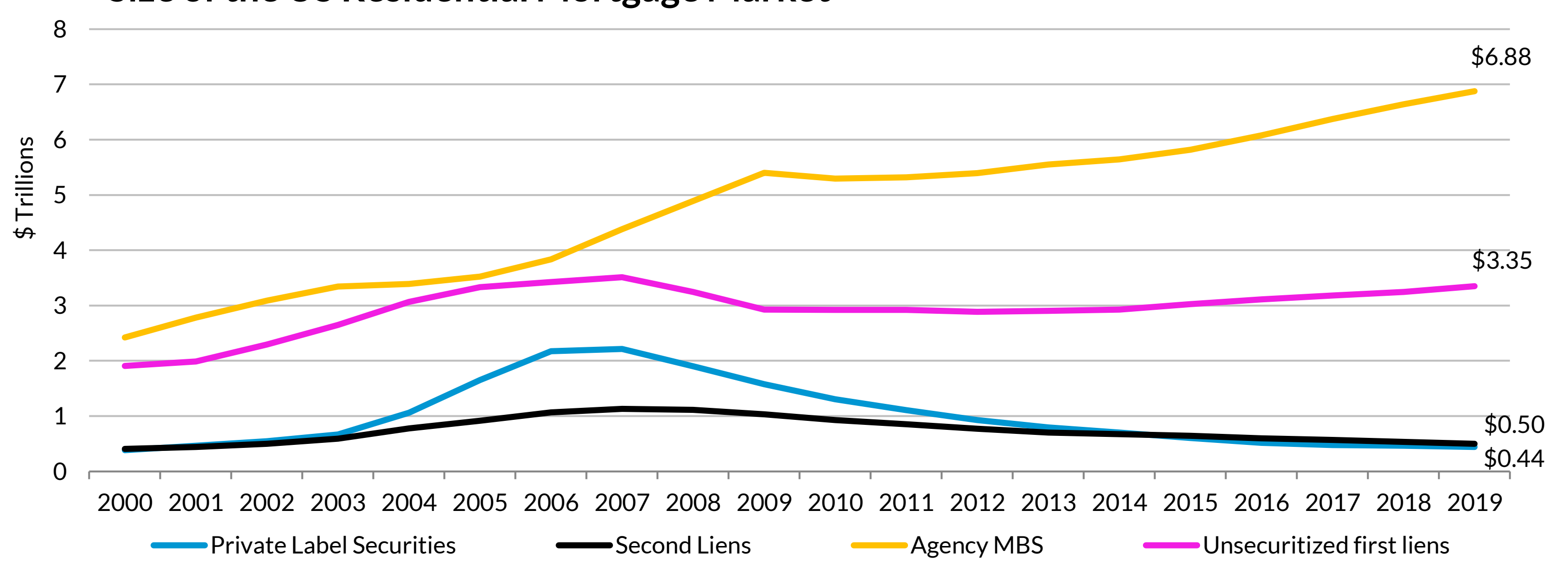
State of the US Housing Market

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 Q4 2019 was no different. Total mortgage debt outstanding and household equity were up slightly from Q3 2019 to $11.2 and $19.7 trillion in Q4 2019, bringing the total value of the housing market to $30.9 trillion as of the year's end. The market is now 20.8 percent higher than the pre-crisis peak in 2006. Agency MBS account for 61.6 percent of the total mortgage debt outstanding, private-label securities make up 4.0 percent, and unsecuritized first liens make up 30.0 percent. Second liens comprise the remaining 4.5 percent of the total.

Value of the US Housing Market



Size of the US Residential Mortgage Market

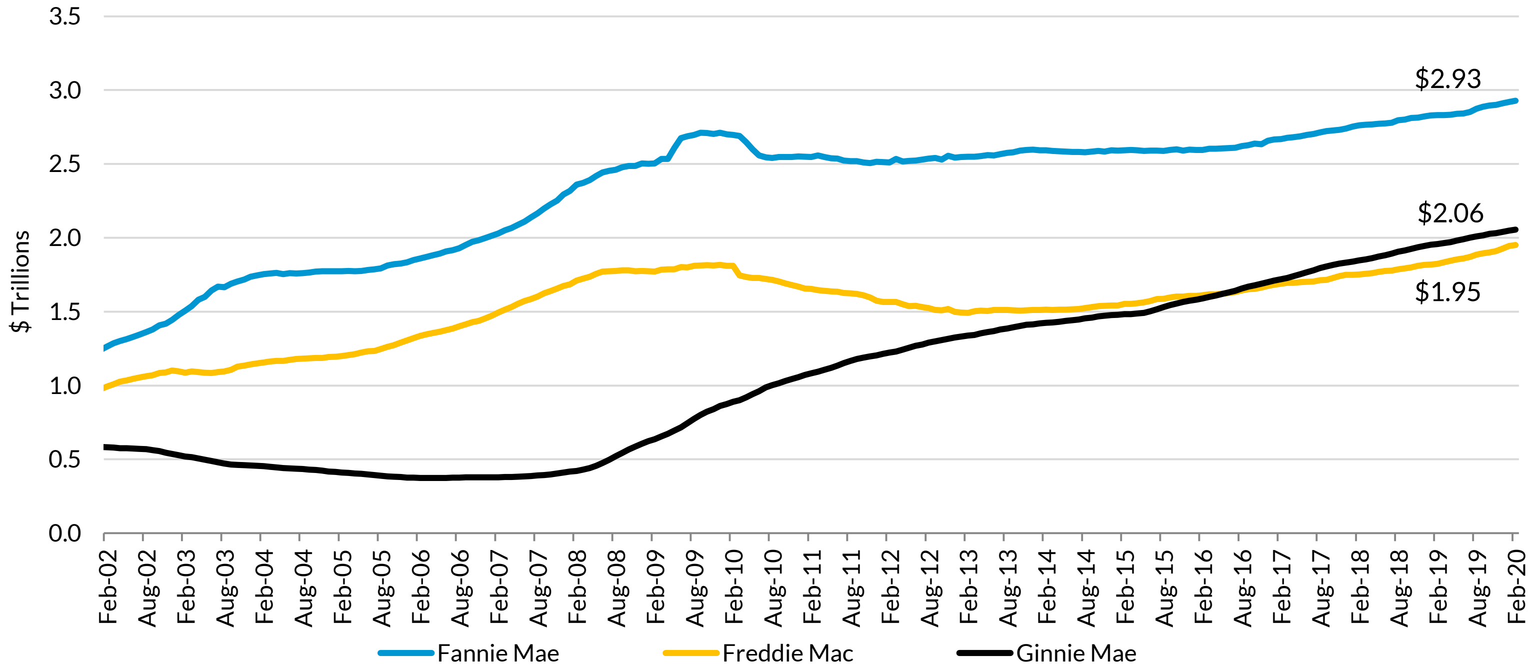


Sources: *Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute. Last updated March 2020.*
Note: *Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions.*

State of the US Housing Market

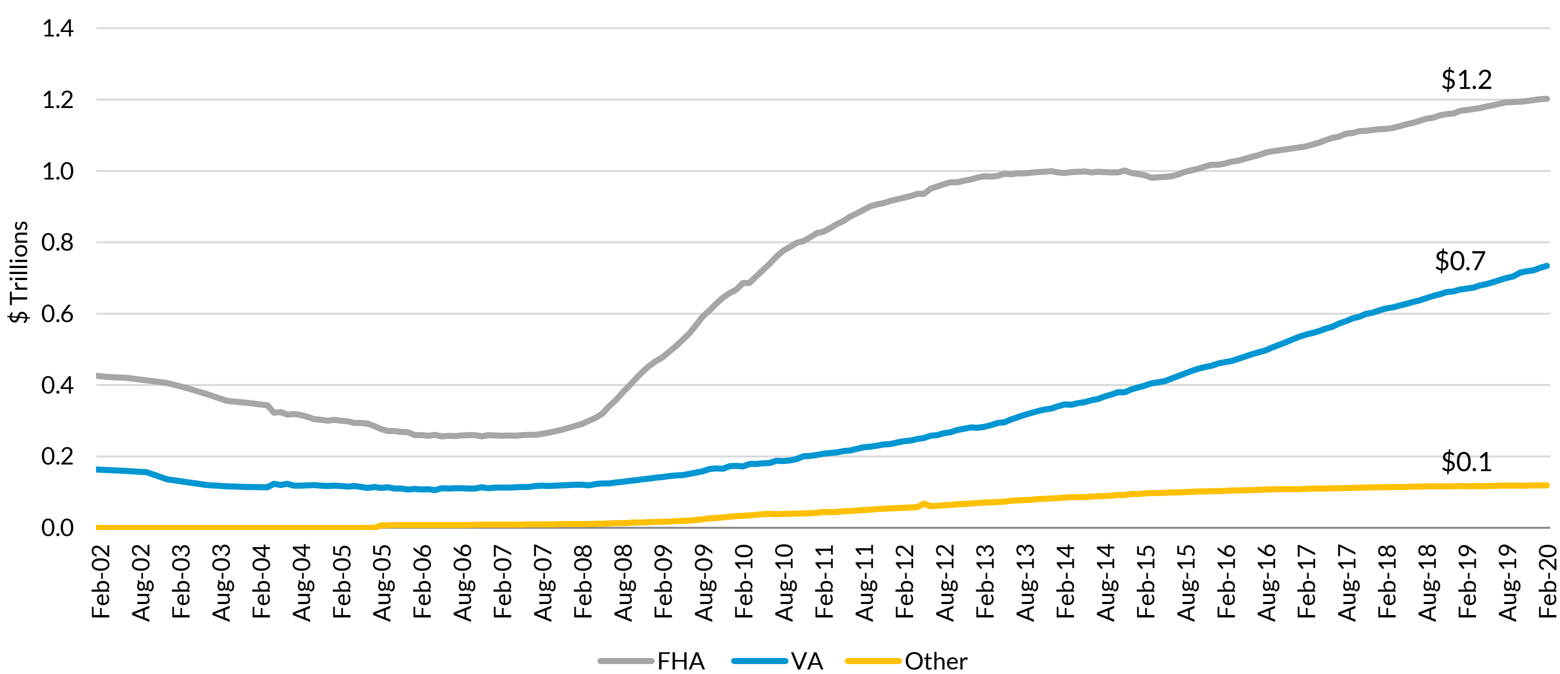
As of February 2020, outstanding securities in the agency market totaled $6.94 trillion: 42.2 percent Fannie Mae, 28.1 percent Freddie Mac, and 29.6 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly since 2009. FHA comprises 58.5 percent of total Ginnie Mae MBS outstanding, while VA comprises 35.7 percent.

Outstanding Agency Mortgage-Backed Securities



Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2020.*

Outstanding Ginnie Mae Mortgage-Backed Securities

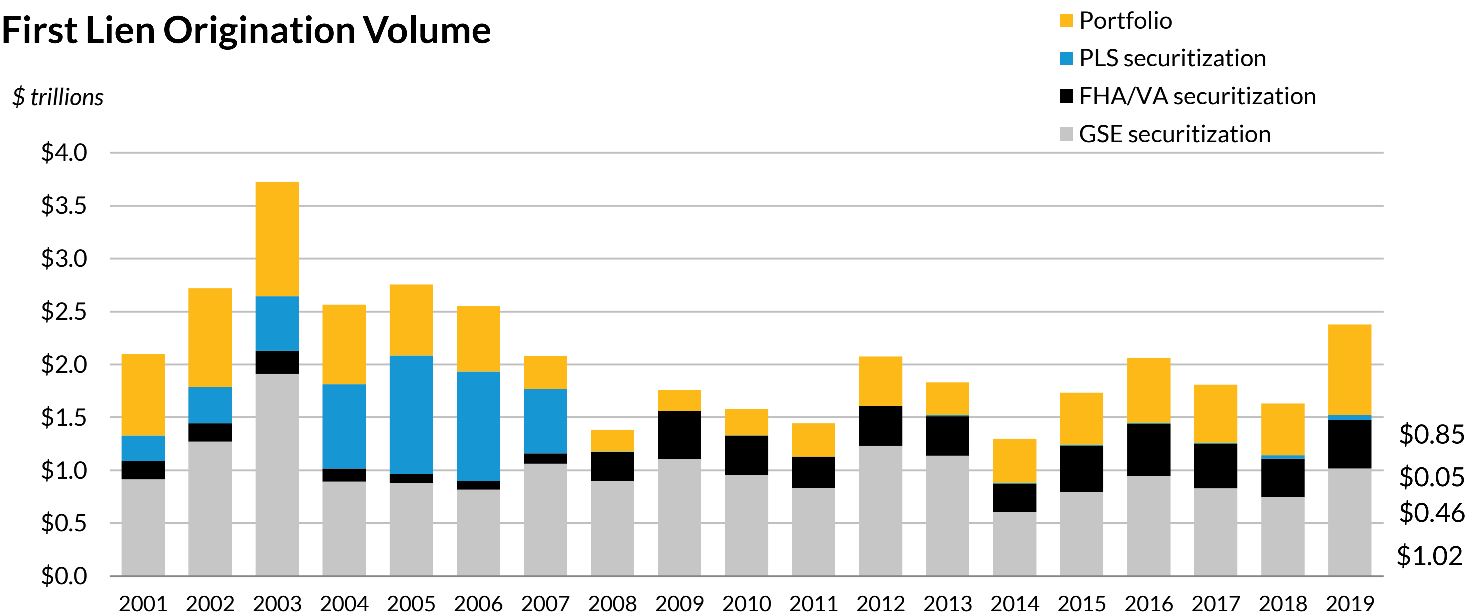


Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2020.*

State of the US Housing Market

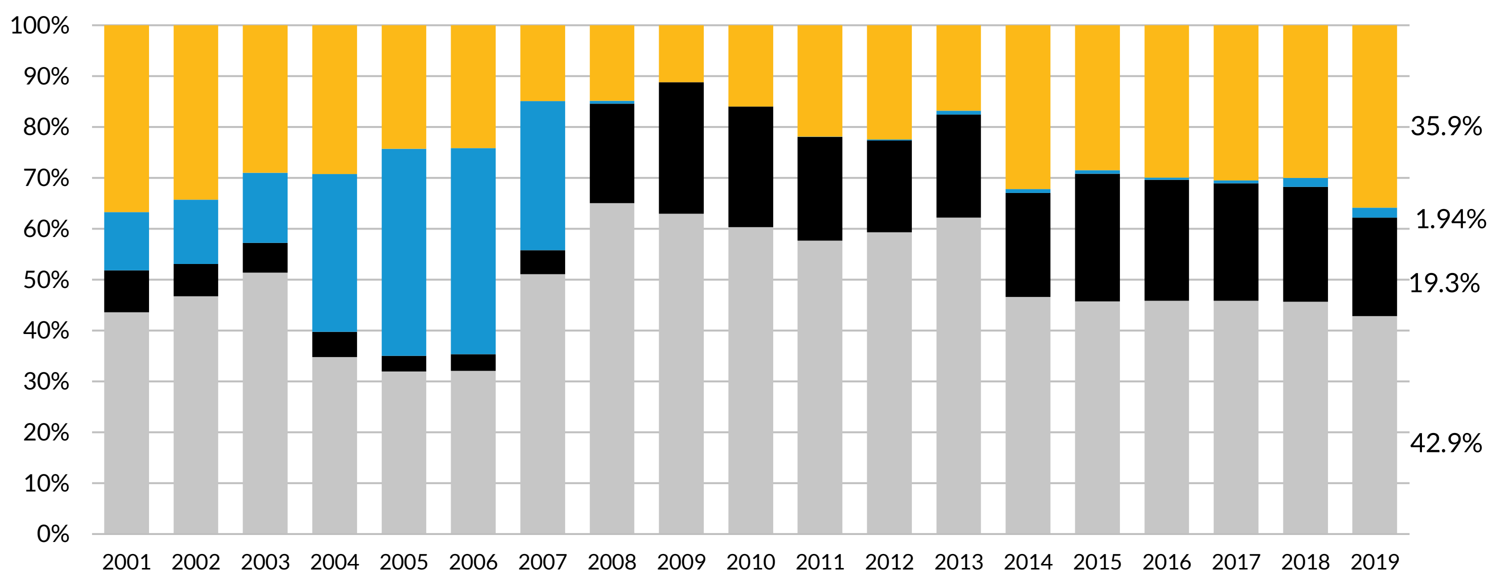
For full-year 2019, first lien originations totaled $2.38 trillion, up from the full year 2018 volume of $1.63 trillion. The share of portfolio originations was 35.9 percent in 2019, a significant jump from the 30.0 percent share in 2018. The 2019 GSE share was down at 42.9 percent, compared to 45.7 percent for the full year 2018. The FHA/VA share fell to 19.3 percent, as compared to 22.6 percent last year. Private-label securitization at 1.9 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 Q4 2019.*

First Lien Origination Share



Sources: *Inside Mortgage Finance and Urban Institute.* **Note:** *Data as of Q4 2019.*

US Agency Market, Originations

Despite the rise in portfolio origination, agency gross issuance was a robust $1.55 trillion in 2019, the strongest year for agency gross issuance since 2013. This reflected primarily strong borrower incentives to refinance, further buoyed by improved home purchase affordability. And this strong issuance trend continues through the first two months of 2020, with gross issuance of $316.3 billion, up 107.7 percent from the same period in 2019. Ginnie Mae gross issuance was up by 104.3 percent and GSE gross issuance was up by 109.5 percent. Within the Ginnie Mae market, FHA was up by 73.4 percent and VA origination was up by 149.5 percent.

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
2020 YTD	$118.2	$90.9	$209.1	$107.2	$316.3
2020 % Change YOY	94.9%	132.2%	109.5%	104.3%	107.7%
2020 Ann.	$709.1	$545.3	$1,254.5	$643.1	$1,897.6

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
2020 YTD	$52.6	$51.3	$3.2	$107.2
2020 % Change YOY	73.4%	149.5%	110.8%	104.3%
2020 Ann.	$315.7	$308.0	$19.4	$643.1

Sources*: eMBS and Urban Institute (top and bottom).*
Note : *Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of February 2020.*

US Agency Market, Originations

2019 was a robust year for net agency issuance, with $293.5 billion of net new supply, 32.6 percent of this Ginnie Mae. This trend continues into the second month of 2020, with net agency issuance totaling $58.6 billion, up 117.9 percent compared with the first two months of 2019. Ginnie Mae net issuance was $15.7 billion, comprising 31.6 percent of total agency net issuance. Ginnie Mae net issuance in the first two months of 2020 was comprised of 78.7 percent VA and 17.6 percent FHA.

Agency Net Issuance					
Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	$92.0	$67.8	$159.8	$29.3	$189.1
2001	$216.6	$151.8	$368.4	-$9.9	$358.5
2002	$218.9	$138.3	$357.2	-$51.2	$306.1
2003	$293.7	$41.1	$334.9	-$77.6	$257.3
2004	$32.3	$50.2	$82.5	-$40.1	$42.4
2005	$62.5	$111.7	$174.2	-$42.2	$132.0
2006	$164.3	$149.3	$313.6	$0.2	$313.8
2007	$296.1	$218.8	$514.9	$30.9	$545.7
2008	$213.0	$101.8	$314.8	$196.4	$511.3
2009	$208.1	$42.5	$250.6	$257.4	$508.0
2010	-$156.4	-$146.8	-$303.2	$198.3	-$105.0
2011	-$32.6	-$95.8	-$128.4	$149.6	$21.2
2012	$32.9	-$75.3	-$42.4	$119.1	$76.8
2013	$53.5	$11.8	$65.3	$89.6	$154.9
2014	-$4.0	$30.0	$26.0	$61.6	$87.7
2015	$3.5	$65.0	$68.4	$97.3	$172.5
2016	$60.5	$66.8	$127.4	$126.1	$261.6
2017	$83.7	$77.0	$160.7	$132.3	$293.0
2018	$81.9	$67.6	$149.4	$112.0	$261.5
2019	$87.4	$110.3	$197.8	$95.7	$293.5
2020 YTD	$18.5	$24.5	$43.0	$15.7	$58.6
2020 % Change YOY	156.3%	317.4%	228.5%	13.3%	117.9%
2020 Ann.	$110.9	$146.8	$257.7	$94.0	$351.7

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
2020 YTD	$2.8	$12.3	$0.6	$15.7
2020 % Change YOY	-65.3%	94.1%	-222.7%	13.3%
2020 Ann.	$16.5	$74.0	$3.5	$94.0

Sources: *eMBS and Urban Institute.* ***Note :*** *Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of February 2020.*

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. The February 2020 gross agency issuance of $147.2 billion is well above the February 2019 level of $70.7 billion, as lower rates gave borrowers a stronger incentive to refinance, contributing to a sharp increase in refinancing volume.

Monthly Agency Issuance

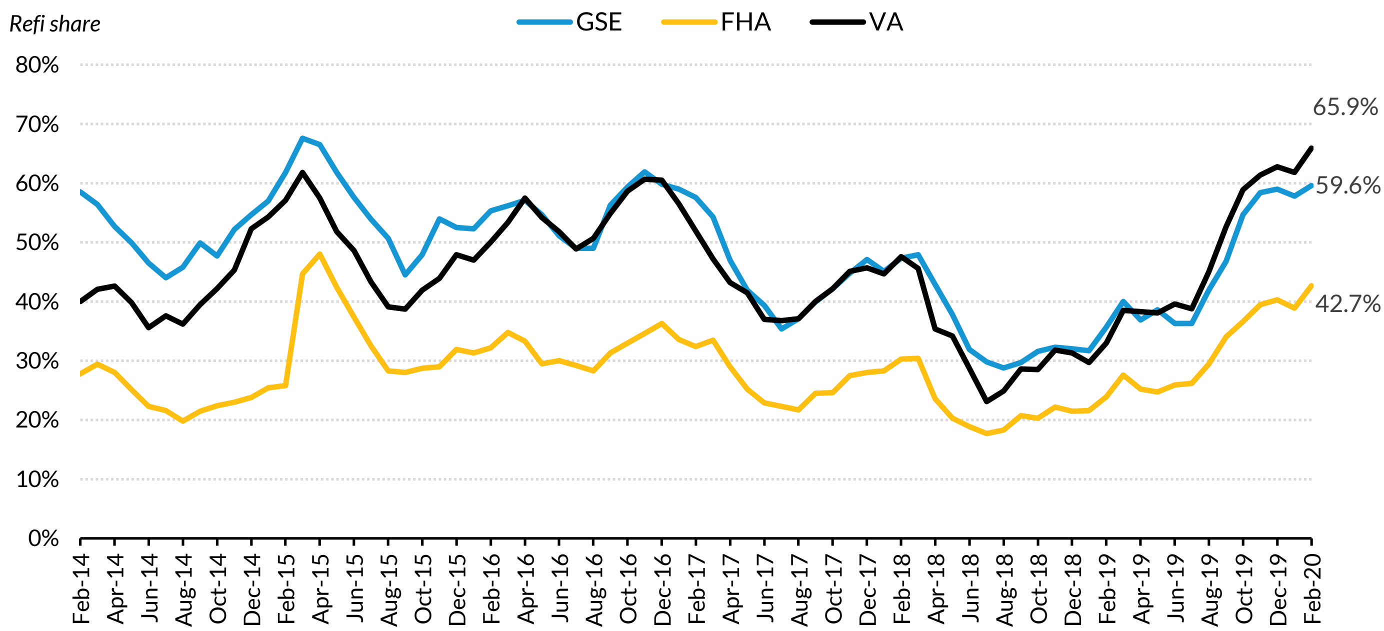
	Gross Issuance				Net Issuance			
Date	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-17	$55.6	$38.5	$42.6	$136.6	$8.5	$10.7	$10.3	$29.5
Feb-17	$37.6	$27.4	$33.1	$98.1	$2.5	$6.5	$9.4	$18.5
Mar-17	$39.5	$24.4	$31.3	$95.2	$9.7	$6.2	$9.7	$25.6
Apr-17	$39.3	$21.2	$36.4	$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	$62.1	$52.5	$52.7	$167.3	$10.1	$17.3	$7.4	$34.7
Jan-20	$61.7	$51.4	$56.0	$169.0	$9.1	$16.5	$8.6	$34.2
Feb-20	$56.5	$39.5	$51.2	$147.2	$9.4	$7.9	$7.1	$24.4

Sources: *eMBS and Urban Institute.*
Note : *Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of February 2020.*

US Agency Market, Originations

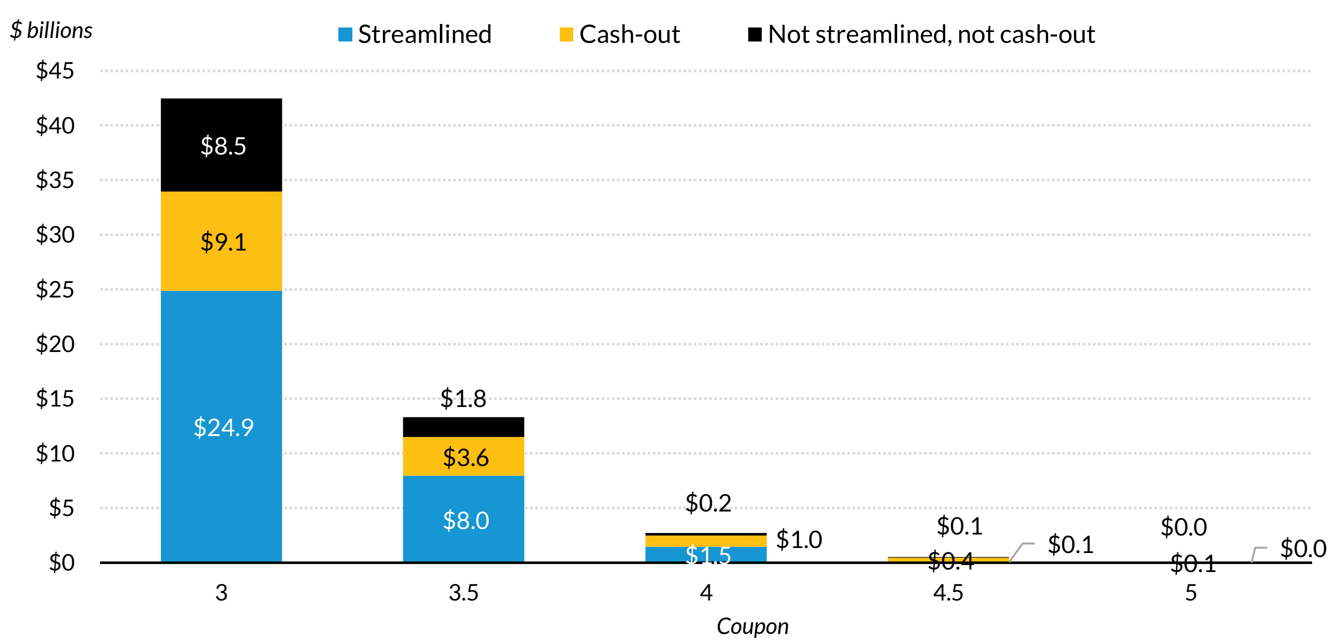
The FHA refinance share stood at 42.7 percent in February 2020, below the 65.9 percent refi share for VA originations and the 59.6 percent share for the GSEs. Refinances as a share of all originations grew during most of 2019 as interest rates were low. They continue to grow into 2020 as rates drop further. The bottom section shows that nearly all of 2020 YTD Ginnie Mae refinances, predominantly streamlined, were securitized in lower coupon pools. Cash-out refinances are typically securitized in higher coupons, but their volume has fallen sharply in recent months due to restrictions Ginnie Mae put in place in late 2019, to combat the "churning" problem.

Percent Refi at Issuance



Sources: *eMBS and Urban Institute.* **Note**: *Based on at-issuance balance. Data as of February 2020.*

Ginnie Mae Refinance Issuance by Type: 2020 YTD

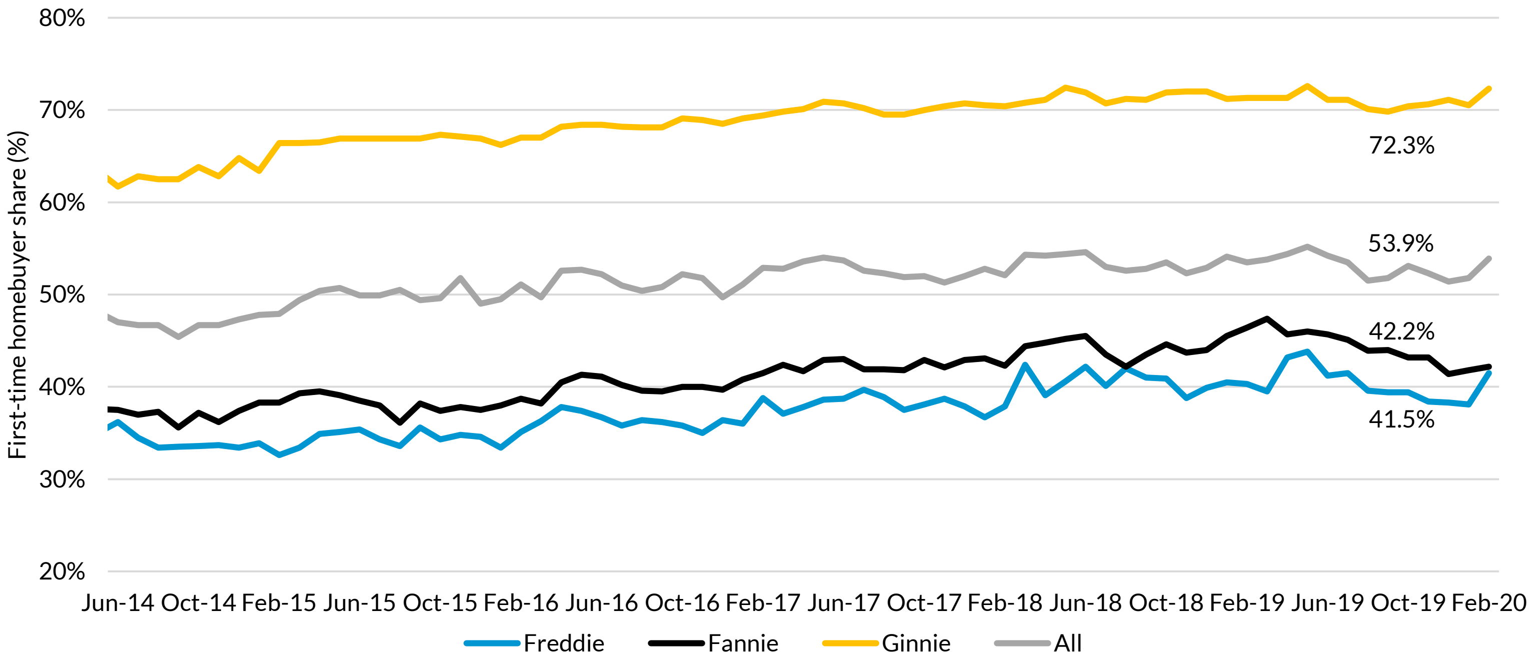


Sources: *eMBS and Urban Institute.*
Note: *Based on at-issuance balance. Data as of February 2020.*

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 72.3 percent in February 2020, down slightly from its historical high in May 2019. 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 42.2 percent and 41.5 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in February 2020, 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 February 2020.*

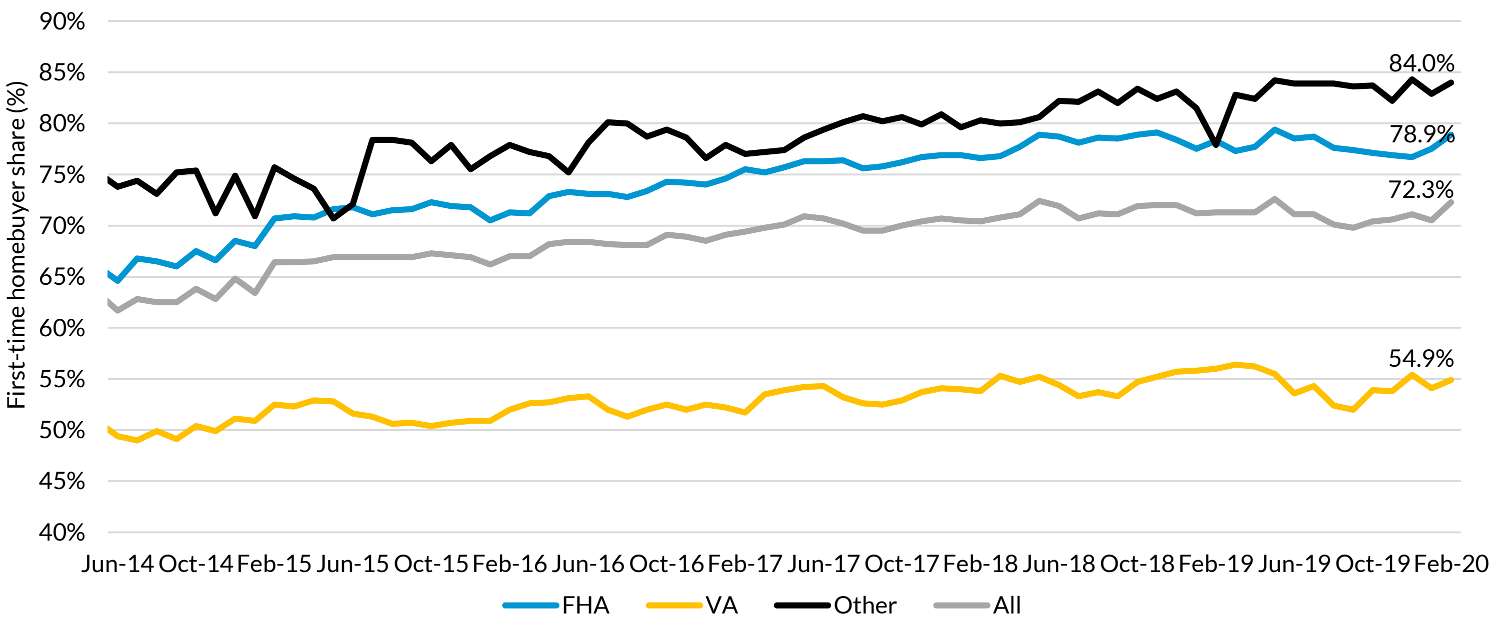
	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	263,842	286,021	241,044	266,274	223,707	272,369	237,653	275,526
Credit Score	744.1	756.1	744.9	757.7	681.3	703.3	711.0	741.3
LTV (%)	87.6	79.2	87.5	79.7	96.8	95.3	92.5	84.1
DTI (%)	35.5	36.6	35.0	36.2	41.5	42.6	38.6	38.2
Loan Rate (%)	4.0	3.9	4.0	3.9	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 February 2020.*

Credit Box

Within the Ginnie Mae purchase market, 78.9 percent of FHA loans, 54.9 percent of VA loans and 84.0 percent of other loans represent financing for first-time home buyers in February 2020. The bottom table shows that based on mortgages originated in February 2020, 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 February 2020.*

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount ($)	221,219	235,341	264,637	319,082	155,834	172,769	223,707	272,369
Credit Score	672.3	675.1	701.0	730.0	695.1	704.0	681.3	703.3
LTV (%)	95.5	93.9	99.8	96.3	99.0	99.1	96.8	95.3
DTI (%)	43.0	44.2	40.4	41.8	34.9	35.7	41.5	42.6
Loan Rate (%)	4.0	3.9	3.7	3.5	3.8	3.8	3.9	3.7

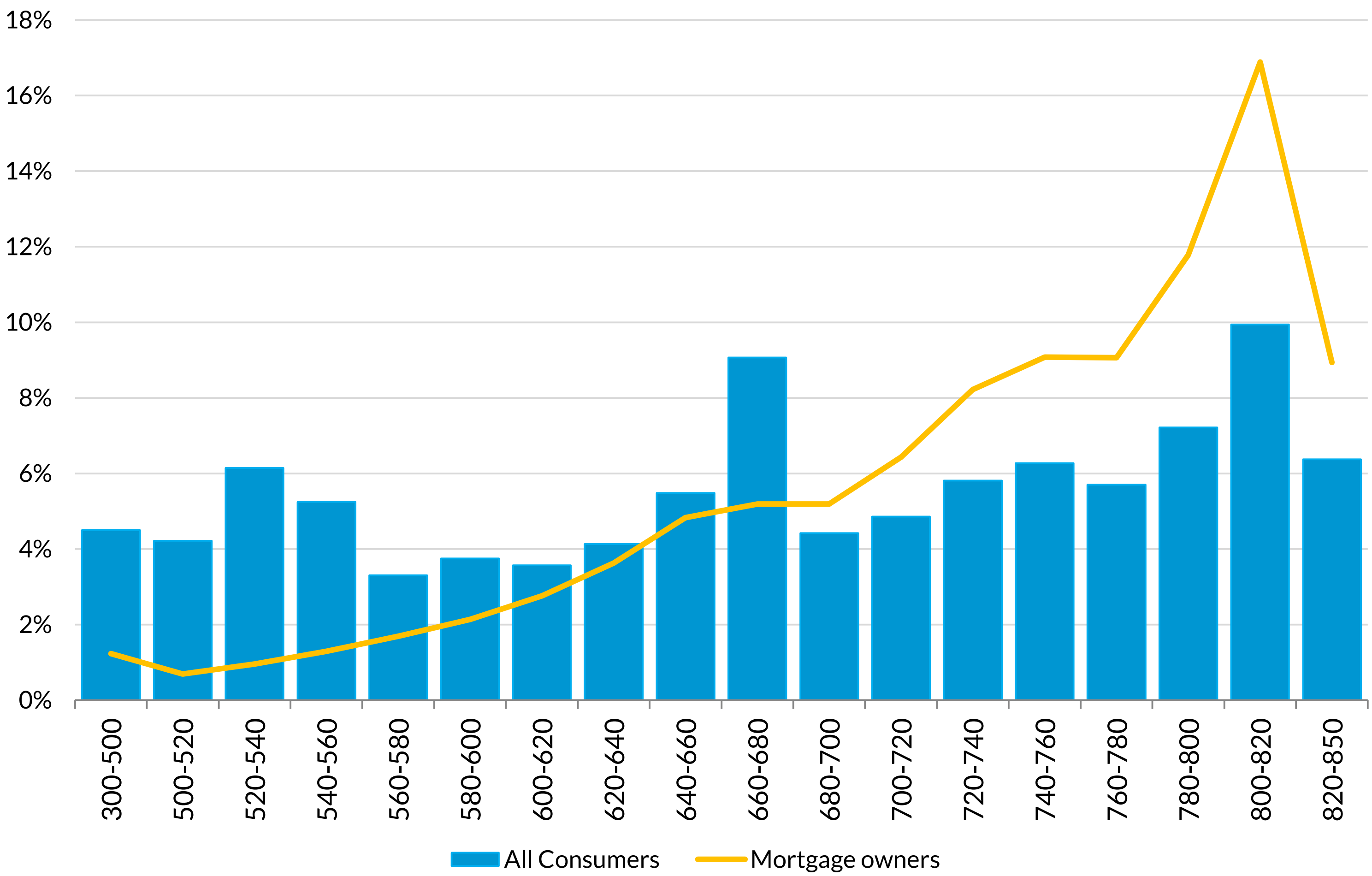
Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2020. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV.*

Credit Box

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

FICO Score Distribution: Mortgage Owners vs All Consumers

All Consumers- Percentiles								
Minimum	**P5**	**P10**	**P25**	**P50**	**P75**	**P90**	**P95**	**Maximum**
300	503	524	587	682	774	813	822	839
Mortgage Owners- Percentiles								
Minimum	**P5**	**P10**	**P25**	**P50**	**P75**	**P90**	**P95**	**Maximum**
300	570	615	682	752	801	818	824	839



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

February 2020 Credit Box at a Glance

In February 2020, the median Ginnie Mae FICO score was 684 versus 758 for both Fannie Mae and Freddie Mac. Note that the FICO score for the 10th percentile was 623 for Ginnie Mae, versus 688 for Fannie Mae and Freddie Mac. Within the Ginnie Mae market, FHA loans have a median FICO score of 666, VA loans have a median FICO score of 716 and other loans have a median FICO score of 693.

Purchase FICO

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	242,161	643	683	735	777	798	727
Fannie	78,809	691	723	760	787	802	752
Freddie	67,699	693	725	761	788	802	753
Ginnie	95,653	623	646	679	727	773	687

Refi FICO

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	293,197	657	698	744	780	799	735
Fannie	130,454	686	719	757	785	801	750
Freddie	86,330	684	717	756	784	801	748
Ginnie	76,413	622	651	690	742	781	695

All FICO

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	535,358	650	691	740	778	798	731
Fannie	209,263	688	721	758	786	801	751
Freddie	154,029	688	721	758	786	801	750
Ginnie	172,066	623	648	684	733	777	691

Purchase FICO: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	95,653	623	646	679	727	773	687
FHA	58,068	618	640	667	702	743	673
VA	28,426	631	663	716	768	795	714
Other	9,159	638	658	692	732	766	696

Refi FICO: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	76,413	622	651	690	742	781	695
FHA	32,039	610	638	665	696	734	668
VA	43,705	636	671	717	765	792	714
Other	669	646	669	703	741	772	705

All FICO: Ginnie Mae Breakdown By Source

	Number of Loans	P10	P25	Median	P75	P90	Mean
All	172,066	623	648	684	733	777	691
FHA	90,107	615	639	666	700	739	671
VA	72,131	634	668	716	766	793	714
Other	9,828	638	659	693	733	767	697

Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2020.*

February 2020 Credit Box at a Glance

In February 2020, the median loan-to-value ratio (LTV) was 96.5 percent for Ginnie Mae, 75 percent for Fannie Mae and 78 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, 98.1 for VA and 100.7 for other programs.

Purchase LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	242,581	73.0	80.0	95.0	96.5	100.0	87.9
Fannie	78,871	63.0	77.0	80.0	95.0	97.0	82.2
Freddie	67,813	65.0	80.0	80.0	95.0	95.0	82.4
Ginnie	95,897	92.7	96.5	96.5	100.0	101.3	96.4
Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	309,864	48.0	62.0	75.0	86.0	96.9	73.3
Fannie	130,456	43.0	57.0	70.0	79.0	84.0	66.6
Freddie	86,359	44.0	58.0	71.0	79.0	83.0	67.2
Ginnie	93,049	71.5	81.4	91.3	98.0	100.0	88.2
All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	552,445	54.0	70.0	80.0	95.0	98.0	79.7
Fannie	209,327	48.0	62.0	75.0	84.0	95.0	72.5
Freddie	154,172	49.0	65.0	78.0	85.0	95.0	73.9
Ginnie	188,946	79.3	89.7	96.5	98.9	101.0	92.3

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	95,897	92.7	96.5	96.5	100.0	101.3	96.4
FHA	58,173	92.8	96.5	96.5	96.5	96.5	95.1
VA	28,505	91.1	100.0	100.0	102.2	103.0	98.2
Other	9,219	94.8	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	93,049	71.5	81.4	91.3	98.0	100.0	88.2
FHA	40,004	72.4	81.4	89.9	97.1	98.3	87.0
VA	52,326	70.7	82.8	92.0	99.4	101.0	88.9
Other	719	85.4	93.3	99.1	101.0	102.0	95.9
All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	188,946	79.3	89.7	96.5	98.9	101.0	92.3
FHA	98,177	80.5	89.9	96.5	96.5	97.3	91.8
VA	80,831	75.3	87.7	98.1	100.0	102.3	92.2
Other	9,938	94.1	98.7	100.7	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 February 2020.*

February 2020 Credit Box at a Glance

In February 2020, the median Ginnie Mae debt-to-income ratio (DTI) was 41.9 percent, considerably higher than the 36.0 percent median DTI for both Freddie Mac and Fannie Mae. The 90th percentile for Ginnie Mae was 54.2 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 44.0 percent, versus 40.1 percent for VA and 35.7 percent for other lending programs.

Purchase DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	242,228	24.0	31.2	39.0	45.0	50.0	38.1
Fannie	78,866	22.0	29.0	37.0	44.0	48.0	35.9
Freddie	67,812	22.0	29.0	37.0	43.0	47.0	35.6
Ginnie	95,550	28.7	35.3	42.4	49.0	54.3	41.8
Refi DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	255,580	21.7	28.0	36.0	43.0	48.0	35.4
Fannie	130,448	21.0	28.0	36.0	43.0	47.0	34.6
Freddie	86,355	21.0	28.0	36.0	43.0	47.0	34.8
Ginnie	38,777	24.3	32.0	40.2	48.4	54.0	39.6
All DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	497,808	23.0	30.0	38.0	44.0	49.0	36.7
Fannie	209,314	22.0	28.0	36.0	43.0	47.0	35.1
Freddie	154,167	22.0	28.0	36.0	43.0	47.0	35.2
Ginnie	134,327	27.5	34.2	41.9	48.9	54.2	41.1

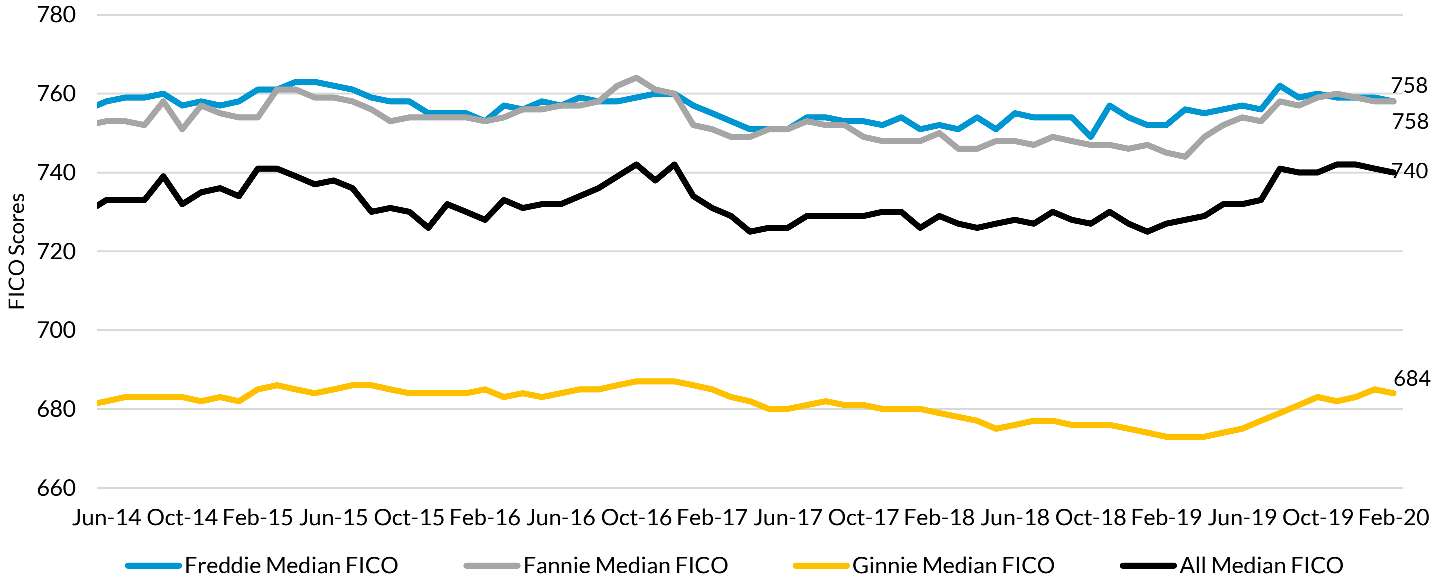
Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	95,550	28.7	35.3	42.4	49.0	54.3	41.8
FHA	58,142	30.6	37.4	44.2	50.2	54.7	43.2
VA	28,227	27.0	34.0	41.5	48.5	54.2	41.0
Other	9,181	25.7	30.6	36.0	40.2	43.1	35.0
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	38,777	24.3	32.0	40.2	48.4	54.0	39.6
FHA	19,627	27.4	34.2	43.0	49.9	54.5	41.6
VA	18,649	22.2	30.1	37.5	46.1	52.9	37.7
Other	501	14.2	20.6	29.0	36.3	41.1	28.6
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	134,327	27.5	34.2	41.9	48.9	54.2	41.1
FHA	77,769	29.8	36.6	44.0	50.1	54.7	42.8
VA	46,876	25.0	32.0	40.1	47.7	53.7	39.7
Other	9,682	24.9	30.3	35.7	40.1	43.0	34.7

Sources: *eMBS and Urban Institute.* **Note**: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2020.*

Credit Box: Historical

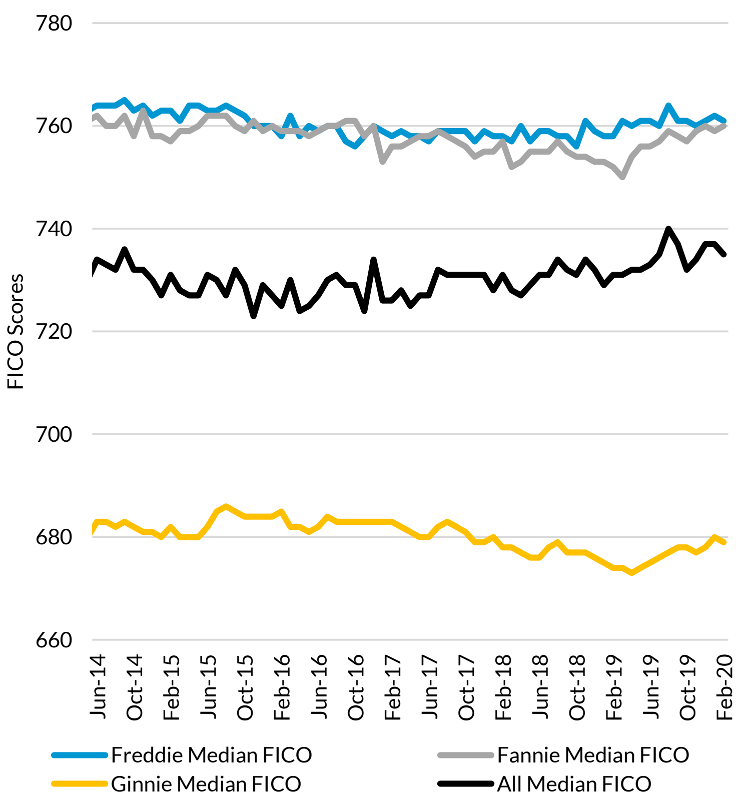
The median FICO score for all agency loans originated in February 2020 was 740, up considerably since the start of last year, owing to the refinance wave, which higher FICO borrowers take advantage of with greater frequency. The figures show that the median FICO score for Ginnie Mae borrowers has always 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.

FICO Scores for All Loans



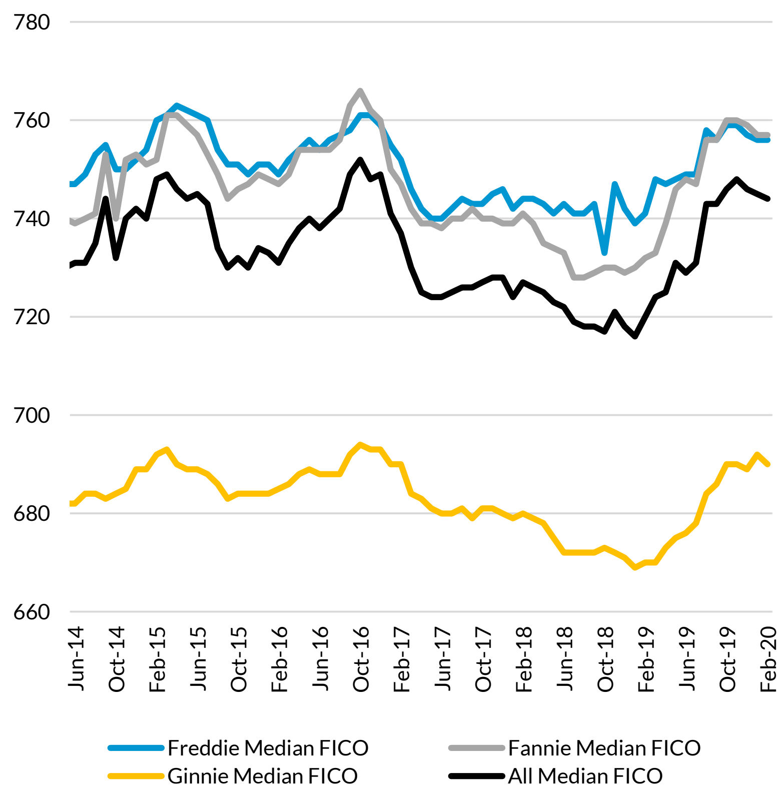
Sources: *eMBS and Urban Institute.* **Note**: *Data as of February 2020.*

FICO Scores for Purchase Loans



Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2020.*

FICO Scores for Refinance Loans

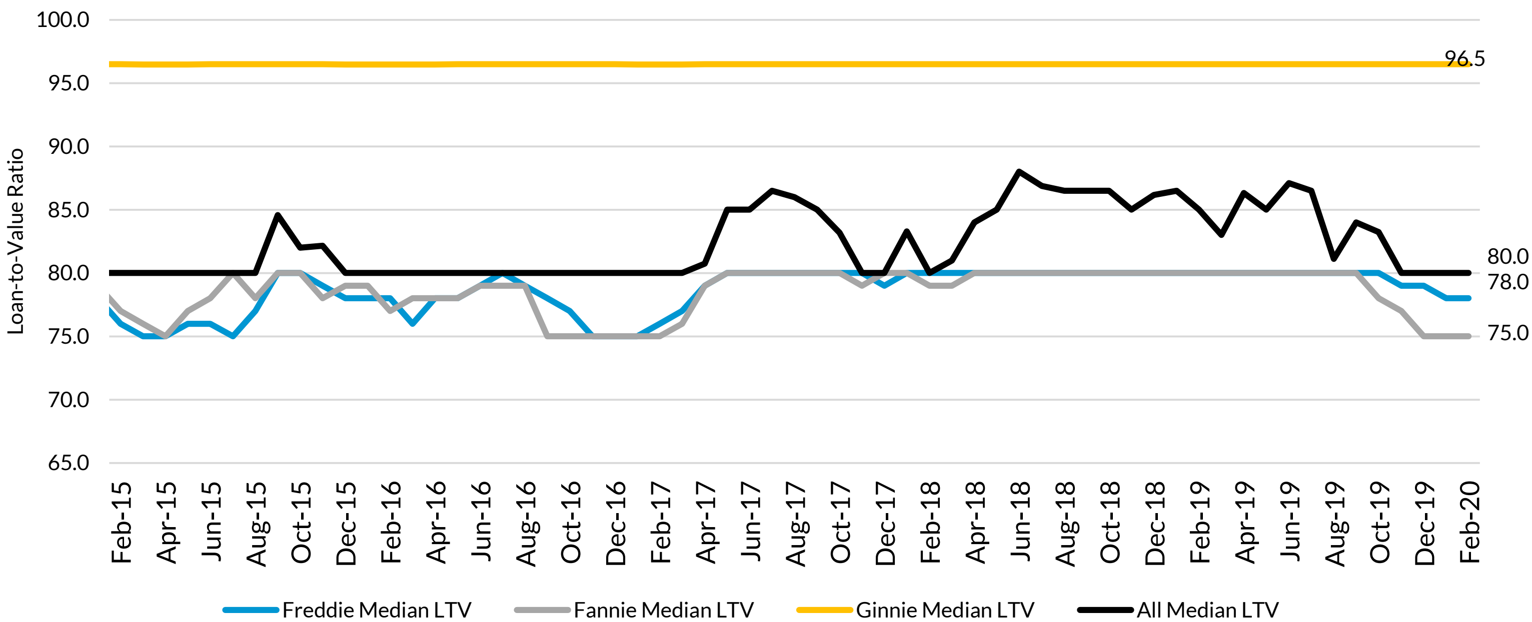


Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2020.*

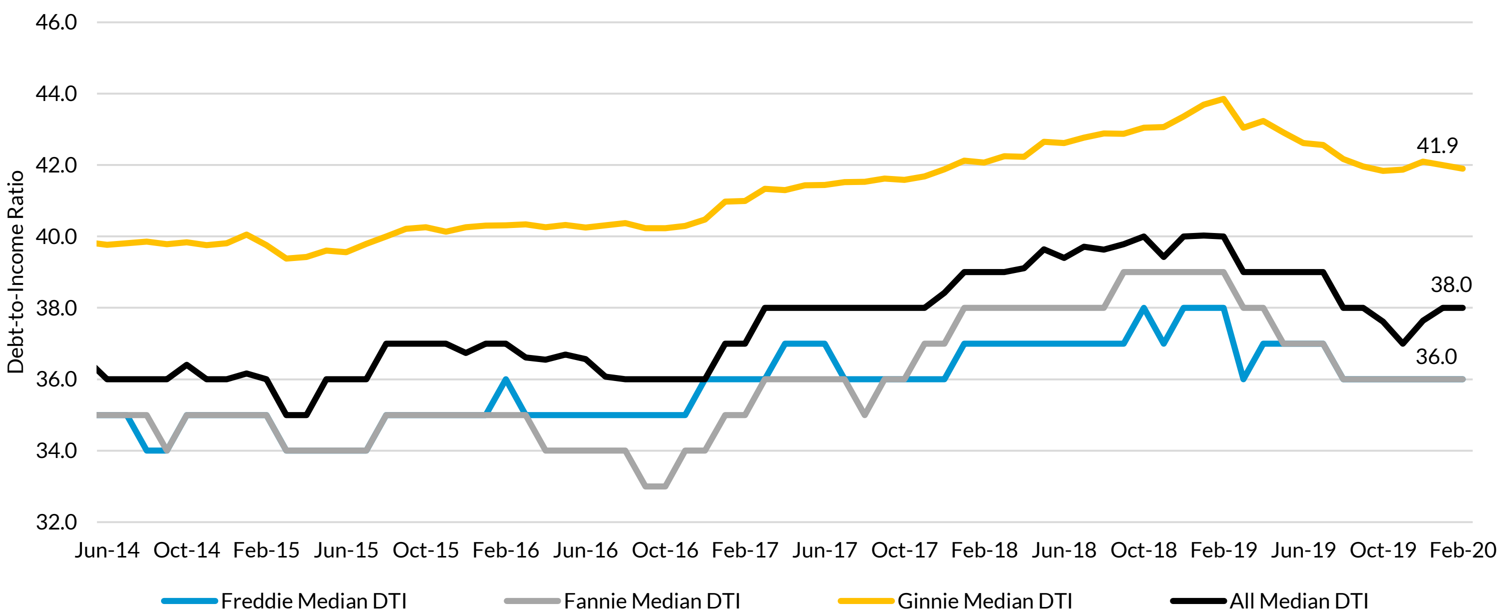
Credit Box: Historical

Median LTVs for Ginnie Mae loans have historically been at 96.5 percent, much higher than the 75–80 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 witnessed measurable declines in DTI, beginning in early 2019, driven by lower interest rates.

LTV Ratio for All Loans



DTI Ratio for All Loans

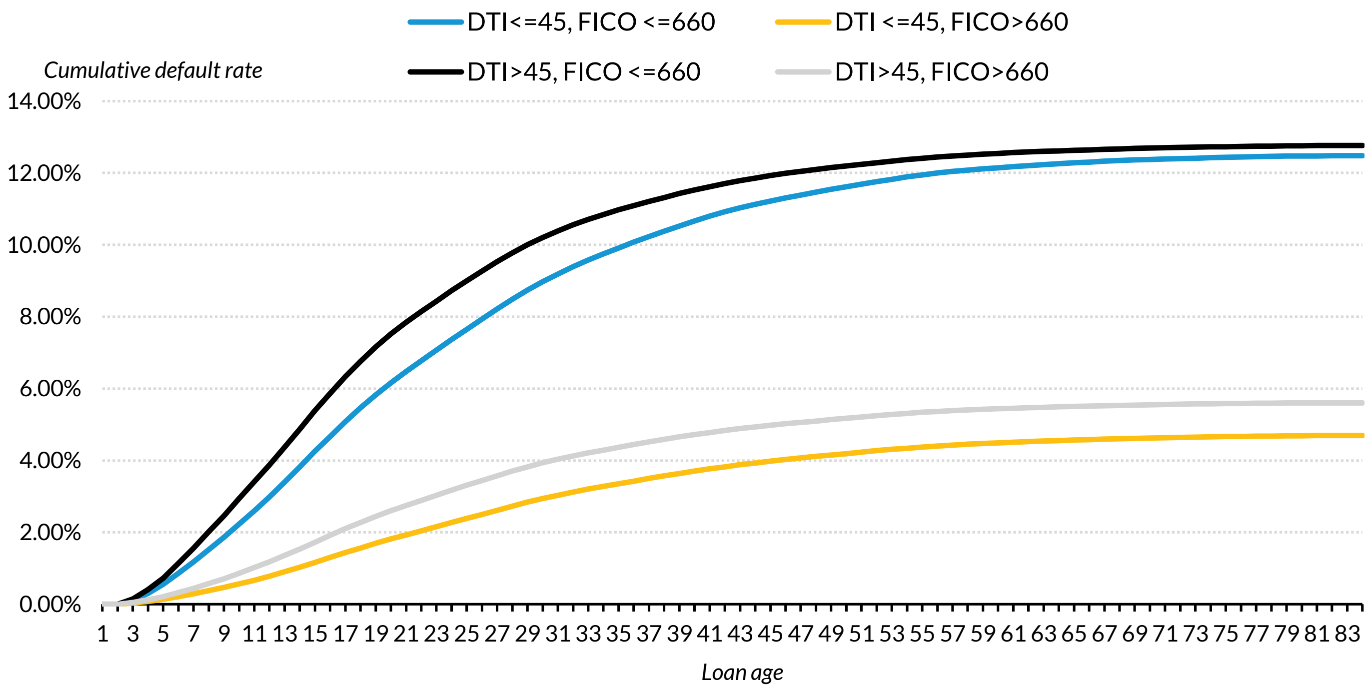


Sources: *eMBS and Urban Institute.* **Note:** *In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Sources and note apply to all three graphs. Data as of February 2020.*

Credit Box: Historical

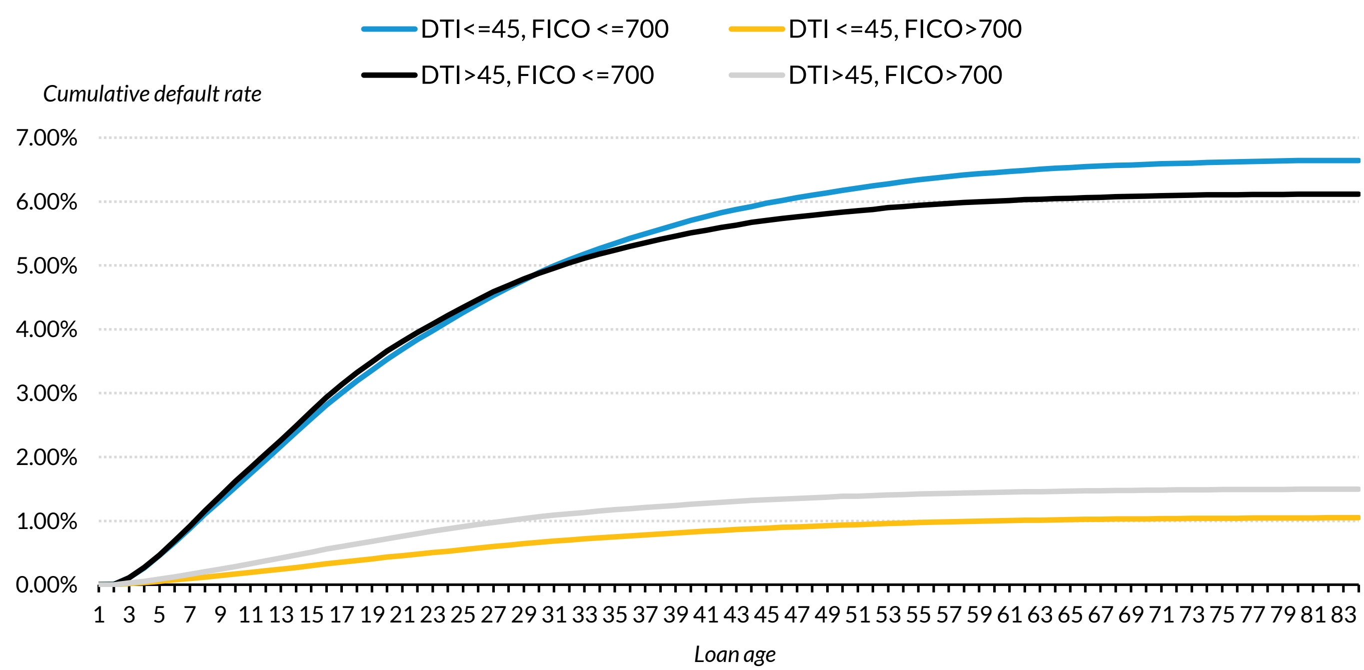
DTI is a much weaker predictor of performance than FICO score. The top chart shows FHA borrowers with higher DTIs do default more than those with lower DTIs, but the differences are modest, as evidenced by the fact that the black line is very close to the blue line and the grey line is not that much 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 borrowers 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 February 2020.*

VA Cumulative Default Rate by DTI and FICO

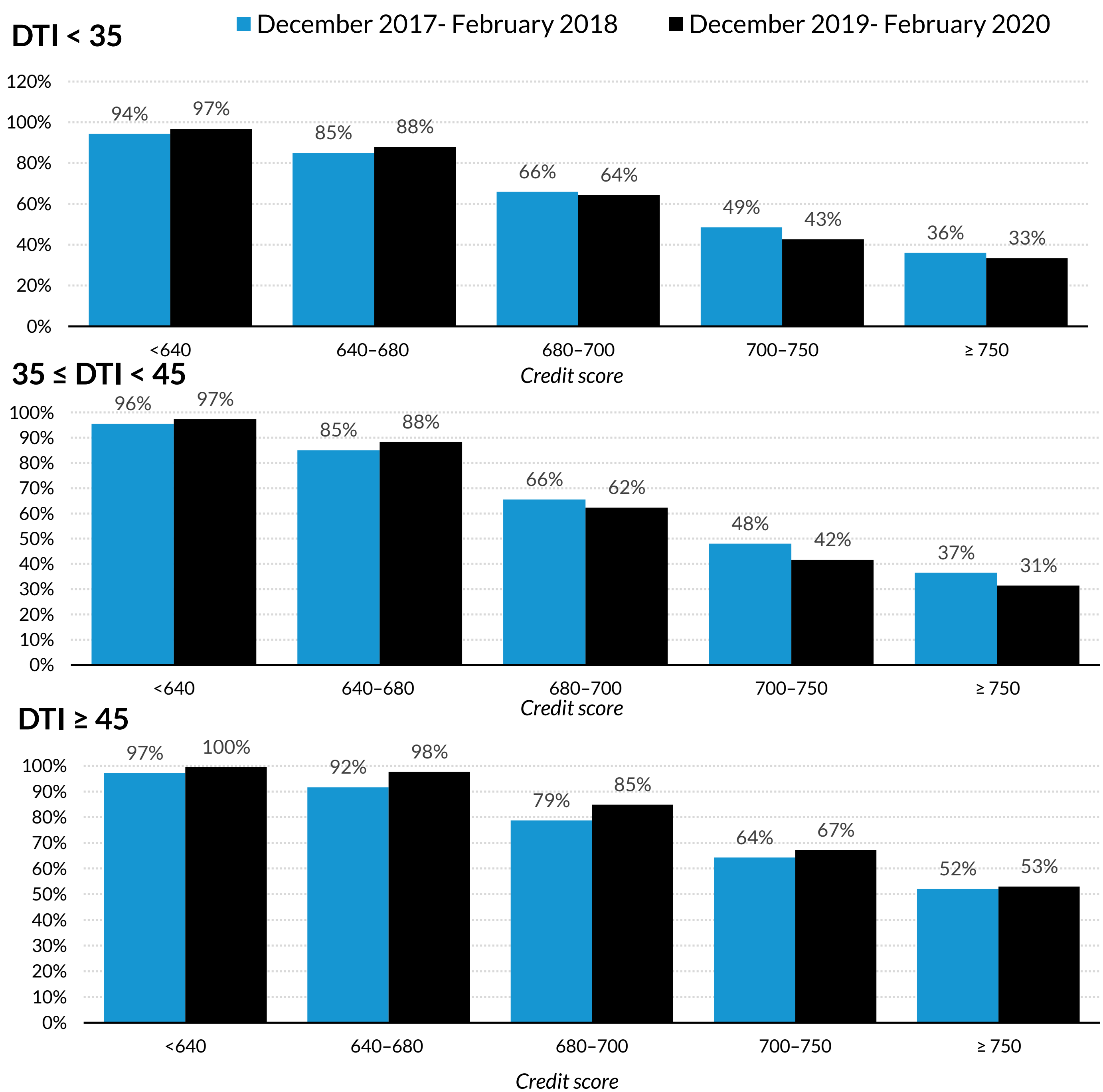


Sources: *eMBS and Urban Institute*. **Note:** Defaults = 180 days delinquent. *Data as of February 2020.*

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 December 2019- February 2020, Ginnie Mae accounted for 97 percent of agency issuance for DTIs under 35 and FICOs below 640, compared to just 33 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 December 2019– February 2020, 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 in the two lower DTI buckets, taking a small amount of this market share from Ginnie Mae.

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



Sources: eMBS and Urban Institute.

High LTV Loans: Ginnie Mae vs. GSEs

Ginnie Mae dominates high-LTV lending, with 65.8 percent of its issuances in the December 2019-February 2020 period having LTVs of 95 or above, compared to 13.3 percent for the GSEs. The GSEs have decreased their high-LTV lending share from 16.2 percent in December 2017–February 2018. Ginnie Mae's high-LTV lending is also down, but by less than the GSE share, over the same period from 68.1 percent. The share of high-LTV agency loans going to highest FICO borrowers (i.e. above 750) has increased from the December 2017-February 2018 period to the December 2019-February 2020 period. The distribution by DTI looks very similar across the two three month periods.

Share of Loans with LTV ≥ 95

	Ginnie Mae	GSE	All
December 2017- February 2018	68.1%	16.2%	32.4%
December 2019- February 2020	65.8%	13.3%	26.9%

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

December 2017-February 2018

DTI	FICO					
	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.9%	5.3%	3.0%	7.6%	9.4%	28.2%
35 –45	5.3%	9.5%	5.1%	11.3%	9.7%	40.9%
≥ 45	4.2%	8.4%	4.2%	8.4%	5.7%	31.0%
All	12.4%	23.3%	12.3%	27.3%	24.8%	100.0%

December 2019-February 2020

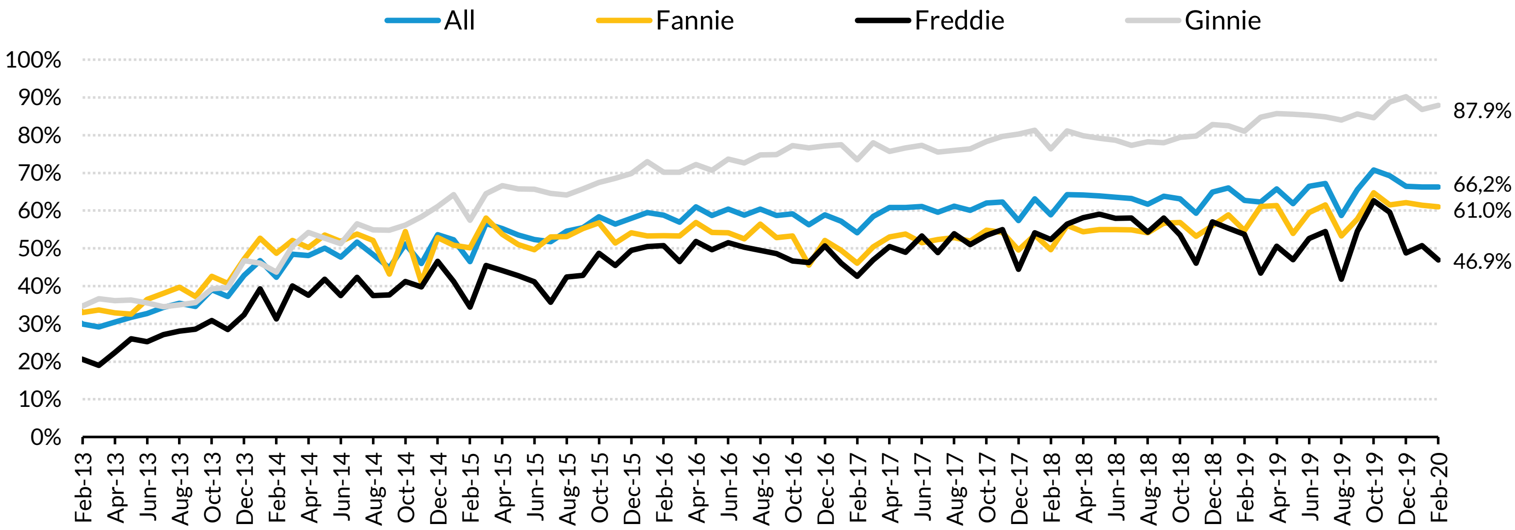
DTI	FICO					
	<640	640–680	680–700	700–750	≥ 750	All
< 35	2.8%	4.7%	2.7%	7.6%	10.5%	28.2%
35 –45	4.9%	8.3%	4.7%	11.7%	11.0%	40.6%
≥ 45	4.5%	7.9%	3.9%	8.5%	6.3%	31.2%
All	12.2%	20.9%	11.3%	27.8%	27.8%	100.0%

Sources: *eMBS and Urban Institute.*

Nonbank Originators

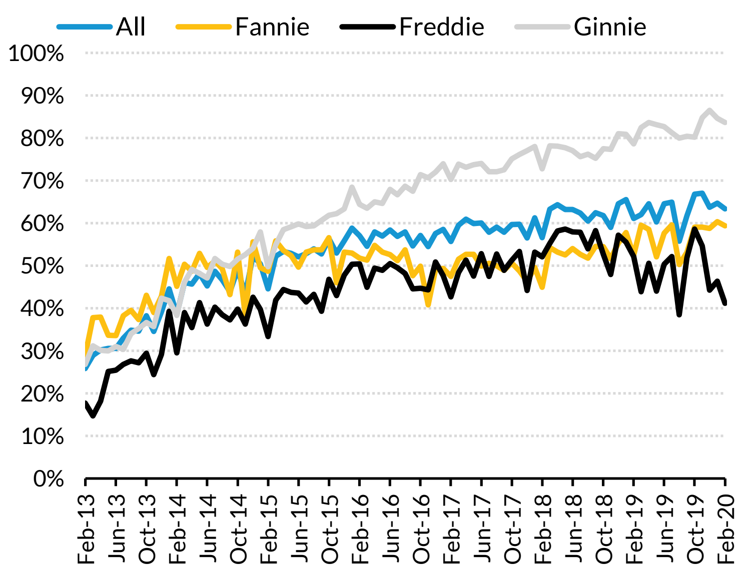
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, standing at 87.9 percent in February 2020, down from a record high of 90.2 percent in December 2019. Freddie's nonbank share dropped to 46.9 percent, while Fannie's nonbank share fell more slightly to 61.0 percent in February (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

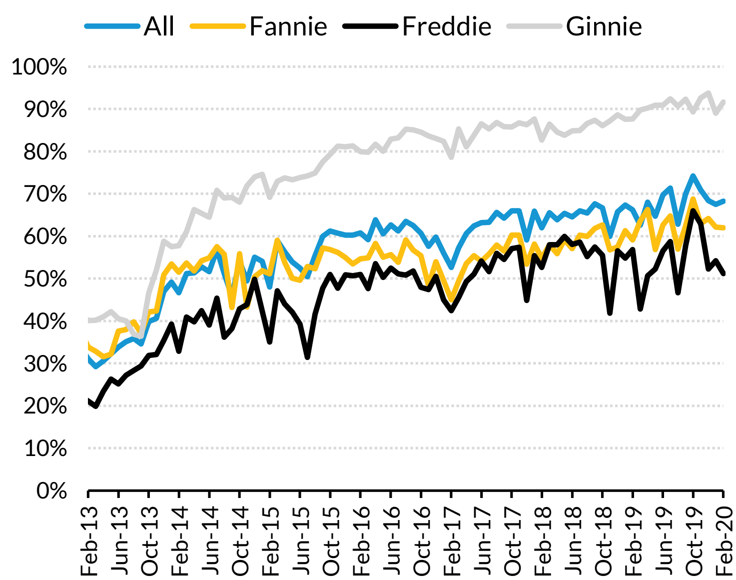


Sources: *eMBS and Urban Institute*
Note: *Data as of February 2020.*

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

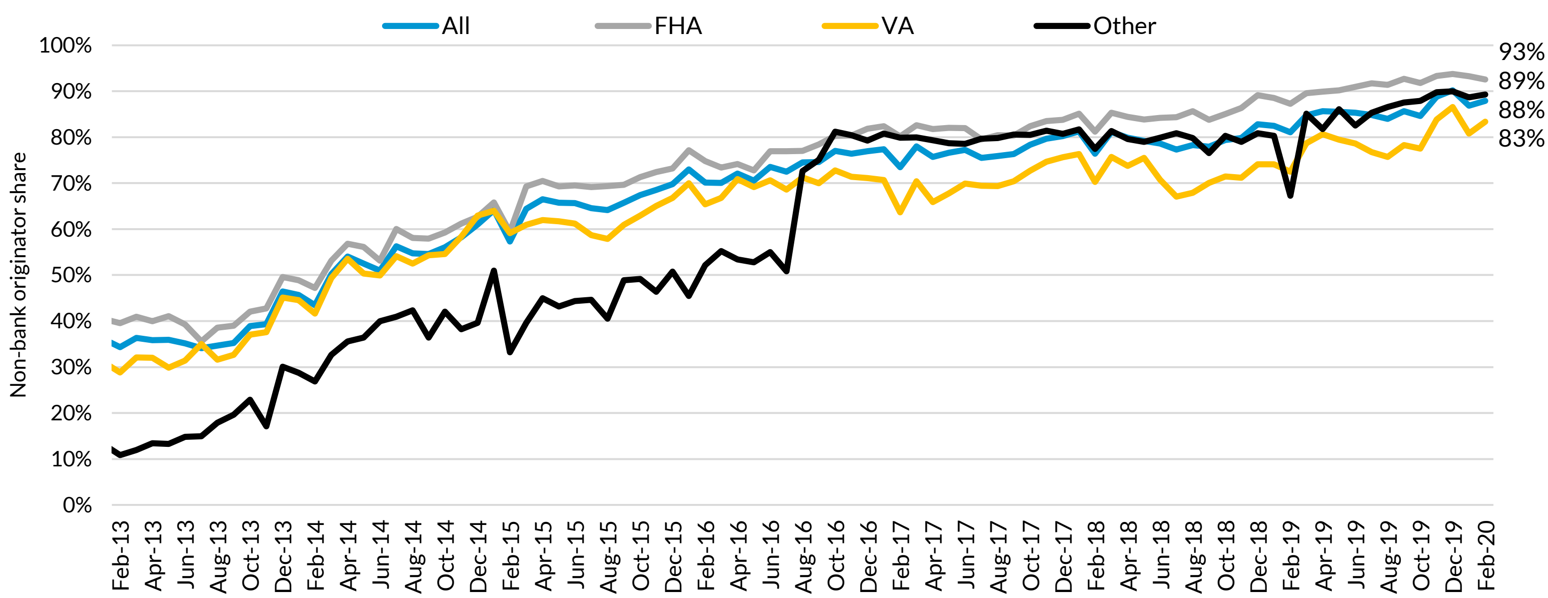


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2020.*

Ginnie Mae Nonbank Originators

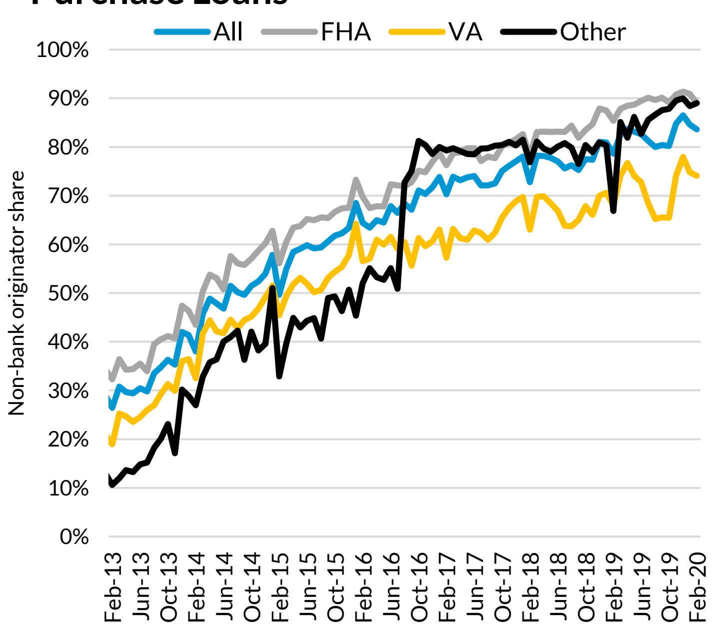
In February 2020, Ginnie Mae's nonbank share rose to 87.9 percent. The nonbank originator share for FHA fell slightly to 92.6 percent in February, just off the high reached in December 2019. The nonbank originator share for VA was higher than last month at 83.4 percent and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, grew slightly to 89.3 percent.

Ginnie Mae Nonbank Originator Share: All Loans

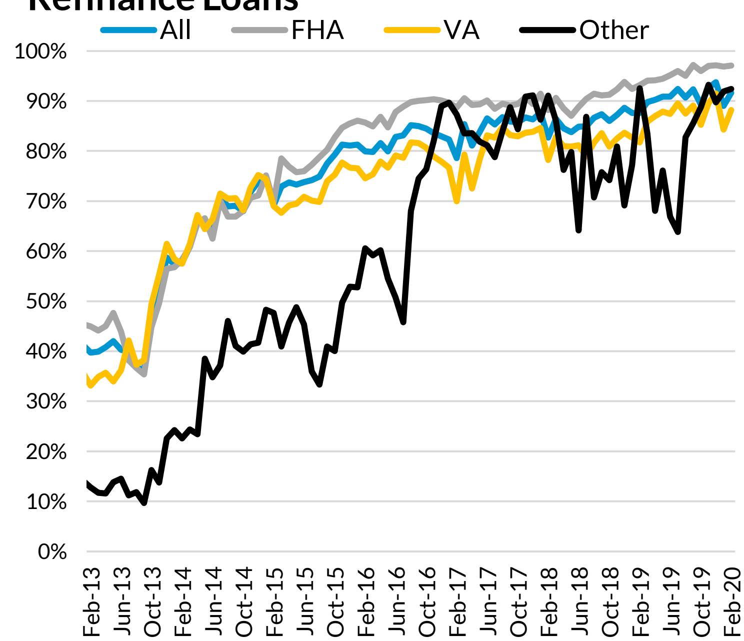


Sources: *eMBS and Urban Institute*
Note: *Data as of February 2020.*

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

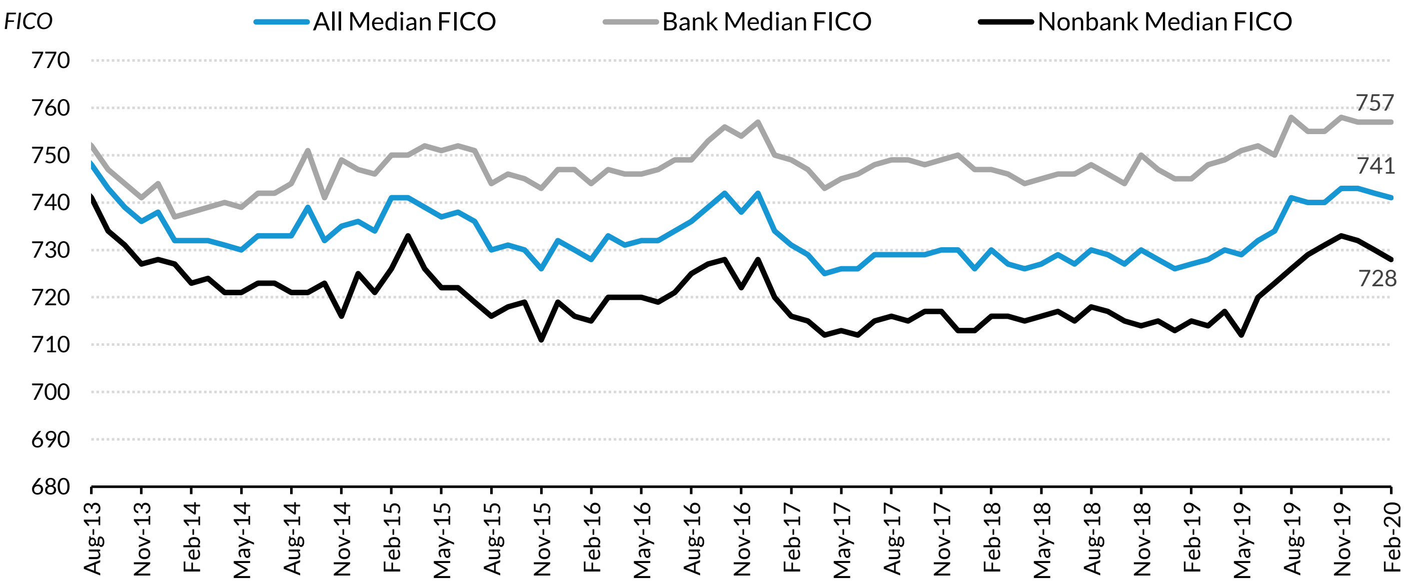


Sources: *eMBS and Urban Institute.* **Note:** *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2020.*

Nonbank Credit Box

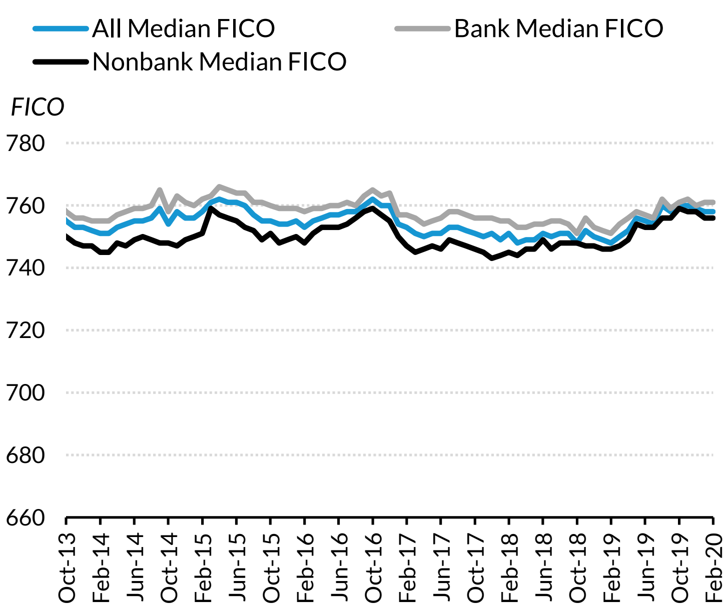
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have increased since early 2014. In contrast, within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



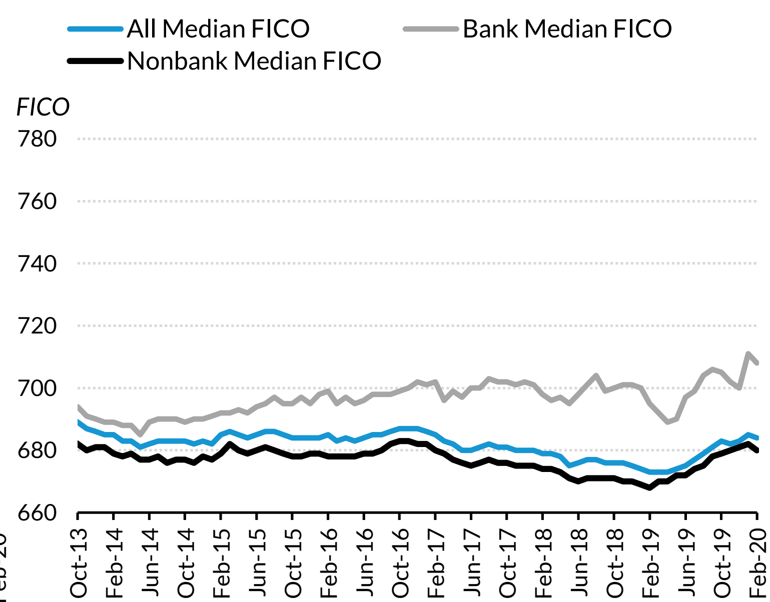
Sources: *eMBS and Urban Institute.* ***Note:*** *Data as of February 2020.*

GSE FICO: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.*
Note: *Data as of February 2020.*

Ginnie Mae FICO: Bank vs. Nonbank

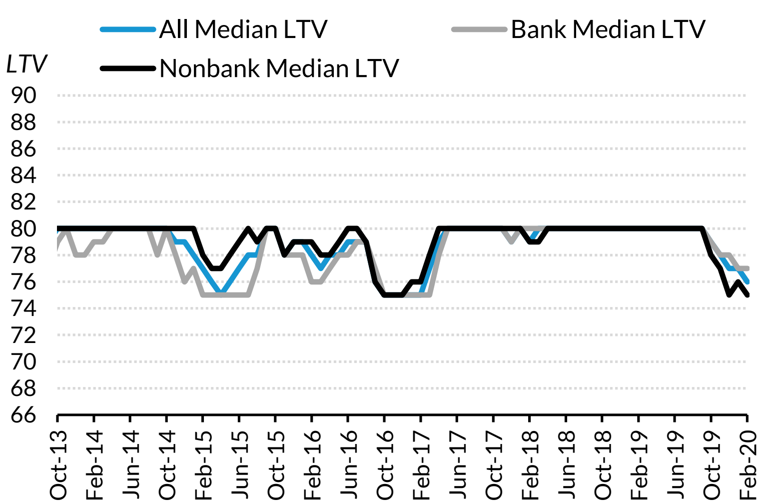


Sources: *eMBS and Urban Institute.*
Note: *Data as of February 2020.*

Nonbank Credit Box

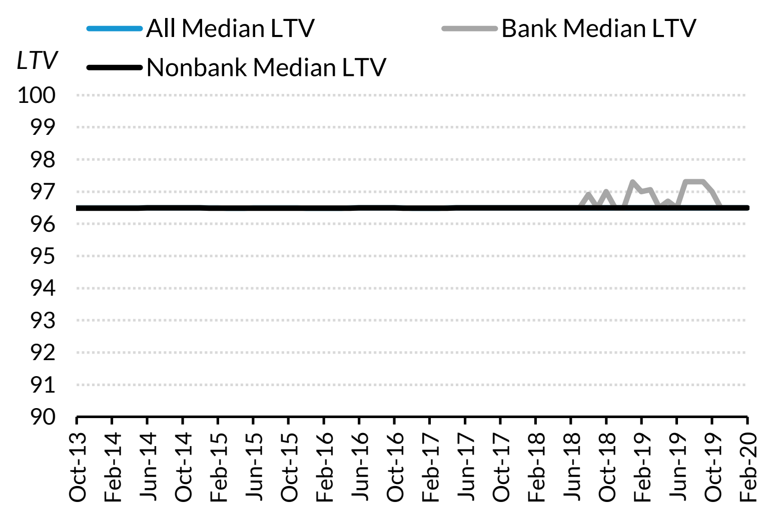
The median LTVs for nonbank and bank originations are comparable, while the median DTI for nonbank loans is higher than for bank loans, indicating that nonbanks are more accommodating in both this and the FICO dimension. Between early 2017 and early 2019, there was a substantial increase in DTIs, which has mostly reversed over the subsequent months. 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 and 2020, DTIs have dropped.

GSE LTV: Bank vs. Nonbank



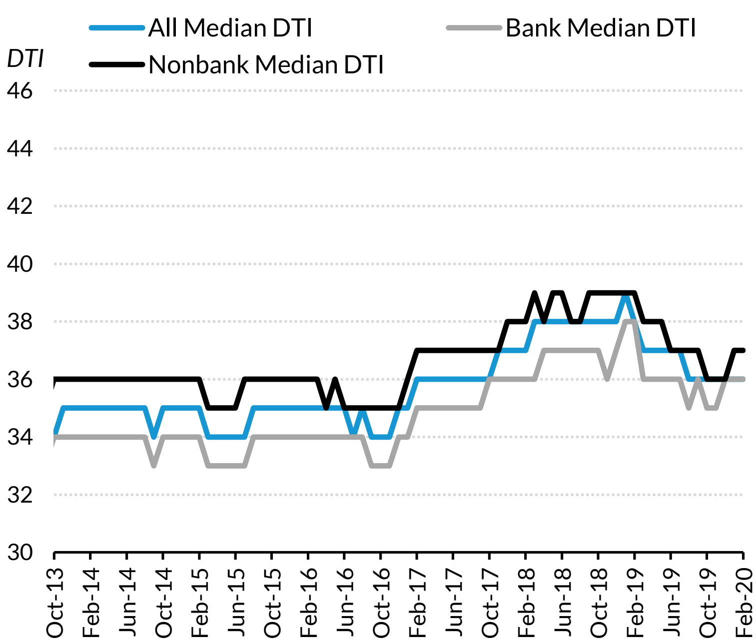
Sources: *eMBS and Urban Institute.* ***Note:*** *Data as of February 2020.*

Ginnie Mae LTV: Bank vs. Nonbank



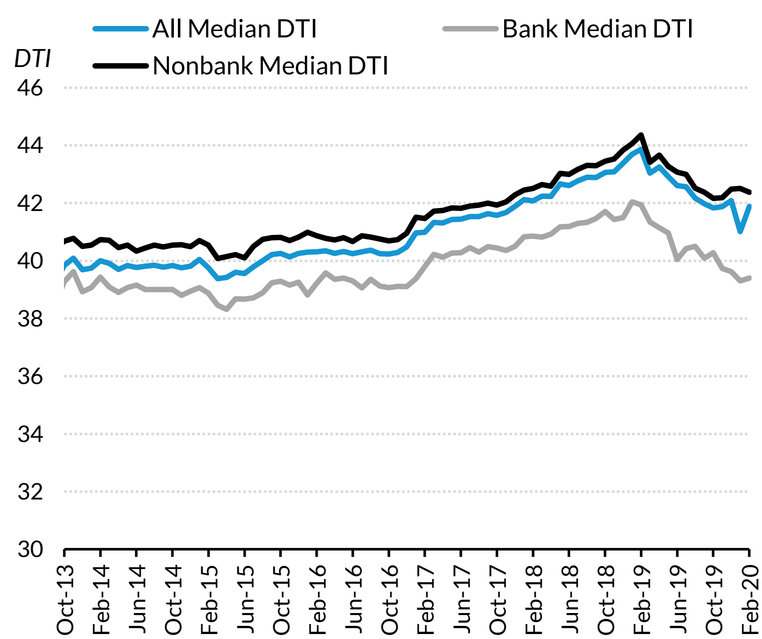
Sources: *eMBS and Urban Institute.* ***Note:*** *Data as of February 2020.*

GSE DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute.* ***Note:*** *Data as of February 2020.*

Ginnie Mae DTI: Bank vs. Nonbank

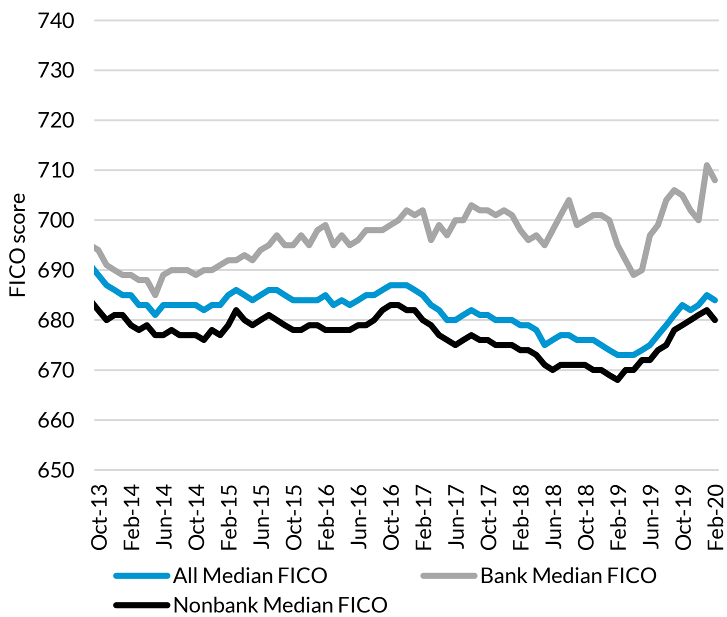


Sources: *eMBS and Urban Institute.* ***Note:*** *Data as of February 2020.*

Ginnie Mae Nonbank Originators: Credit Box

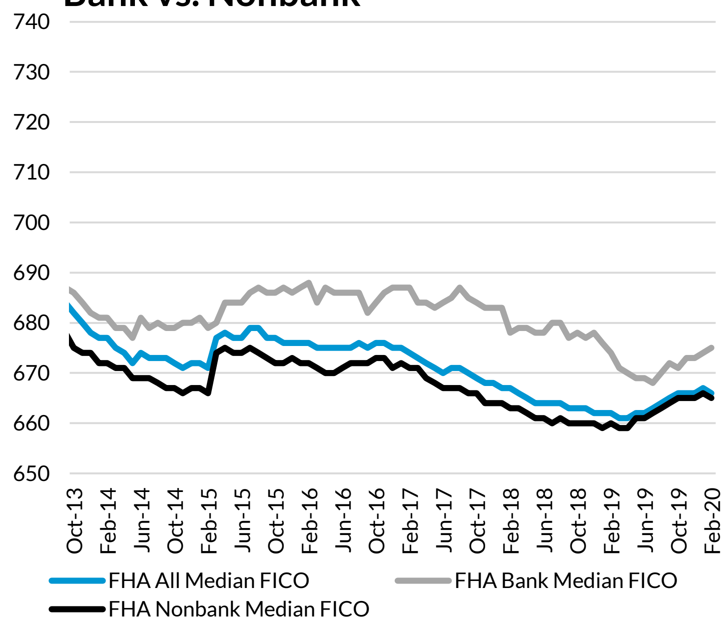
The median FICO score for Ginnie Mae bank and non-bank originators fell in February 2020; bank FICOs remain 28 points above non-banks. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



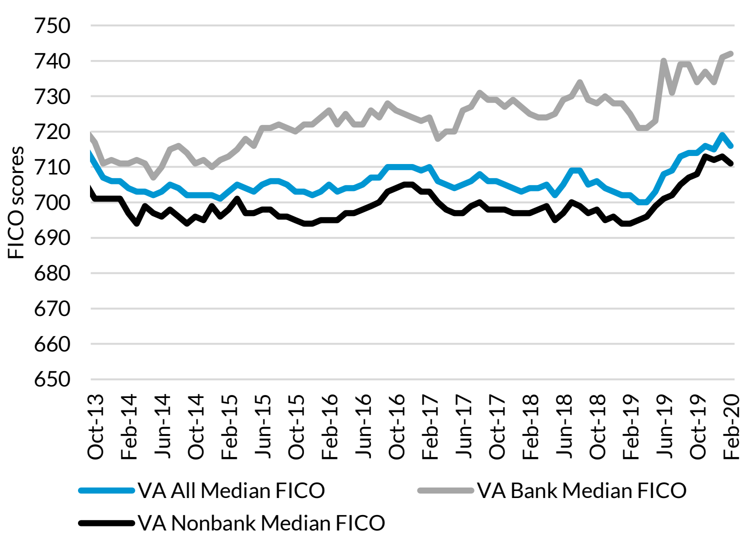
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2020.*

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



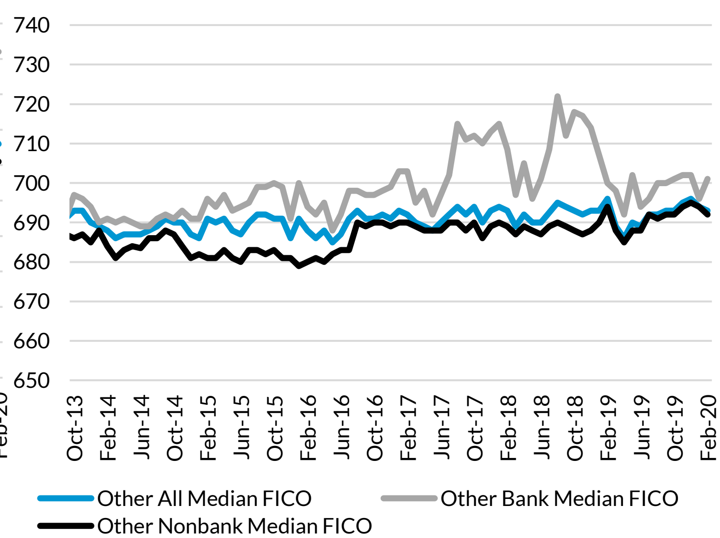
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2020.*

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *Data as of February 2020.*

Ginnie Mae Other FICO Scores: Bank vs. Nonbank

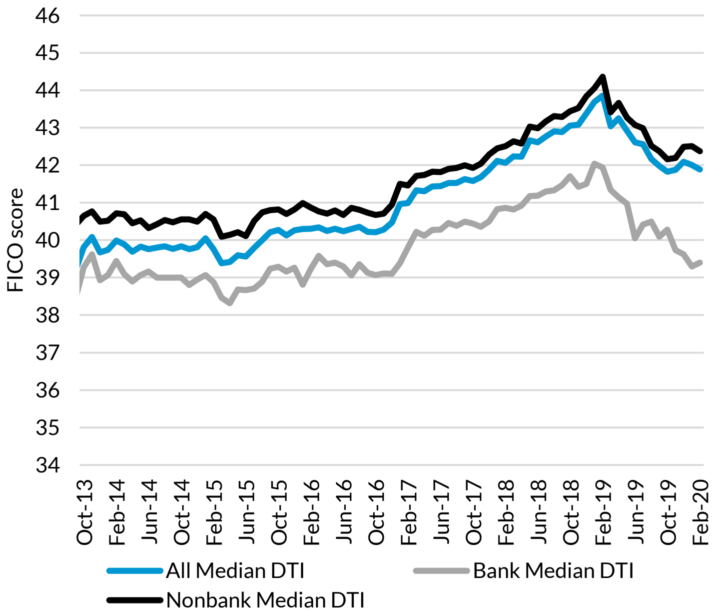


Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2020.*

Ginnie Mae Nonbank Originators: Credit Box

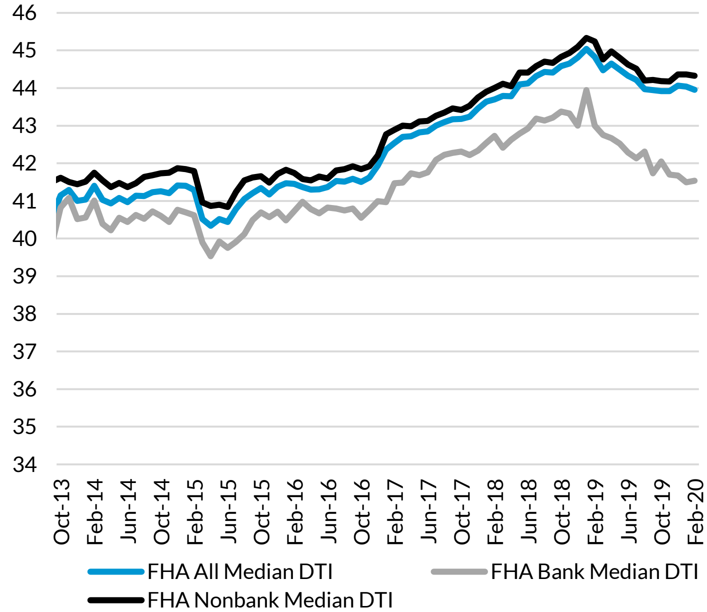
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA borrowers experienced notable increases during 2017 and 2018 for both banks and nonbank originators, while the Other origination DTIs stayed relatively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



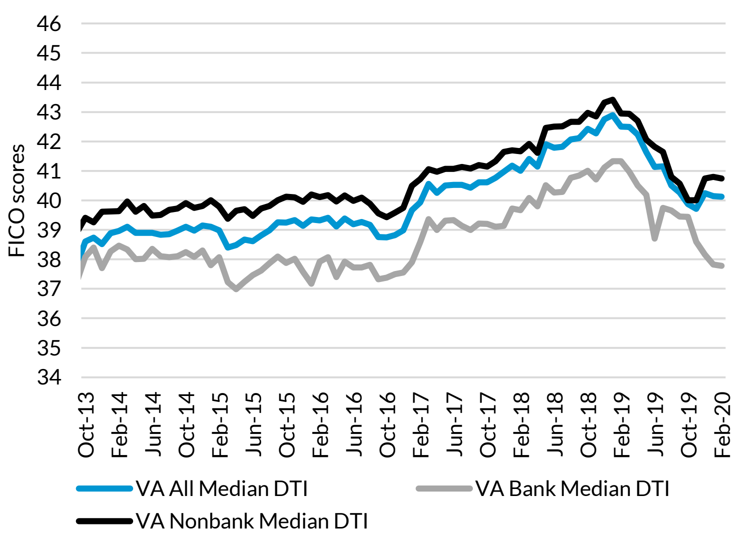
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2020.*

Ginnie Mae FHA DTI: Bank vs. Nonbank



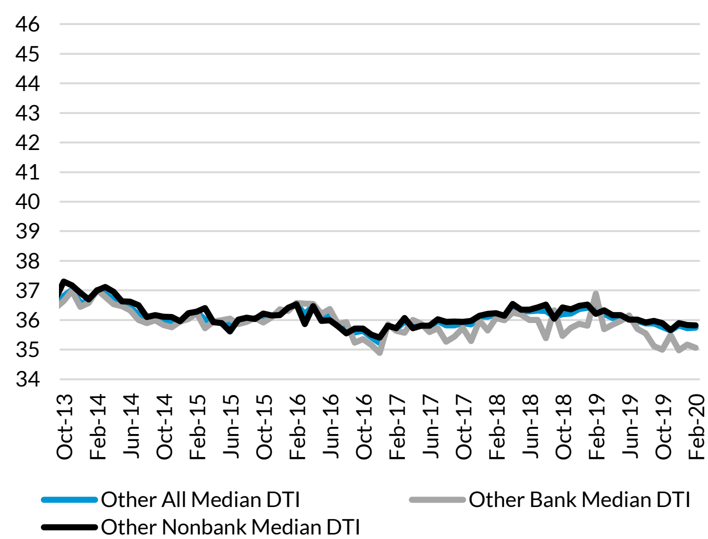
Sources: *eMBS and Urban Institute* **Note:** *Data as of February 2020.*

Ginnie Mae VA DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *Data as of February 2020.*

Ginnie Mae Other DTI: Bank vs. Nonbank



Sources: *eMBS and Urban Institute*
Note: *"Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of February 2020.*

Holders of Ginnie Mae MSRs

This table shows 30 largest owners of mortgage servicing rights (MSR) by UPB for Ginnie Mae securitizations. As of January 2020, over half (52.5 percent) of the Ginnie Mae MSRs are owned by the top six firms. The top 30 firms collectively own 86.0 percent. Eighteen of these 30 are non-depositories, the remaining 12 are depository institutions.

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

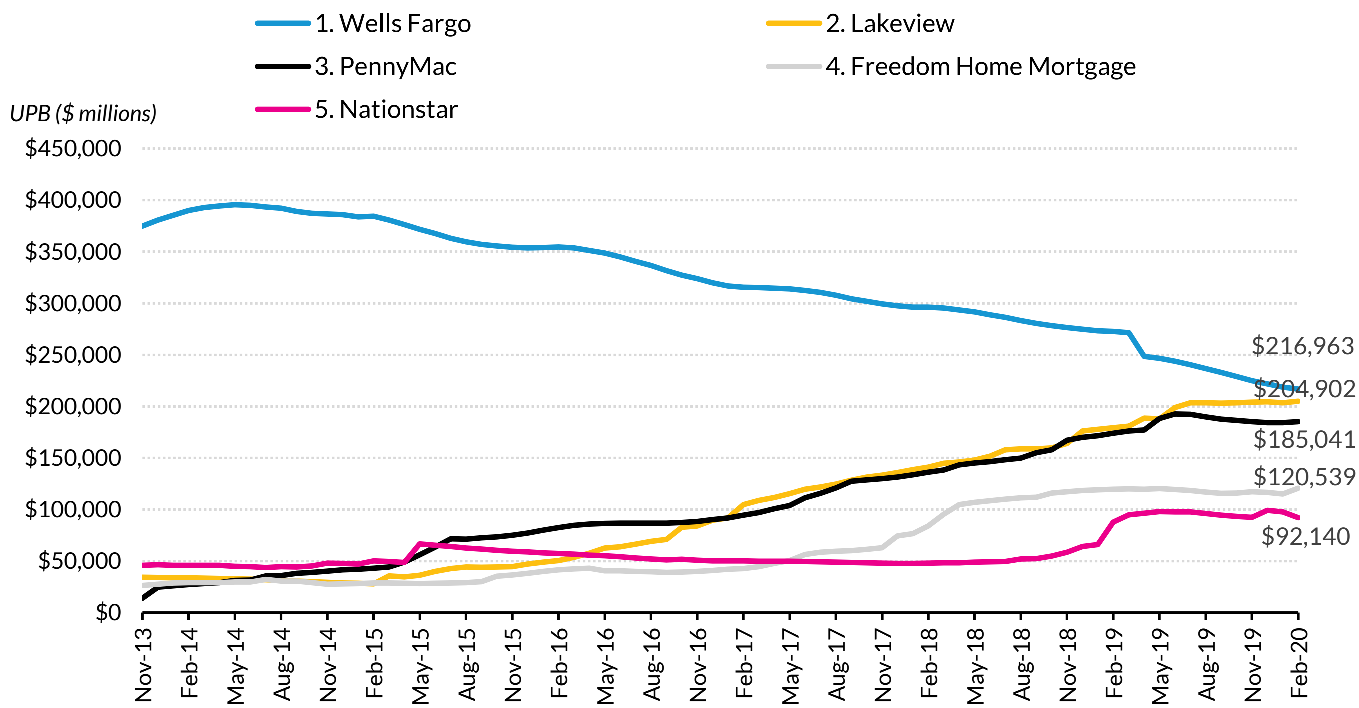
Rank	MSR Holder	UPB ($ millions)	Share	Cumulative Share
1	Wells Fargo	$216,963	12.9%	12.9%
2	Lakeview	$204,902	12.2%	25.1%
3	PennyMac	$185,041	11.0%	36.1%
4	Freedom Home Mortgage	$120,539	7.2%	43.2%
5	Nationstar	$97,684	5.5%	48.7%
6	Quicken Loans	$64,201	3.8%	52.5%
7	US Bank	$57,468	3.4%	56.0%
8	Newrez	$44,566	2.6%	58.6%
9	Carrington Mortgage	$39,028	2.3%	60.9%
10	USAA Federal Savings Bank	$38,131	2.3%	63.2%
11	Caliber Home Loans	$38,054	2.3%	65.5%
12	JP Morgan Chase	$33,356	2.0%	67.4%
13	Amerihome	$29,143	1.7%	69.2%
14	Navy Federal Credit Untion	$28,424	1.7%	70.9%
15	The Money Source	$21,414	1.3%	72.1%
16	Midfirst Bank	$20,244	1.2%	73.3%
17	Home Point Financial	$19,187	1.1%	74.5%
18	M&T Bank	$18,119	1.1%	75.6%
19	Roundpoint	$17,235	1.0%	76.6%
20	Truist Bank	$32,257	1.9%	78.5%
21	Loan Depot	$15,709	0.9%	79.4%
22	Guild Mortgage	$15,616	0.9%	80.4%
23	Flagstar Bank	$13,909	0.8%	81.2%
24	PHH Mortgage	$13,415	0.8%	82.0%
25	Citizens Bank	$13,097	0.8%	82.8%
26	Pingora	$12,379	0.7%	83.5%
27	Planet Home Lending	$10,767	0.6%	84.1%
28	Fifth Third Bank	$10,543	0.6%	84.8%
29	Bank of America	$10,526	0.6%	85.4%
30	PNC Bank	$10,003	0.6%	86.0%

Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2020.*

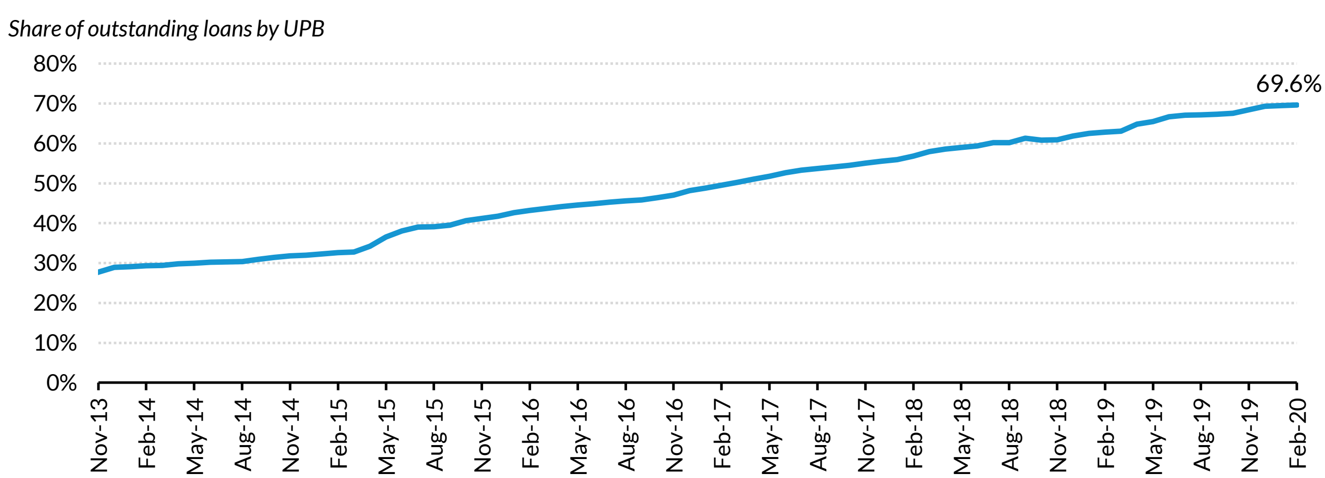
Holders of Ginnie Mae MSRs

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 $217 billion. Lakeview, PennyMac, Freedom Home Mortgage, and Nationstar (all nonbanks) make up the remainder of the top five largest holders of MSRs, owning $205 billion, $185 billion, $120 billion, and $92 billion respectively as of February 2020. As of February 2020, nonbanks collectively owned servicing rights for 69.6 percent of all outstanding unpaid principal balance guaranteed by Ginnie Mae. In December 2013, the nonbank share was much smaller at 27.7 percent.

Top 5 MSR Holders: Outstanding Ginnie Mae Loans by UPB



Share of Ginnie Mae MSRs held by Nonbanks



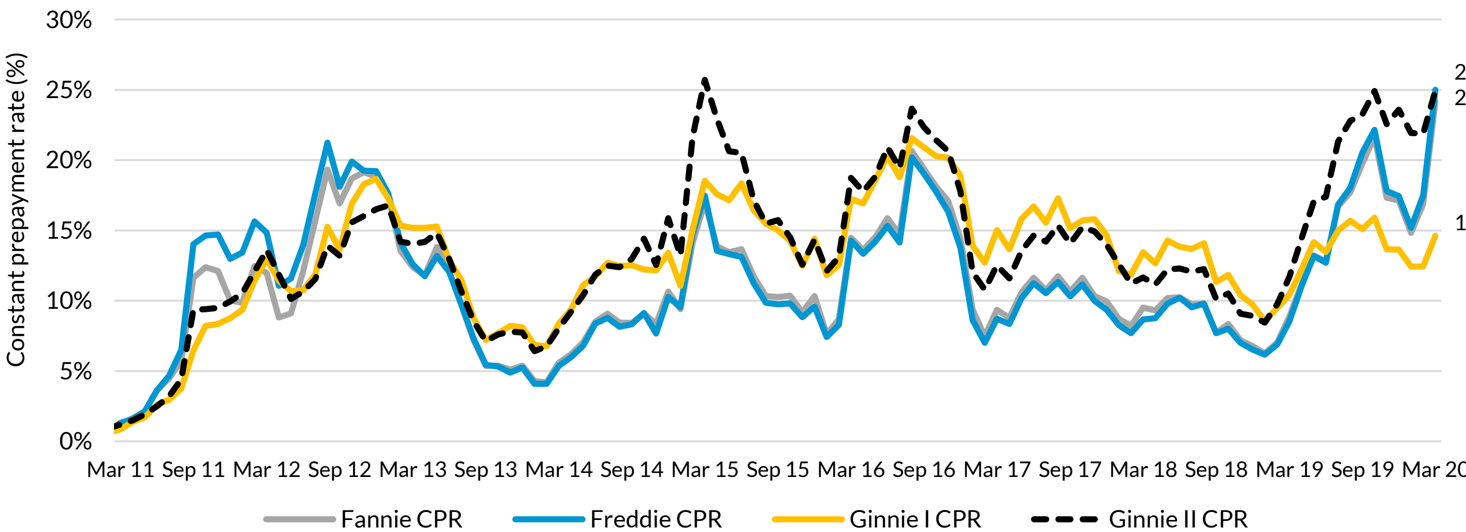
Sources: *eMBS and Urban Institute.* **Note:** *Data as of February 2020.*

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.

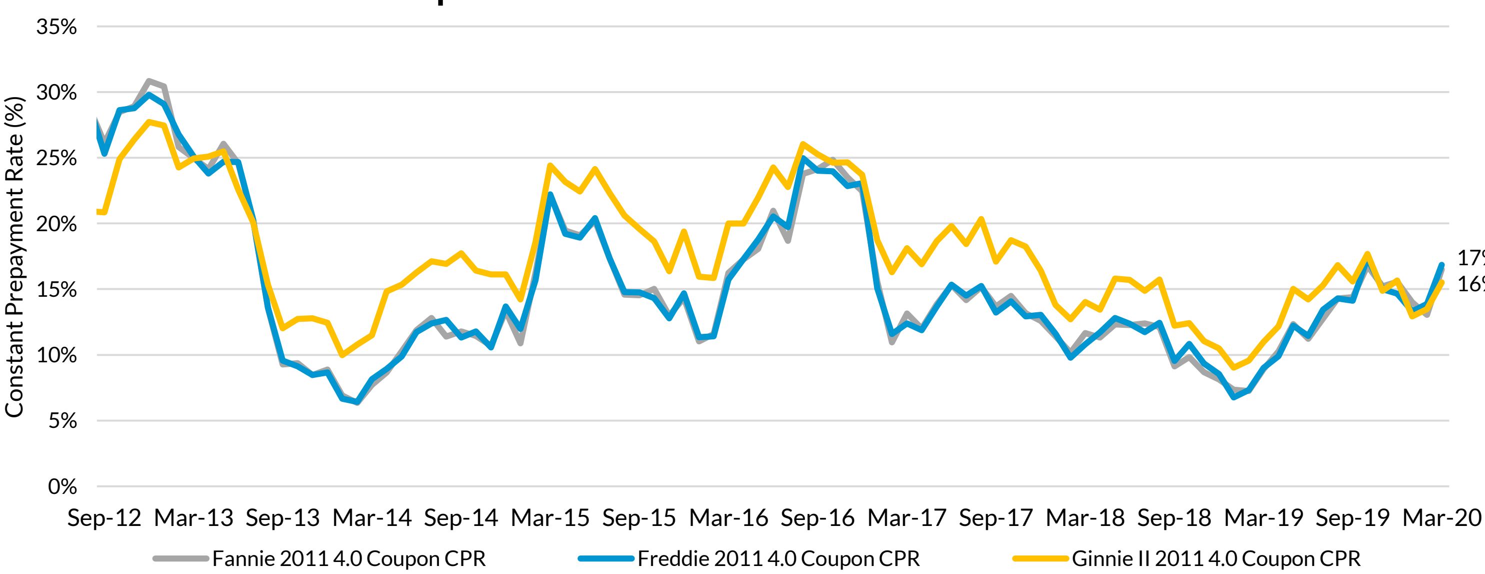
From late 2016 to later 2018, as interest rates increased, the bulk of the mortgage universe found it non-economic to refinance and the prepayment speeds for all agency MBS slowed substantially. The small month-to-month variation in speeds reflected primarily seasonality and changes in day count. With the drop in rates beginning in late 2018 and persisting through the start of 2020, we have seen a notable pick up in prepayment activity. The recent drop in rates has further accelerated speeds.

Aggregate Prepayments



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

2011 Issued 4.0 Coupon CPR



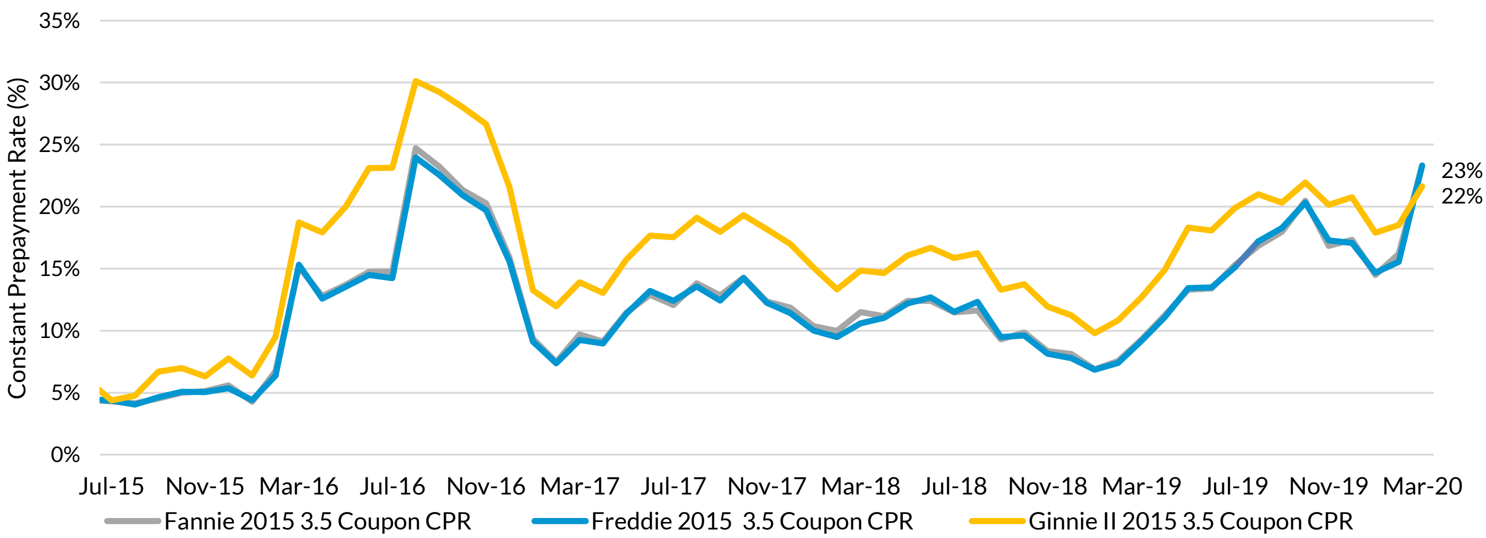
Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2020.*

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.

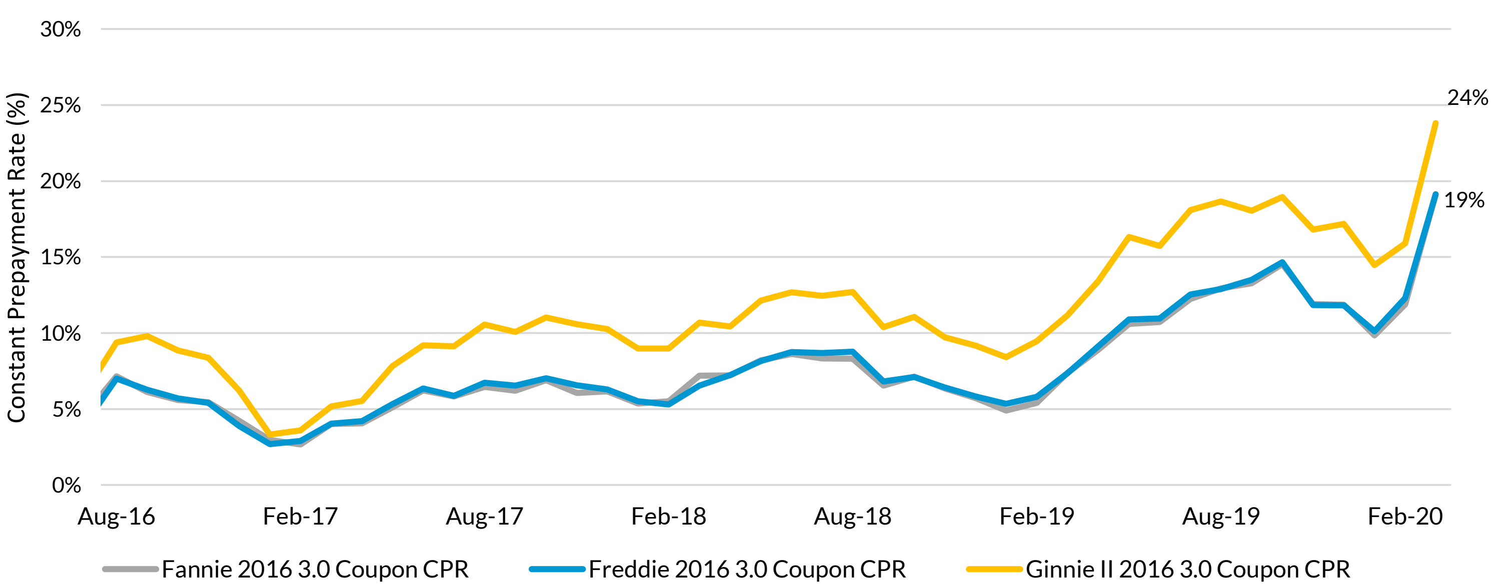
With the increase in interest rates over the 2 year period beginning in November 2016, the prepayment speeds for all agency MBS had slowed. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflected seasonality, changes in day count and changes in mortgage interest rates. With the drop in rates beginning in late 2018 and persisting through early 2020, we have seen a notable pick up in prepayment activity. The recent drop in speeds has accelerated prepayments, particularly in the 3.0% coupon, where speeds had been muted.

2015 Issued 3.5 Coupon CPR



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

2016 Issued 3.0 Coupon CPR

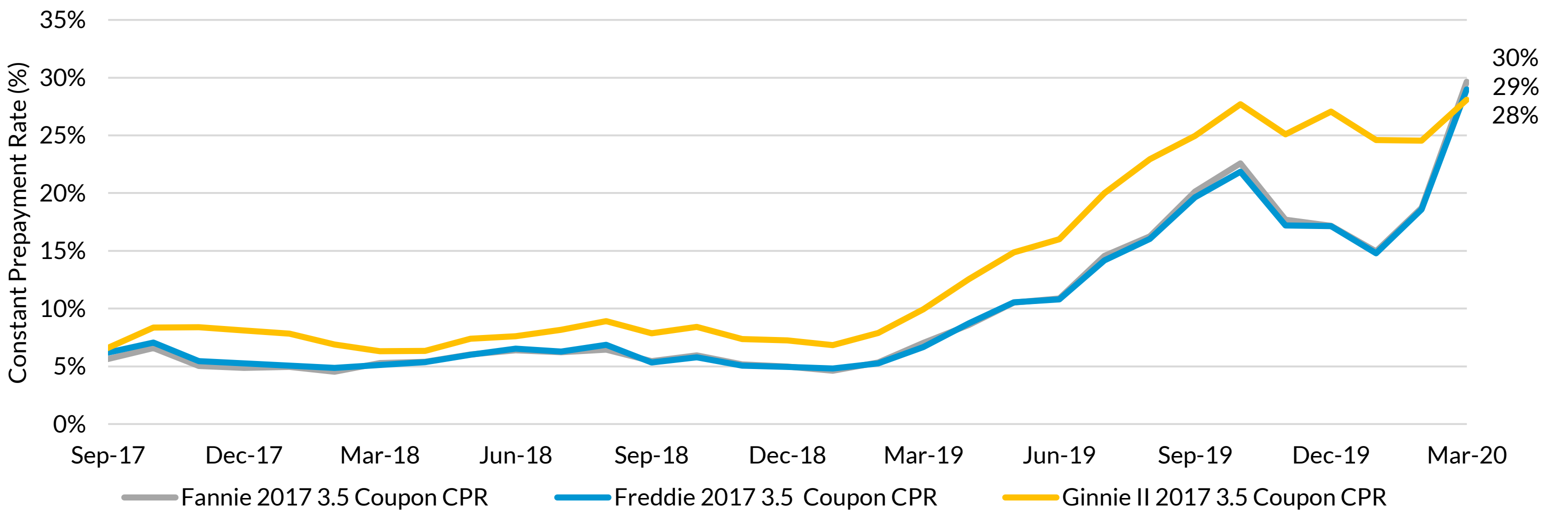


Sources: *Credit Suisse and Urban Institute.* **Note:** *Data as of March 2020.*

Prepayments

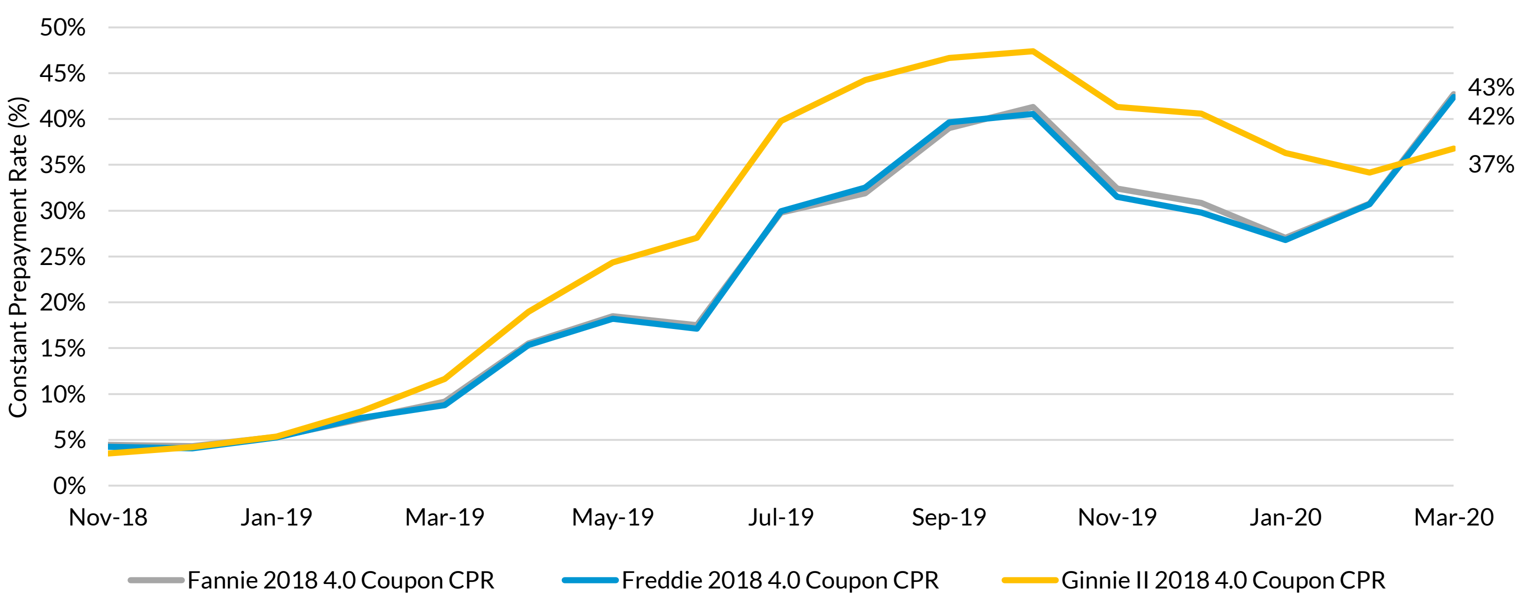
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayment in the early months but are more interest rate responsive thereafter. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of 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. However, in early 2020 conventional speeds accelerated, while Ginnie speeds were more stable, and in the past month, these Ginnie cohorts had speeds similar to, albeit slightly slower than their conventional counterparts.

2017 Issued 3.5 Coupon CPR



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

2018 Issued 4.0 Coupon CPR

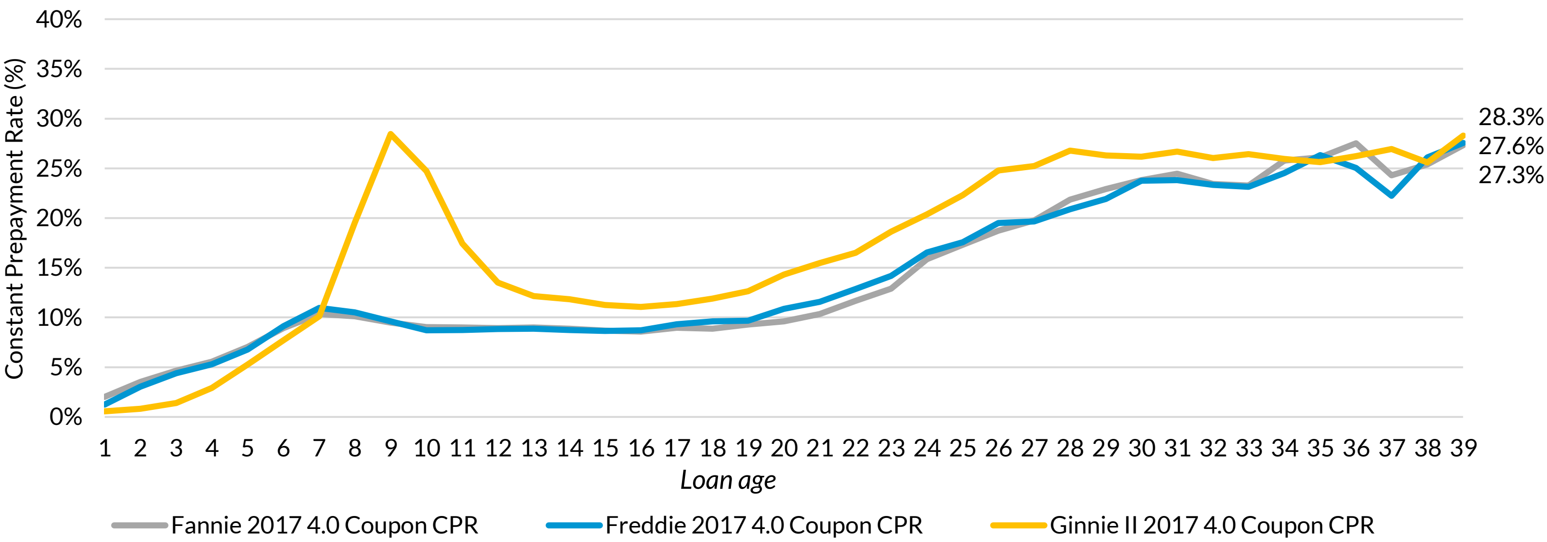


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2020.*

Prepayments

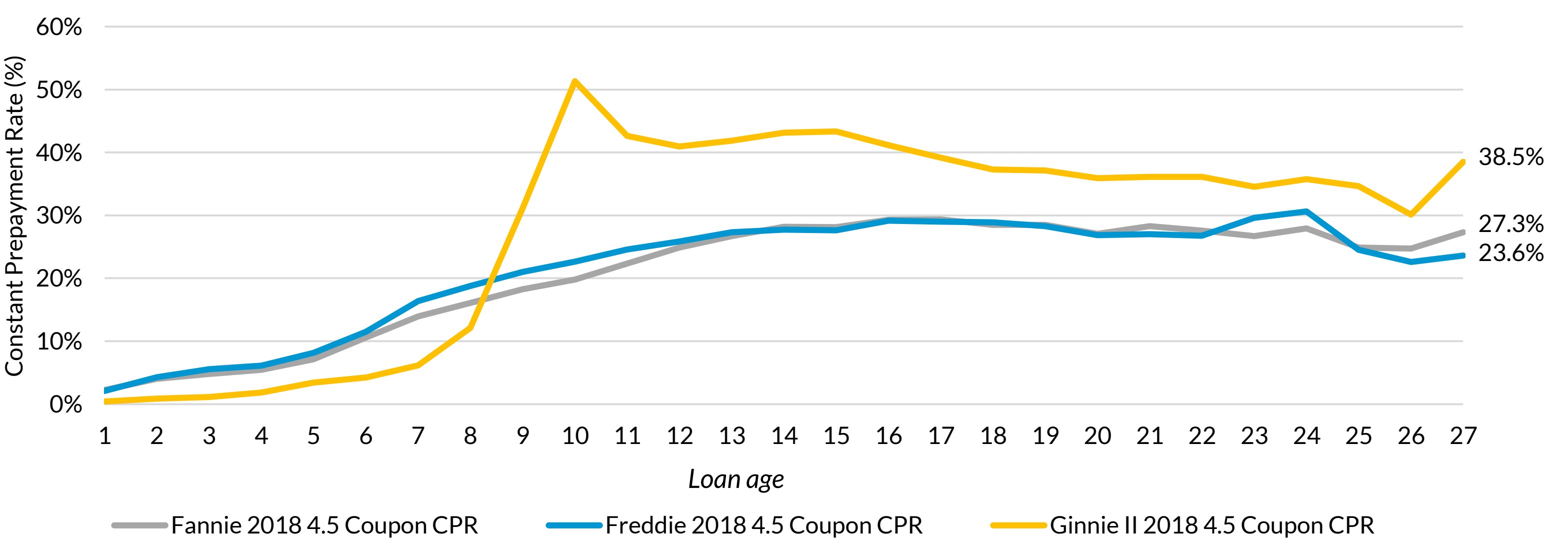
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined 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 these cohorts indicates they are much more responsive to interest rate changes than their conventional mortgages, with the 2017 Ginnie II 4.0s faster than their conventional counterparts until they are 3 years old, and the 2018 Ginnie II 4.5s faster life to date.

2017 Issued 4.0 Coupon CPR, by Loan Age



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

2018 Issued 4.5 Coupon CPR, by Loan Age

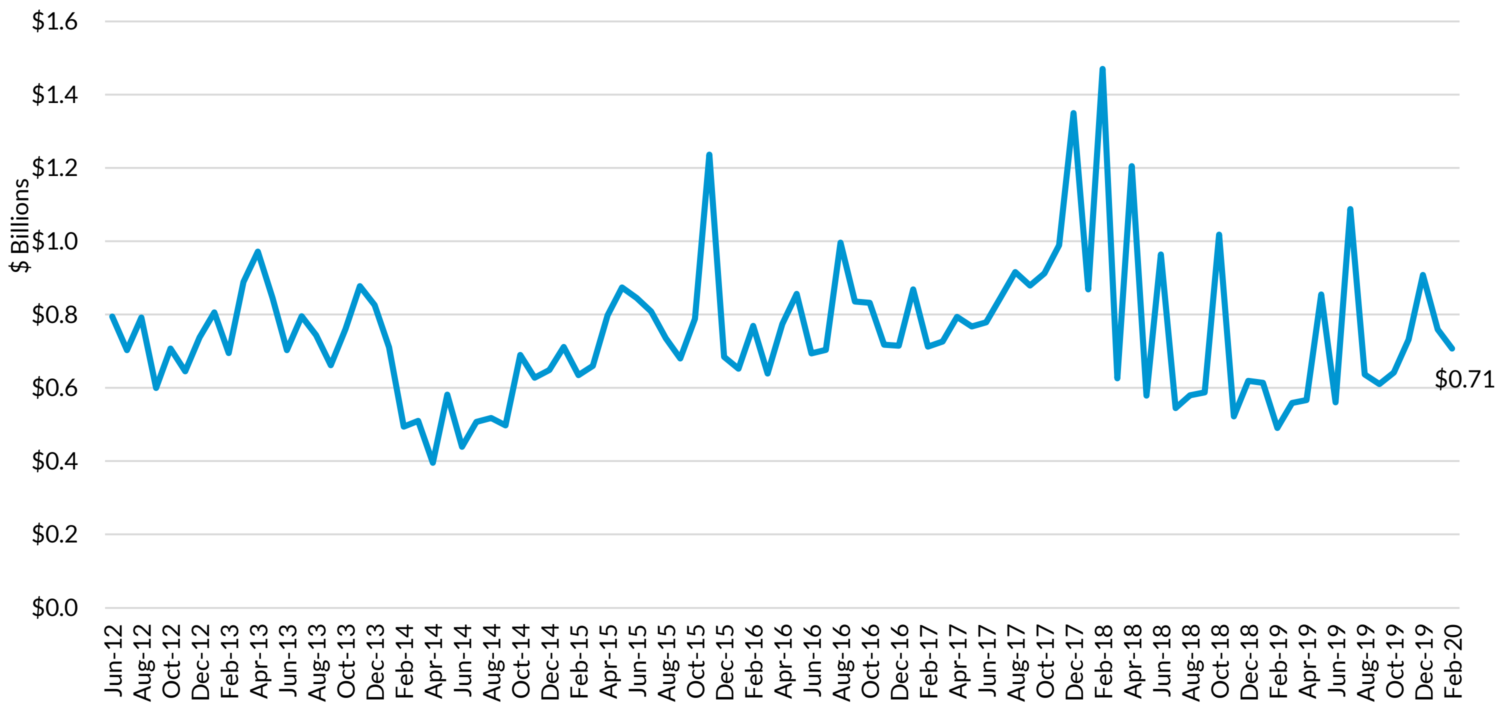


Sources: *Credit Suisse and Urban Institute*. **Note:** *Data as of March 2020..*

Other Ginnie Mae Programs Reverse Mortgage Volumes

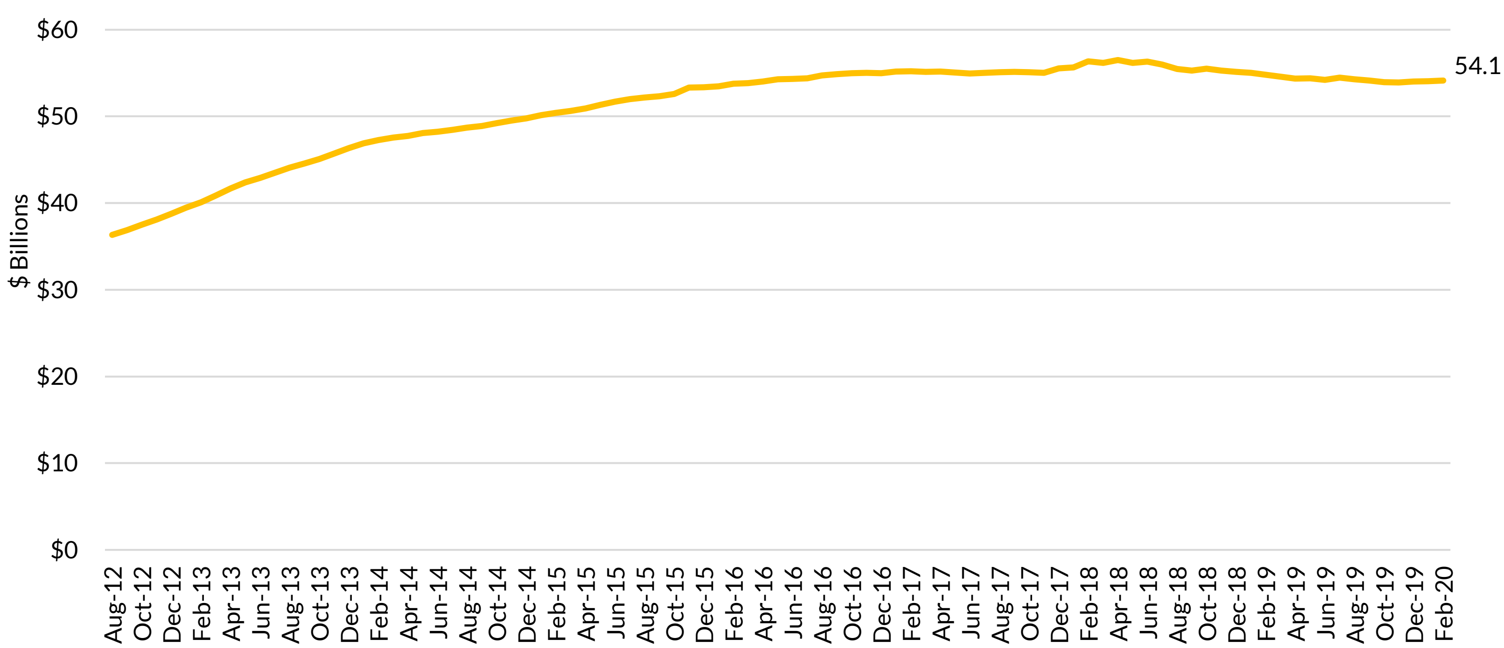
Ginnie Mae reverse mortgage issuance has been volatile in recent months; after falling consecutively in August and September 2019, volume rose to $0.91 billion in December 2019 but it has fallen in the first two months of 2020 to $0.71 billion. Issuance has been generally declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In February 2020, outstanding reverse mortgage securities totaled $54.1 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 February 2020.*

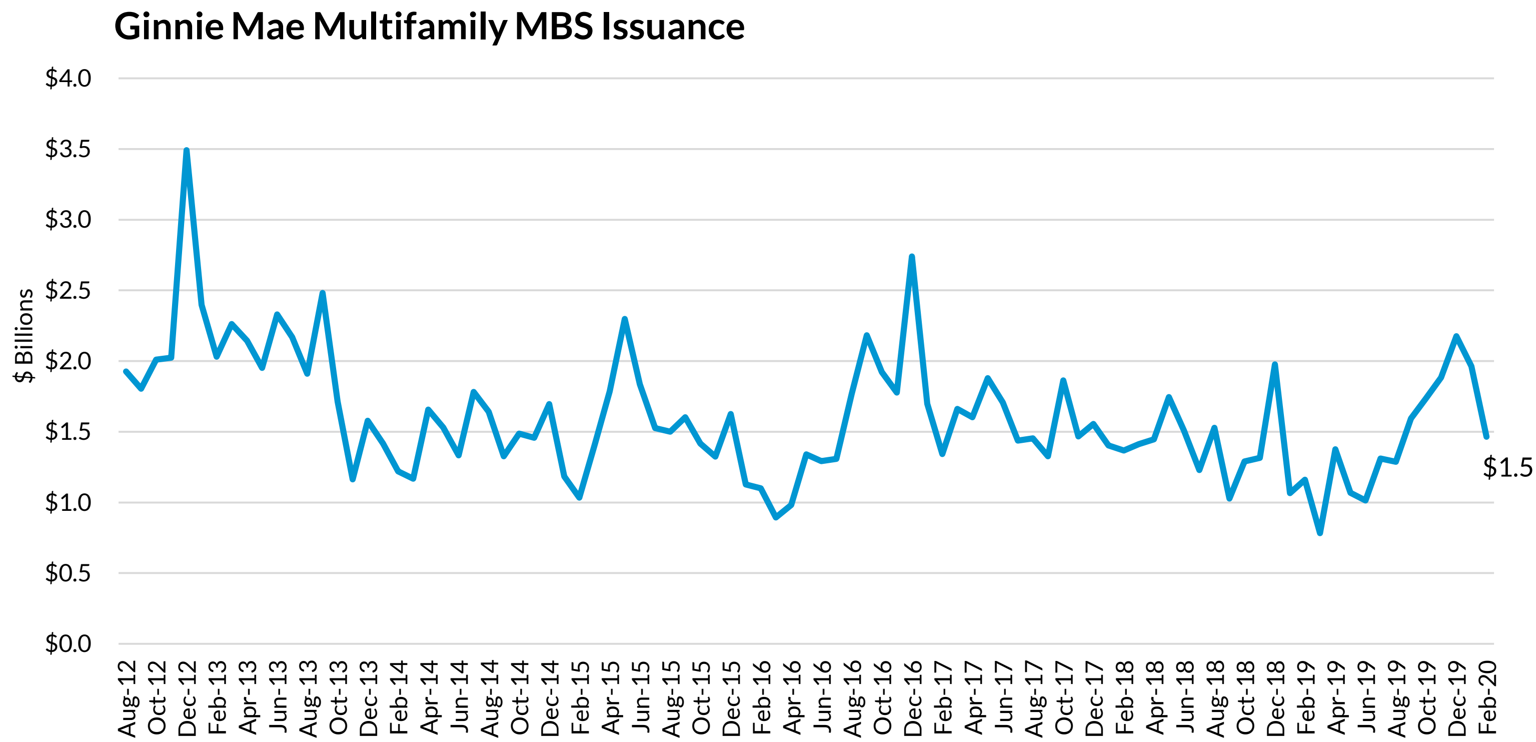
HMBS Outstanding



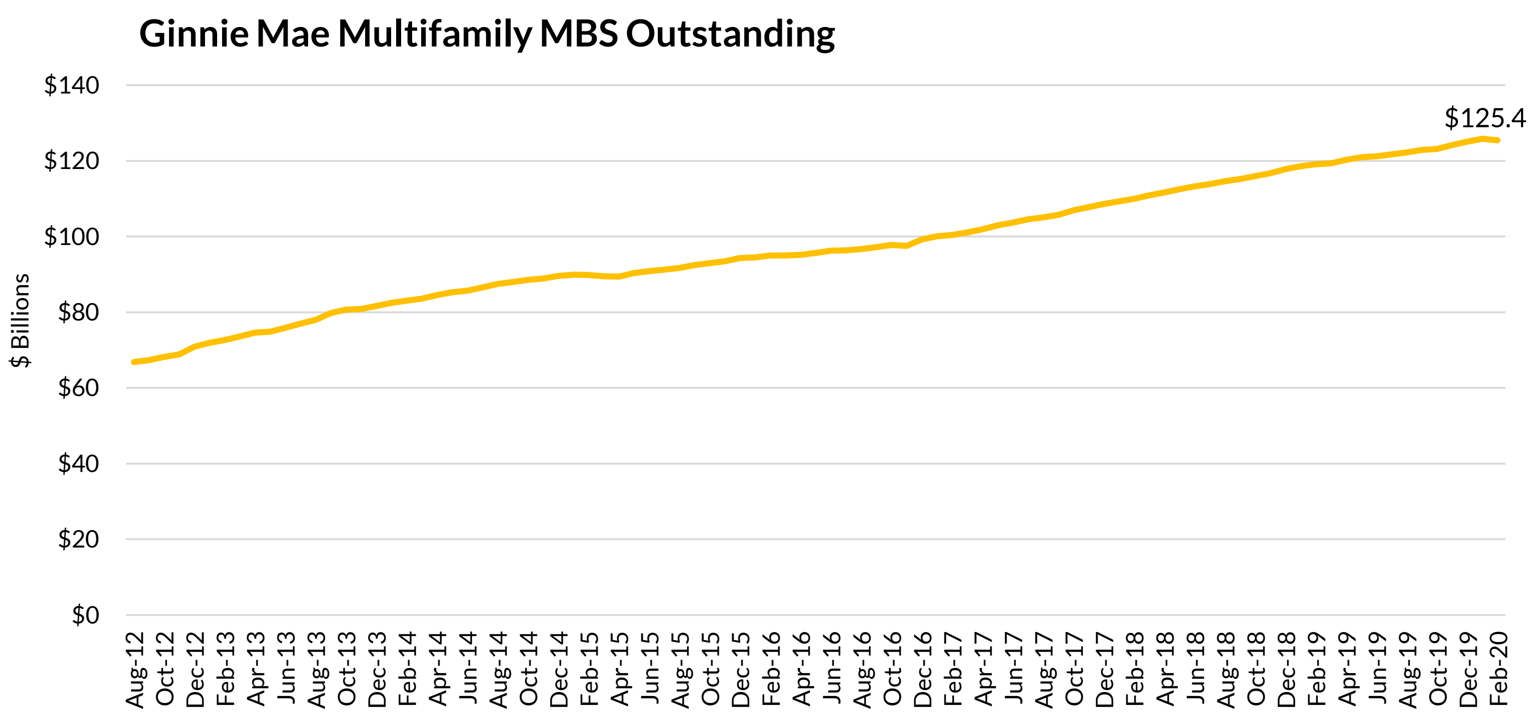
Sources: *Ginnie Mae and Urban Institute.* **Note:** *Data as of February 2020.*

Other Ginnie Mae Programs Multifamily Market

Ginnie Mae multifamily issuance volume in February 2020 totaled $1.5 billion, a decrease from the past month. Outstanding multifamily securities totaled $125.4 billion as of the second month of 2020.



Sources: *Ginnie Mae and Urban Institute.* ***Note***: *Data as of February 2020.*

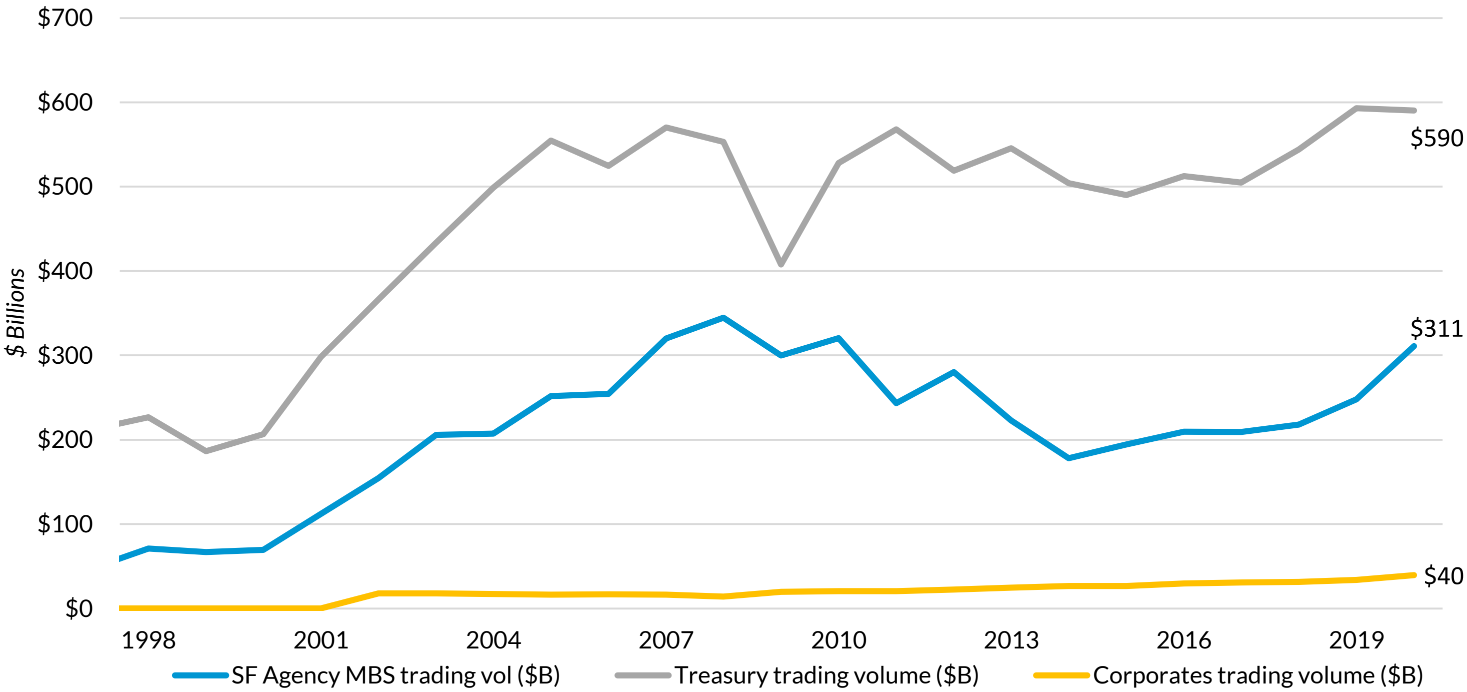


Sources: *Ginnie Mae and Urban Institute.* ***Note***: *Data as of February 2020.*

Market Conditions

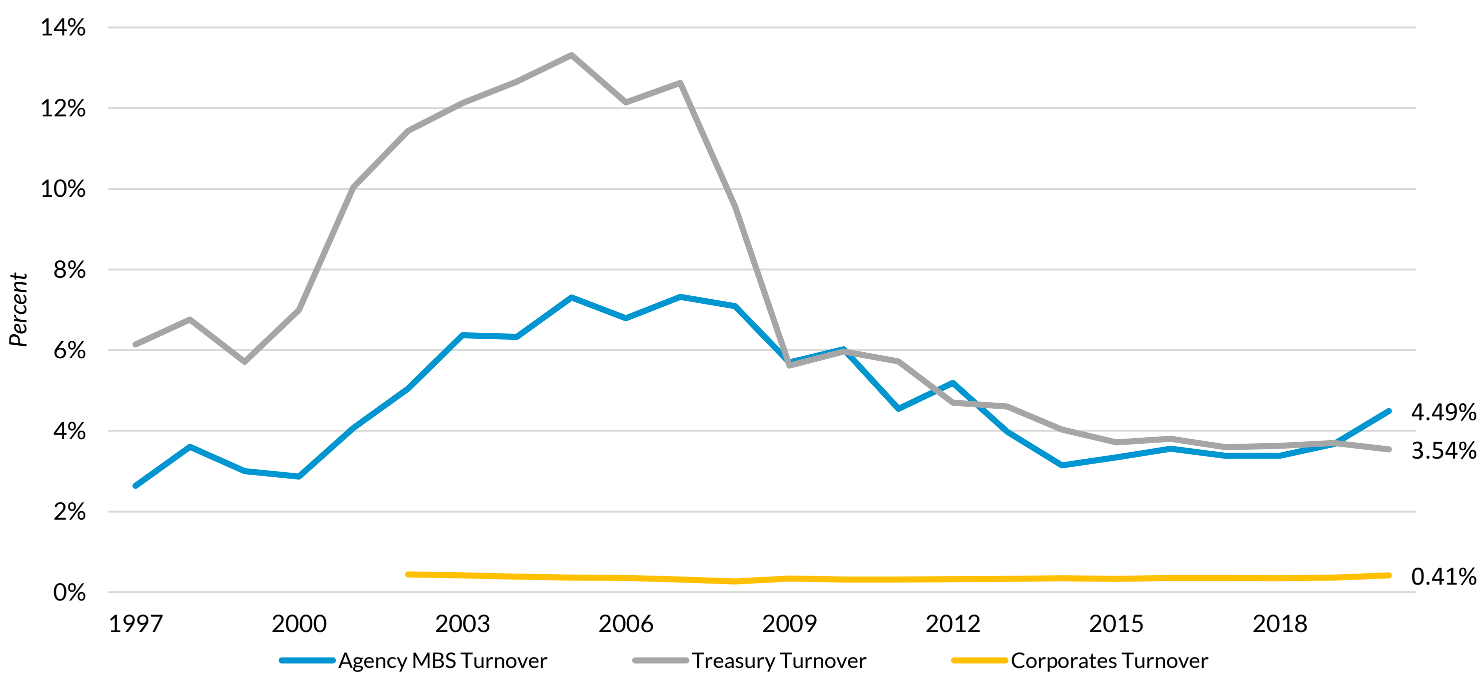
Agency MBS trading volume is $311 billion/day on average in February 2020, more robust than in the 2014-2019 period, but still below the pre-crisis peak of $345 billion in 2008. Average daily trading volume for Treasuries now exceed the pre-crisis peak. Agency MBS turnover in 2020 YTD also has been higher than the 2014-2019 period; in 2020, average daily MBS turnover was 4.49 percent, above the 2019 average of 3.67 percent. Note that agency MBS turnover in the first two months of 2020 has been higher than US Treasury turnover, a rare occurrence. 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 February 2020.*

Average Daily Turnover by Sector

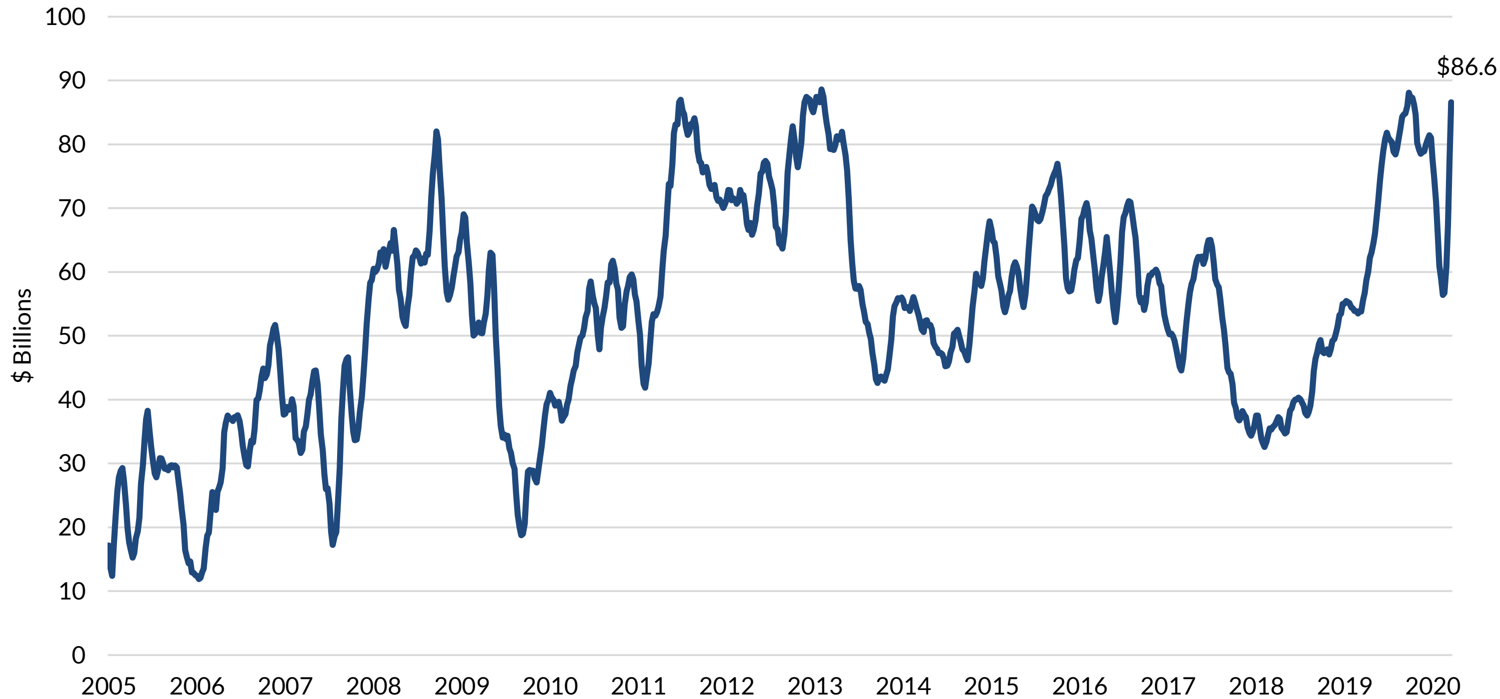


Sources: *SIFMA and Urban Institute.* ***Note:*** *Data as of February 2020.*

Market Conditions

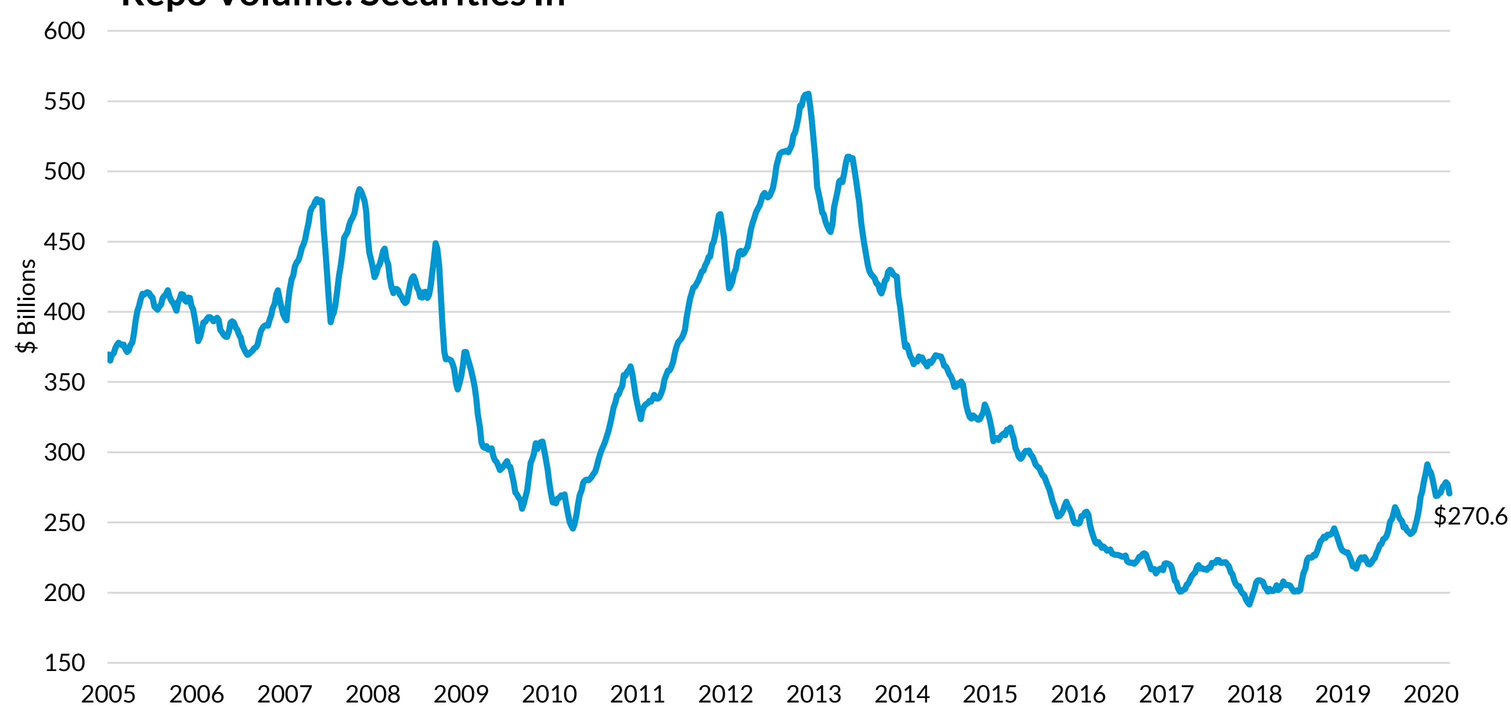
Dealer net positions are near their post-crisis high. By contrast, dealer gross positions have fallen dramatically. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

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 March 2020.*

Repo Volume: Securities In

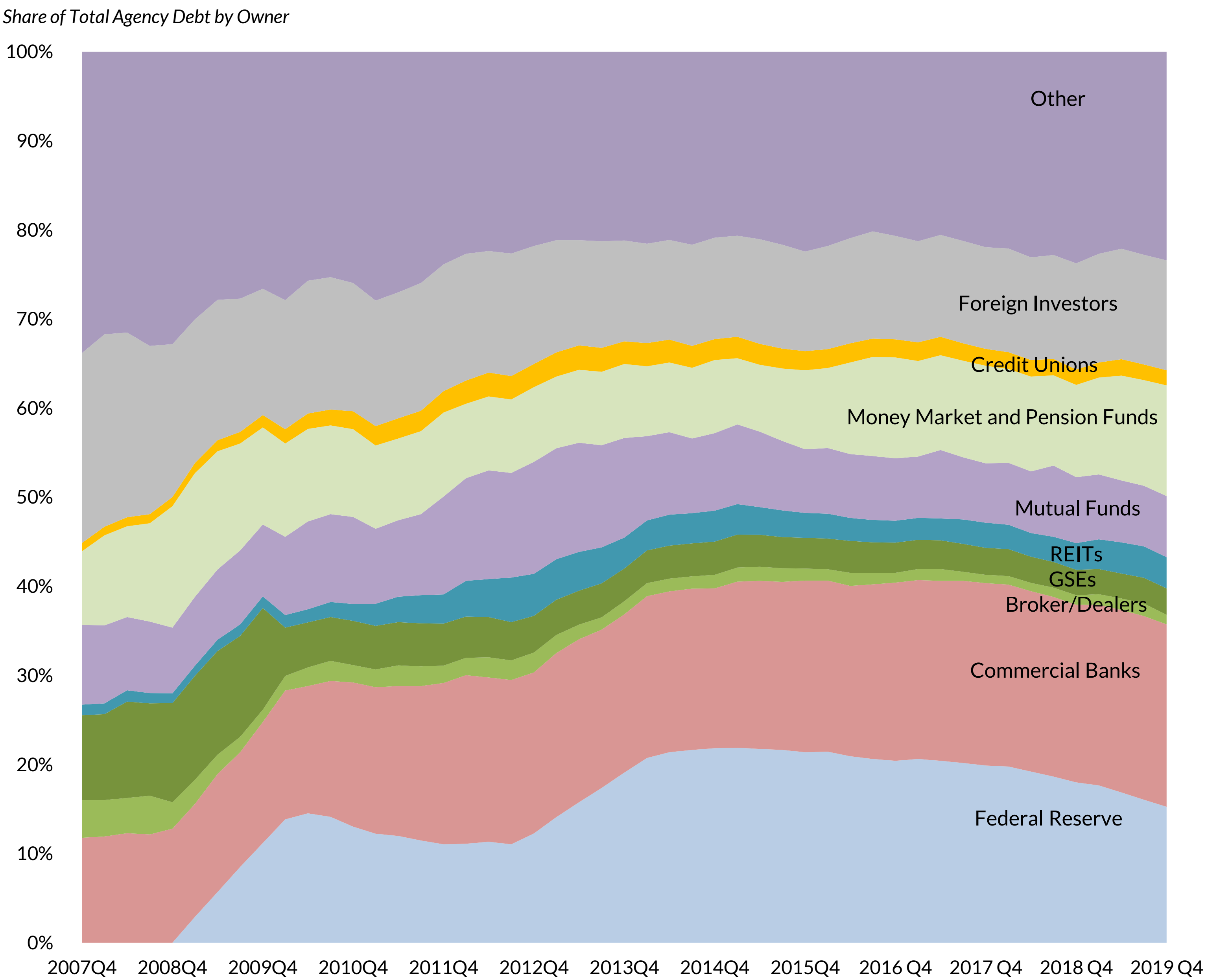


Sources: *Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute.* ***Note:*** *Data as of March 2020.*

MBS Ownership

The largest holders of agency debt (Agency MBS + Agency notes and bonds) include the Federal Reserve (15 percent), commercial banks (20 percent) and foreign investors (12 percent). The broker/dealer and GSE shares are a fraction of what they once were.

Who owns Total Agency Debt?

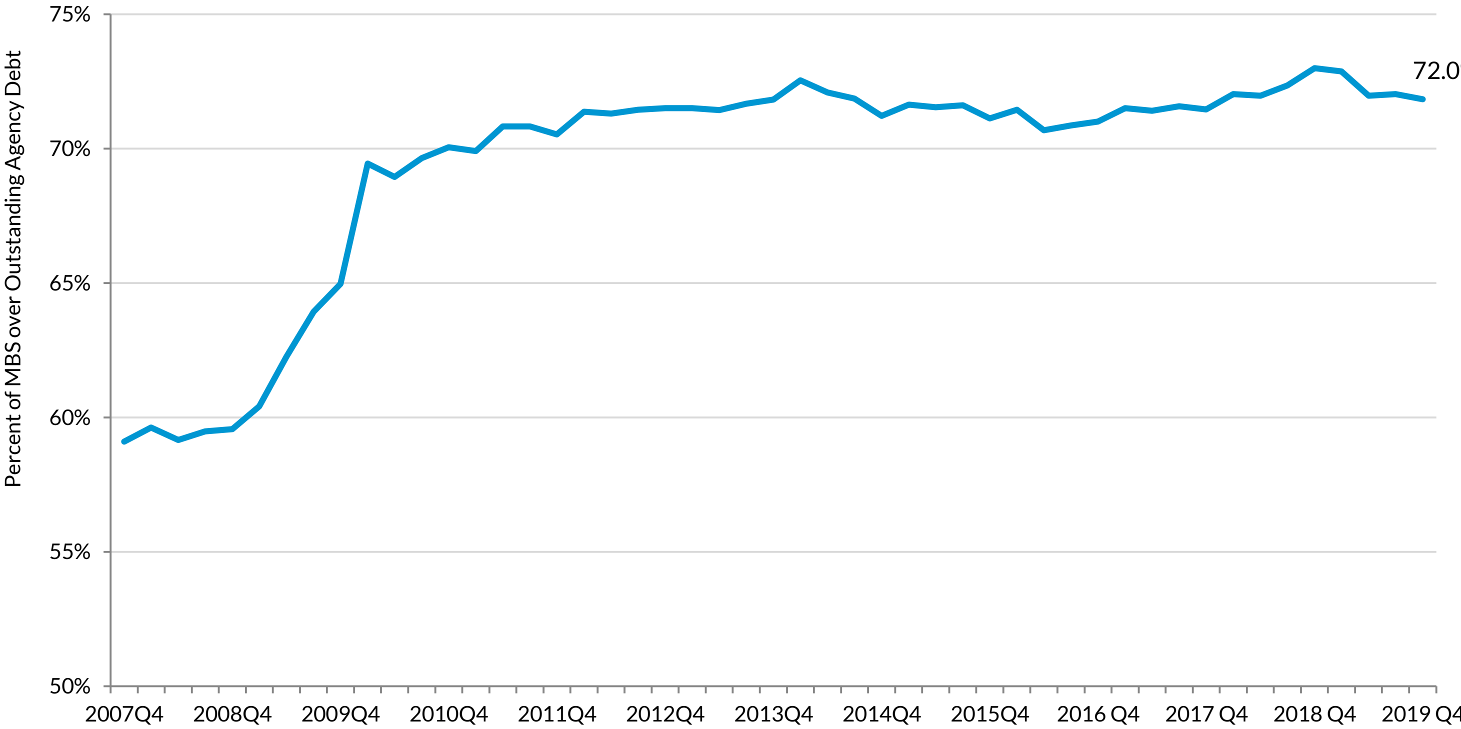


Sources: *Federal Reserve Flow of Funds and Urban Institute.* ***Note:*** *The "other" category includes primarily life insurance companies, state and local govts, households, and nonprofits. Data as of Q4 2019.*

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 Q4 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 $2.2 trillion in holdings as of the end of March 2020, $1.6 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 Q4 2019.*

	Commercial Bank Holdings ($Billions)								Week Ending			
	Feb-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar 4	Mar 11	Mar 18	Mar 25
Largest 25 Domestic Banks	1,407.7	1,471.6	1,495.7	1,509.8	1,529.2	1,509.7	1,528.9	1,538.4	1,547.3	1,557.8	1,578.3	1,617.7
Small Domestic Banks	485.9	506.8	511.9	516.4	521.1	531.2	535.8	539.4	543.1	542.4	546.0	551.2
Foreign Related Banks	25.1	34.1	35.0	37.1	37.6	37.8	38.3	39.3	40.9	43.5	41.8	47.6
Total, Seasonally Adjusted	1,918.7	2,012.5	2,042.6	2,063.3	2,087.9	2,078.7	2,103.0	2,117.1	2,131.3	2,143.7	2,166.1	2,216.5

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 March 2020.*

MBS Ownership

Out of the $2.0 trillion in MBS holdings at banks and thrifts as of Q4 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. In Q4, 2019, MBS holding at banks and thrifts increased for the fifth consecutive quarter, although the increase was smaller than in the previous 4 quarters. The increase was almost entirely in GSE pass-throughs, Ginnie Mae pass-through holdings were flat.

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
4Q19	$1,985.38	$1,516.26	$1,089.41	$426.85	$428.99	$4.62	$35.52

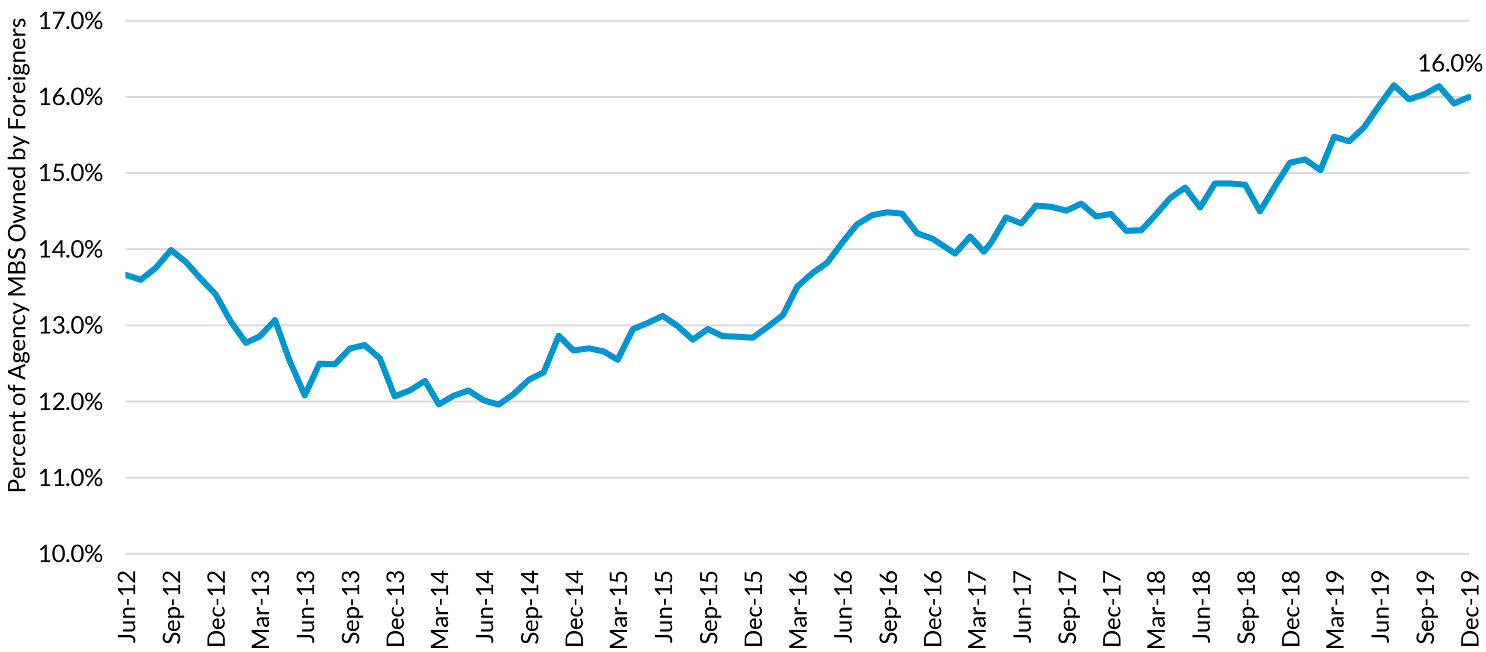
	Top Bank & Thrift Residential MBS Investors	Total ($MM)	GSE PT ($MM)	GNMA PT ($MM)	Agency REMIC ($MM)	Non-Agency ($MM)	Market Share
1	Bank of America Corporation	$331,072	$188,861	$131,989	$10,134	$88	16.7%
2	Wells Fargo & Company	$252,535	$182,814	$65,936	$2,958	$827	12.7%
3	JP Morgan Chase & Co.	$143,485	$93,693	$36,597	$205	$12,990	7.2%
4	U S. Bancorp.	$93,914	$43,762	$29,495	$20,657	$1	4.7%
5	Charles Schwab Bank	$89,040	$52,065	$19,196	$17,779	$0	4.5%
6	Citigroup Inc.	$72,342	$61,511	$2,433	$6,564	$1,834	3.6%
7	Truist Bank	$68,581	$23,908	$18,243	$26,062	$368	3.5%
8	Capital One Financial Corporation	$63,600	$25,739	$14,676	$22,424	$761	3.2%
9	Bank of New York Mellon Corp.	$55,954	$34,758	$4,184	$15,696	$1,316	2.8%
10	PNC Bank, National Association	$52,962	$45,959	$2,748	$2,301	$1,953	2.7%
11	State Street Bank and Trust Company	$42,248	$22,722	$10,143	$6,799	$2,584	2.1%
12	HSBC Bank USA, National Association	$26,171	$5,054	$13,017	$8,098	$2	1.3%
13	Ally Bank	$24,631	$15,300	$2,211	$4,340	$2,780	1.2%
14	Morgan Stanley	$24,014	$13,923	$6,029	$4,062	$0	1.2%
15	E*TRADE Bank	$21,952	$10,470	$3,212	$8,270	$0	1.1%
16	USAA Federal Savings Bank	$20,933	$17,662	$2,420	$851	$0	1.1%
17	Citizens Bank, National Association	$20,763	$10,416	$4,050	$5,635	$662	1.0%
18	KeyBank National Association	$20,577	$1,469	$660	$18,449	$0	1.0%
19	TD Bank	$18,203	$1,858	$184	$15,854	$306	0.9%
20	Regions Bank	$16,248	$10,623	$3,310	$2,314	$1	0.8%
	Total Top 20	**$1,459,225**	**$862,567**	**$370,733**	**$199,451**	**$26,474**	**73.3%**

Sources: *Inside Mortgage Finance and Urban Institute.* ***Note:*** *Data as of Q4 2019.*

MBS Ownership

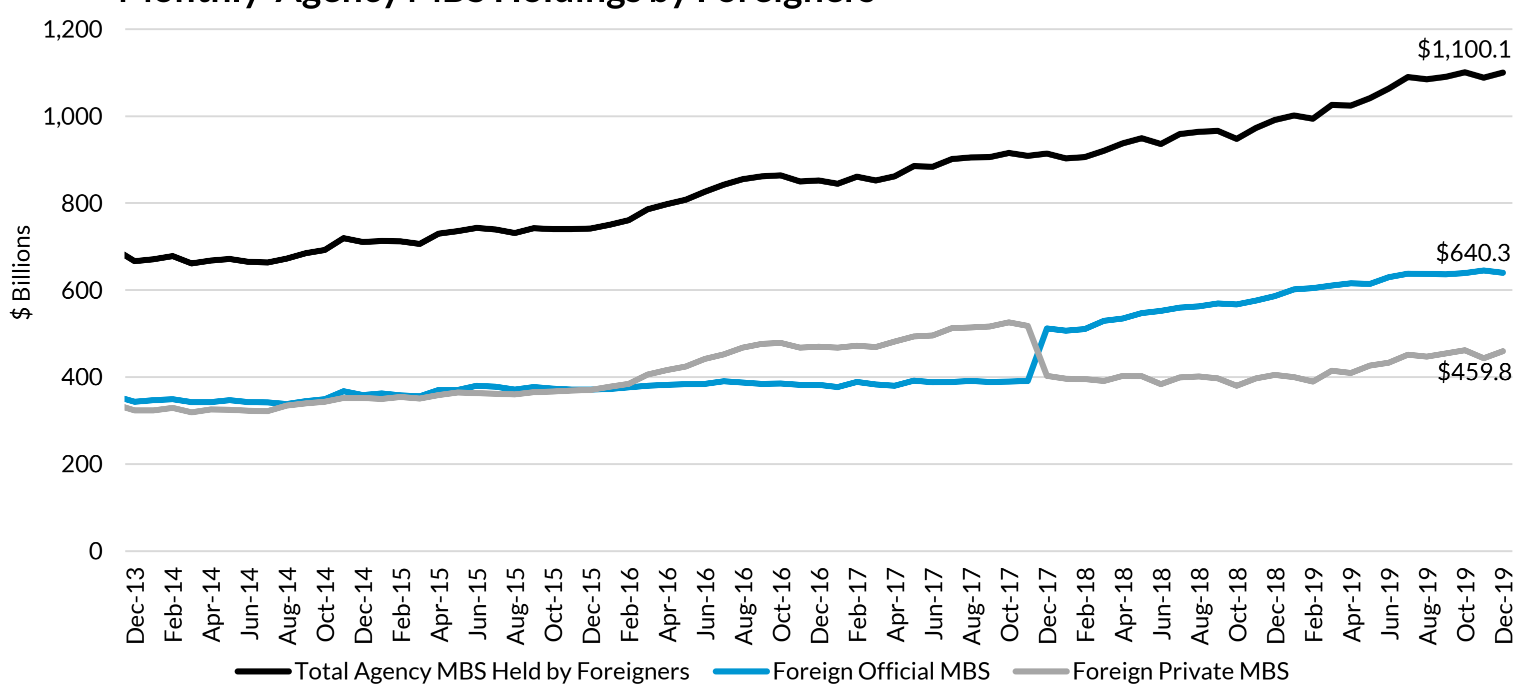
Foreign investors held 16.0 percent of agency MBS in December 2019, up from a low of 12.0 percent in July 2014. For the month of December 2019, this represents $1.10 trillion in Agency MBS, $460 billion held by foreign private institutions and $640 billion held by foreign institutions.

Foreign Share of Agency MBS



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

Monthly Agency MBS Holdings by Foreigners



***Sources**: Treasury International Capital (TIC) and Urban Institute. **Note**: Data as of December 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 December 2019, we estimate China has increased their agency MBS holdings by $51.7 billion, Japan has increased their holdings by $48.2 billion and Taiwan has increased their holdings by $11.8 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	Dec-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Japan	257,547	254,511	271,999	284,322	296,445	311,043	305,327	-3,036	17,488	12,323	12,123	14,598	-5,716
Taiwan	250,009	250,639	261,262	265,992	265,520	263,011	261,740	630	10,623	4,730	-472	-2,509	-1,271
China	180,635	190,203	188,921	208,540	227,312	233,778	231,742	9,568	-1,282	19,619	18,772	6,466	-2,036
Ireland	46,817	48,220	48,020	46,623	44,850	41,374	38,633	1,403	-200	-1,397	-1,773	-3,476	-2,741
Luxembourg	36,372	38,800	50,869	44,561	46,328	46,606	38,977	2,428	12,069	-6,308	1,767	278	-7,629
South Korea	44,039	43,944	44,794	42,604	42,669	41,309	40,542	-95	850	-2,190	65	-1,360	-767
Bermuda	27,866	27,610	28,777	28,450	29,286	29,183	33,897	-256	1,167	-327	836	-103	4,714
Cayman Islands	31,017	31,638	31,398	30,374	30,819	29,432	31,036	621	-240	-1,024	445	-1,387	1,604
Malaysia	12,710	12,874	12,671	12,395	12,108	15,585	16,600	164	-203	-276	-287	3,477	1,015
Netherlands	11,995	12,229	9,601	9,400	13,548	10,546	10,898	234	-2,628	-201	4,148	-3,002	352
Rest of World	125,197	128,807	128,323	130,053	128,049	135,460	152,136	3,610	-484	1,730	-2,004	7,411	16,676
Total	1,024,200	1,039,475	1,076,635	1,103,314	1,136,934	1,157,327	1,161,528	15,275	37,160	26,679	33,620	20,393	4,201

Agency MBS Only (Estimates)

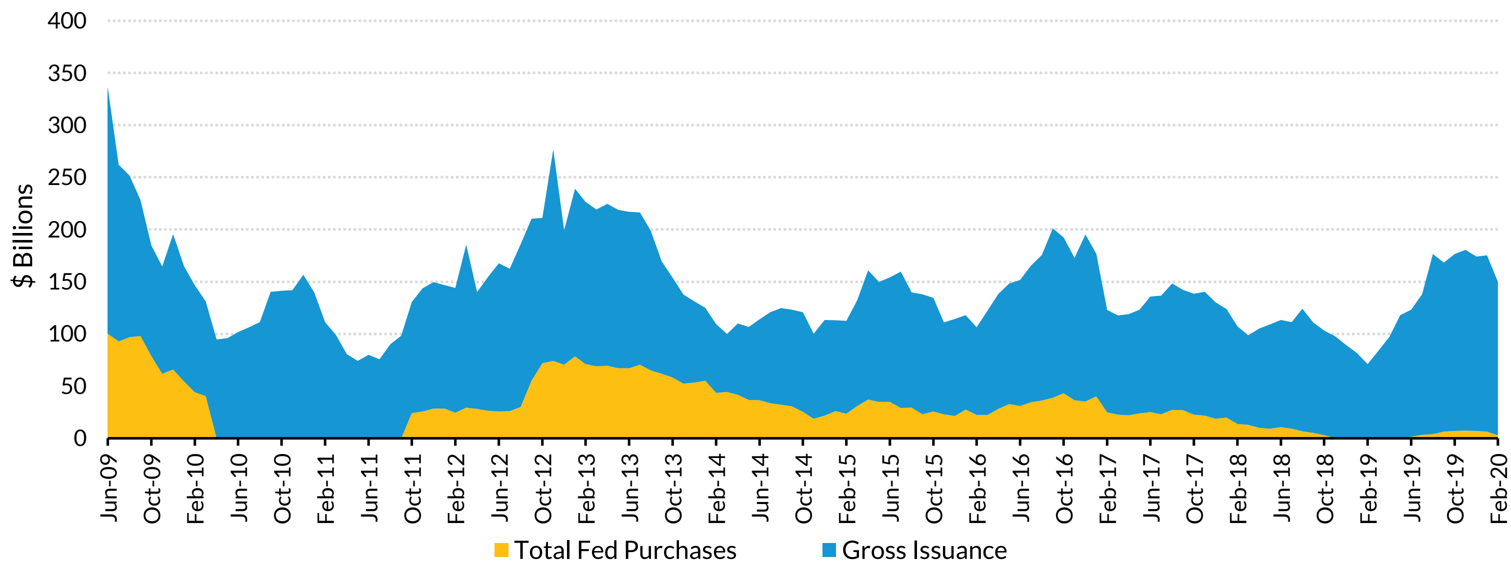
	Level of Holdings ($Millions)*							Change in Holdings ($Millions)*					
Country	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Dec-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Japan	253,972	250,851	268,150	280,394	293,002	307,681	302,218	-3,121	17,299	12,244	12,608	14,678	-5,462
Taiwan	249,773	250,397	261,008	265,733	265,293	262,789	261,535	624	10,611	4,725	-440	-2,504	-1,254
China	176,345	185,811	184,302	203,827	223,181	229,743	228,011	9,466	-1,509	19,525	19,354	6,562	-1,732
Ireland	37,832	39,021	38,346	36,751	36,197	32,923	30,819	1,189	-676	-1,594	-554	-3,274	-2,104
Luxembourg	34,012	36,384	48,328	41,968	44,055	44,386	36,925	2,372	11,944	-6,360	2,087	331	-7,462
South Korea	33,064	32,708	32,977	30,546	32,100	30,986	30,998	-356	269	-2,431	1,554	-1,113	11
Bermuda	24,969	24,644	25,658	25,267	26,496	26,458	31,378	-325	1,014	-391	1,229	-38	4,919
Cayman Islands	24,384	24,847	24,256	23,086	24,431	23,193	25,268	463	-591	-1,170	1,345	-1,238	2,074
Malaysia	12,319	12,474	12,250	11,965	11,731	15,217	16,260	155	-224	-285	-234	3,486	1,043
Netherlands	11,437	11,658	9,000	8,787	13,011	10,021	10,413	221	-2,658	-213	4,224	-2,989	392
Rest of World	95,510	98,414	96,359	97,436	99,460	107,538	126,319	2,904	-2,056	1,078	2,023	8,078	18,781
Total	953,612	967,209	1,000,632	1,025,760	1,068,956	1,090,935	1,100,142	13,597	33,423	25,128	43,196	21,979	9,207

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 December 2019.*

MBS Ownership

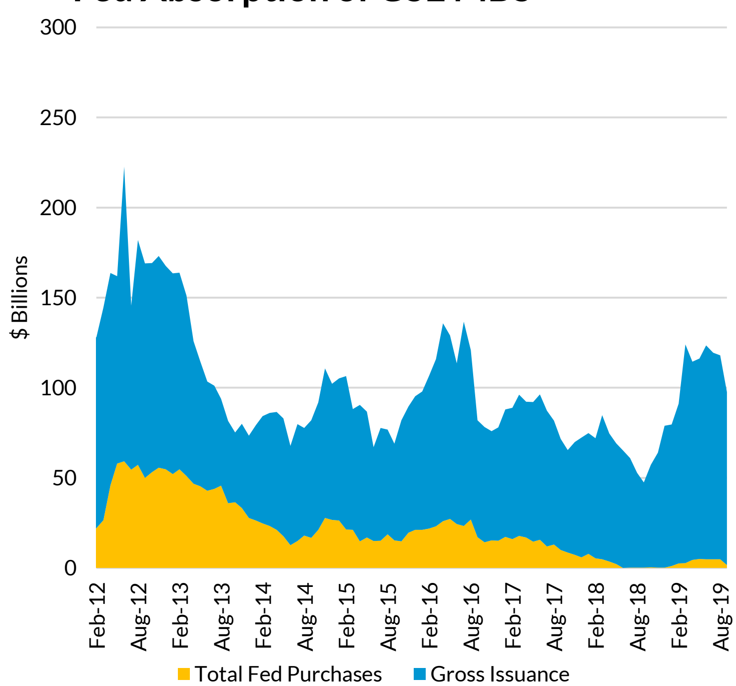
On March 23rd 2020, the Fed announced extensive measures to purchase agency MBS in response to the coronavirus pandemic. Prior to this, the Fed was winding down its MBS portfolio. During the period October 2014-September 2017, the Fed ended its Great Recession era purchase program, but was reinvesting 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. Since then the amount of Fed purchases has been tiny. Fed's absorption of gross issuance was 1.82 percent in February 2020.

Total Fed Absorption



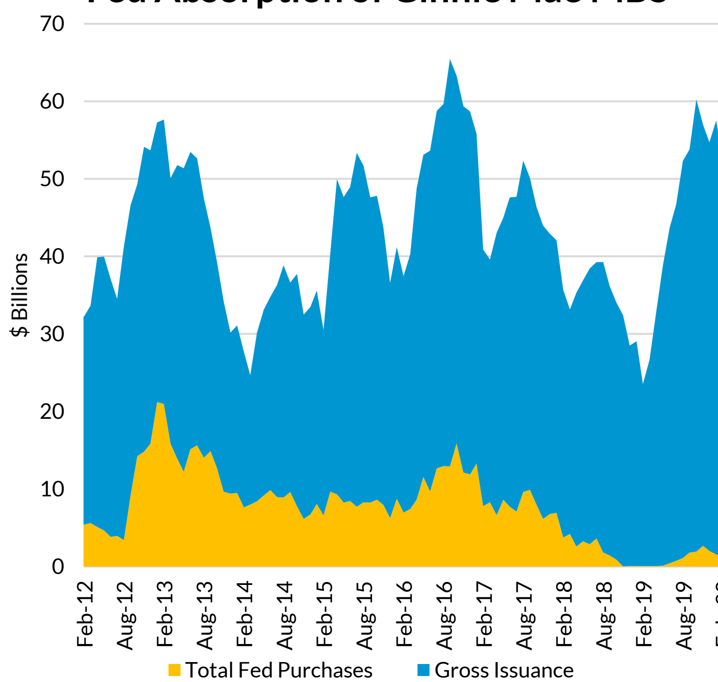
***Sources**: eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note:** Data as of February 2020.*

Fed Absorption of GSE MBS



***Sources**: eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note:** Data as of February 2020.*

Fed Absorption of Ginnie Mae MBS



***Sources**: eMBS, Federal Reserve Bank of New York and Urban Institute.* ***Note**: Data as of February 2020.*

Disclosures

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