

Global Markets Analysis Report

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



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

CONTENTS

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

Barclays US Aggregate and Global Indices	5
Global 10-year treasury yields	6
Ginnie Mae yields and yield spreads—USD, JPY, Euro	7-9
Ginnie Mae yield spreads - Intermediate Credit	10
MBS yield per duration	11
Total return and Sharpe Ratios	12

State of the US Housing Market

Serious delinquency rates	13
National HPI, HPI by state	13-14
Ginnie Mae Agency issuance and Agency outstanding by state	15
FHA and VA Outstanding Loan Count Maps	16
Size and value of the US Residential housing and mortgage markets	17
Outstanding Agency MBS	18
Origination volume over time	19

US Agency Market, Originations

Agency Gross and Net Issuance	20-22
Purchase versus refi: Refi Issuance Breakdown	23

Credit Box

First time home buyer share—purchase only loans	24-25
FICO score distribution	26
Credit box at a glance (FICO, LTV, DTI)	27-29
Historical credit box (FICO, LTV,DTI)	30-31
Cumulative Default Rates: FHA and VA	32
High LTV credit box	33-34

Ginnie Mae Nonbank Originators

Nonbank originator share (All, Purchase, Refi)	35-36
Bank vs. nonbank originators historical credit box, Ginnie Mae vs. GSE (FICO, LTV, DTI)	37-40

Holder of Ginnie Mae Mortgage Servicing Rights

Top Holders of Ginnie Mae MSR	41-42
Non-bank Holders of Ginnie Mae MSR	42

Prepayments

Aggregate	43
Select coupon/origination year cohorts	44-46

Other Ginnie Mae Programs

HMBS	47
Multifamily	48

Market Conditions-Agency MBS

Average daily trading volume and turnover by sector	49
Dealer net positions, repo volume	50

MBS Ownership

Ownership breakdown of total agency debt	51
MBS share of total agency debt and commercial bank ownership of MBS	52
Bank and Thrift Residential MBS Holdings	53
Foreign ownership of MBS	54-55
Fed Ownership of MBS	56

HIGHLIGHTS

Ginnie Mae Statement on COVID-19

In the wake of the COVID-19 outbreak, Ginnie Mae is positioned to continue providing services across its range of stakeholders. We are in close communication with issuers, servicers, vendors, and trustees. Program functions are expected to be completed in a timely manner. In addition, Ginnie Mae is working in tandem with its insuring agency partners, including the Federal Housing Administration (FHA), the U.S. Department of Veterans Affairs (VA), and the U.S. Department of Agriculture (USDA) to ensure a continued flow of homeownership capital. We are addressing the economic impacts resulting from the outbreak and will take further action as necessary.

To date we have successfully transitioned our staff to working remotely and our service contractors have done the same. This ensures the health and wellness of our staff, contractors, and advisors – all necessary contributors for continuity of services, while still operating at full capacity.

Our processes remain on the standard schedule. These include:

- New MBS, Multiclass and Platinum Securities issuance,
- Pool factors and loan level disclosure releases, and
- Investor remittance payments.

Finally, we remind all stakeholders that our securities are backed by the full faith and credit of the United States of America. All investors will be paid on time, in full.

If you have additional questions, connect with your regular Ginnie Mae representative, visit Ginniemae.gov, or contact Ginnie Mae Relationship Services at (800) 234-4662, Option 5.

HIGHLIGHTS

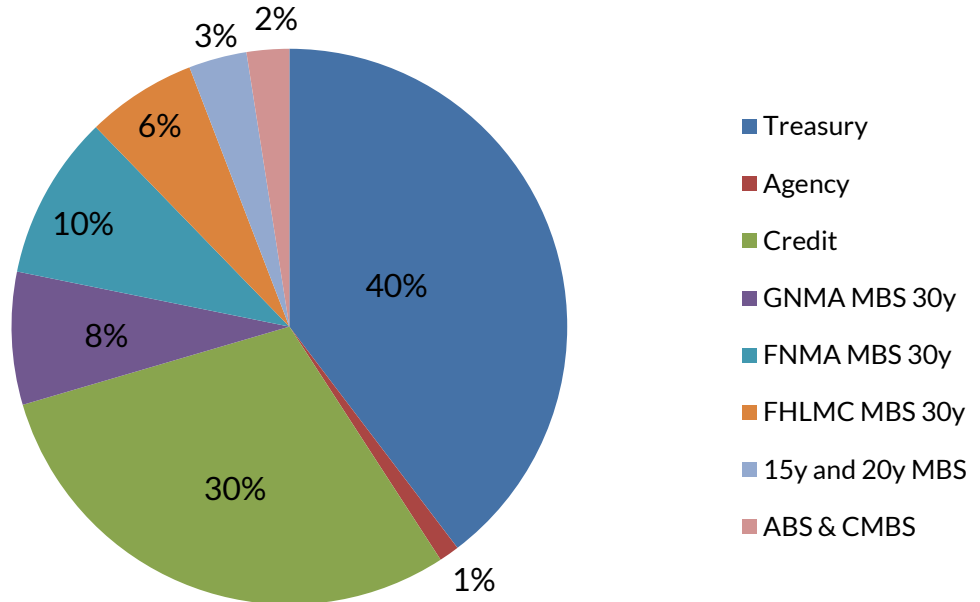
Highlights this month:

- Ginnie Mae securities underperformed corporate bonds in February, with the OAS on Ginnie Mae securities now on par with corporate bonds for the first time since 2016 (page 10).
- The total value of the US housing market grew to \$30.9 trillion in Q4 2019, according to the Federal Reserve's Flow of Funds report; household equity accounted for \$19.7 trillion of total value while mortgage debt made up the remaining \$11.2 trillion (Page 17).
- In 2019, first lien mortgage originations totaled \$2.38 trillion, the highest level since 2006, as low rates fueled strong refinance activity (page 19).
- MBS holdings at banks and thrifts increased for the fifth quarter in a row, reaching \$1.98 trillion in Q4 2019 (page 53).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

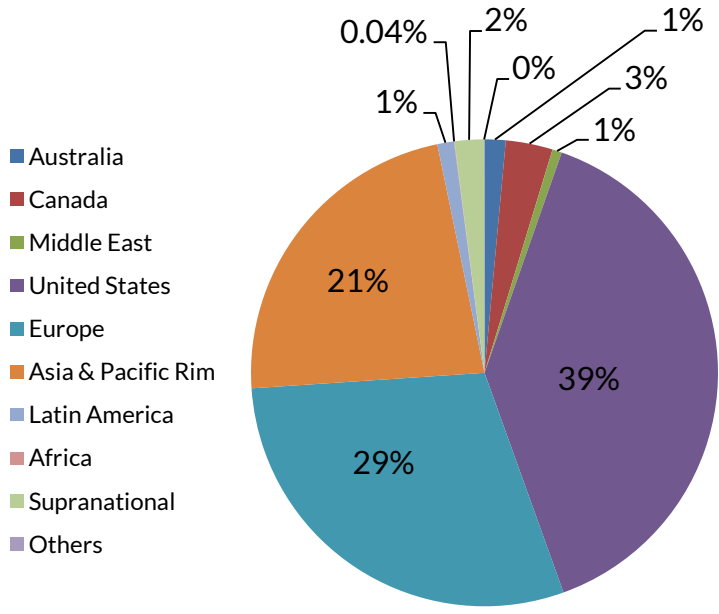
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 27 percent of the Barclays US Aggregate Index- less than either the US Treasury share (40 percent) or the US Credit share (30 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (10 percent), while Ginnie Mae 30-year MBS and Freddie Mac 30-year MBS comprise 8 percent and 6 percent of the market, respectively. Mortgages with terms of 15 and 20 years comprise the remaining balance (3 percent) of the US MBS share. US securities are the single largest contributor to the Barclays Global Aggregate, accounting for 39 percent of the global total. US MBS comprises 11 percent of the global aggregate.

Barclays US Aggregate Index



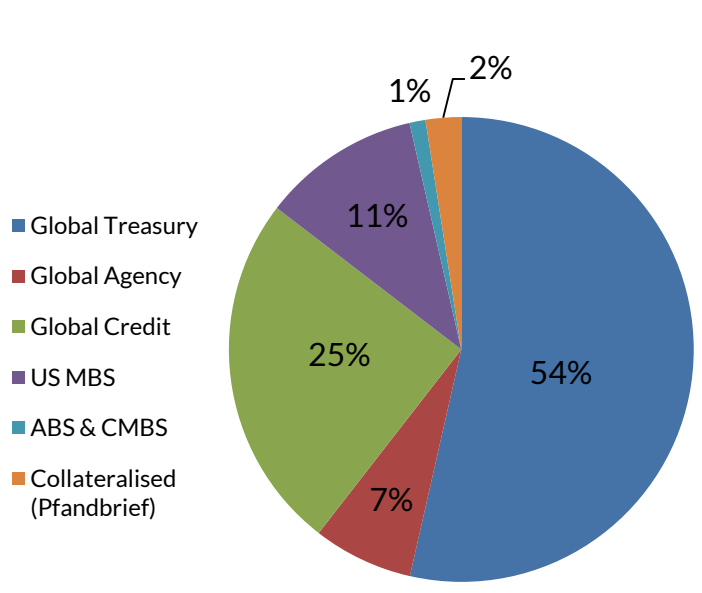
Sources: Bloomberg and State Street Global Advisors. Note: Data as of December 2019. Note: Numbers in chart may not add to 100 percent due to rounding.

Barclays Global Aggregate Index by Country



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

Barclays Global Aggregate Index by Sector

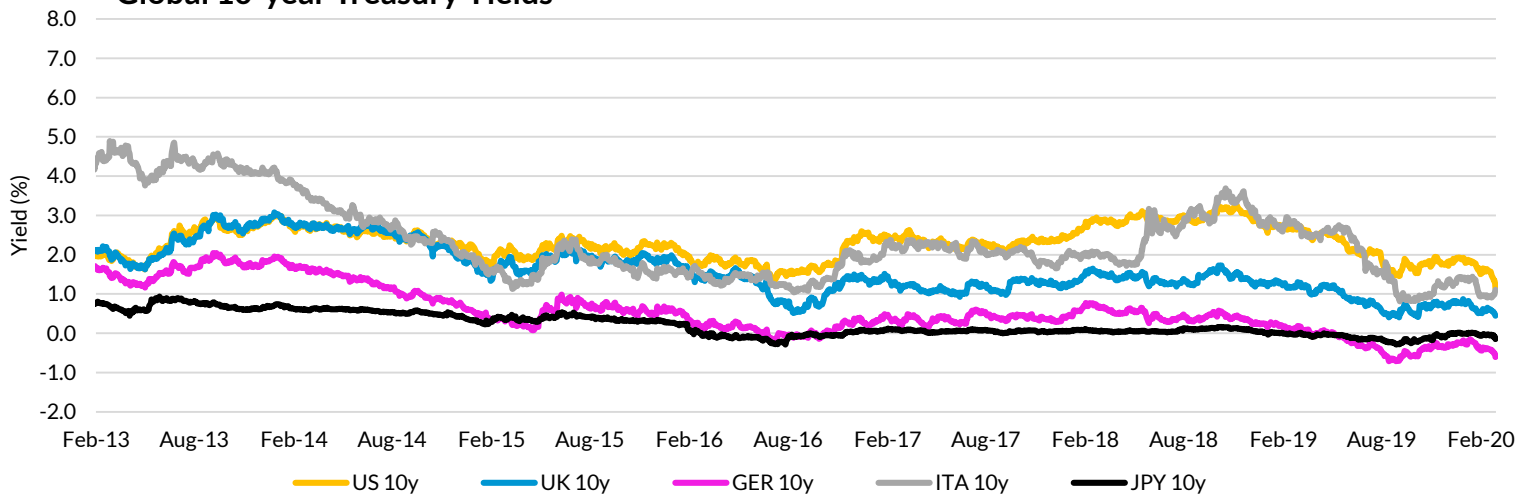


Sources: Bloomberg and State Street Global Advisors. Note: Data as of December 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

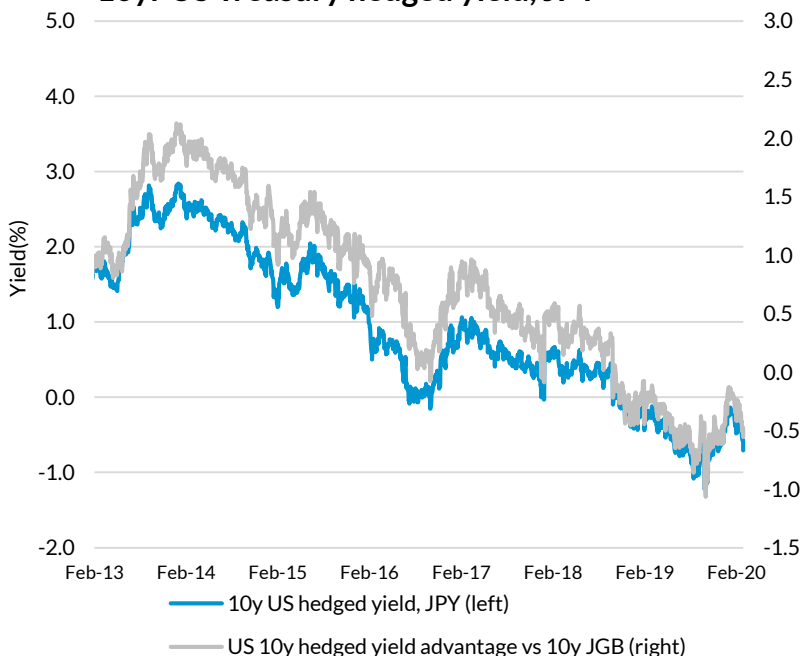
With weakness in economic data and worries about tariffs and trade wars, yields on government bonds dropped across the globe over the course of 2019. The trend continued in Feb 2020 as government bond yields fell sharply, in response to the global spread of the COVID-19 disease. The yield on the US 10-year treasury fell 36 bps to 1.15 percent. Despite this drop, US treasury yields are the highest in the developed world. This is followed by yields on the Italian 10-year note, up 17 basis points in February to 1.10 percent, the UK 10-year bond, down 8 bps to 0.44 percent, the Japanese 10 year government bond, down 9 bps to -0.15 percent, and the German 10 year, down 17 bps to -0.61 percent over the course of February. At the end of February, the hedged yield differential between the 10-year Treasury and the 10-year JGB stood at -55 bps, a decrease of 14 bps since January 2020. The hedged yield differential between the 10-year Treasury and the 10-year Bund stands at -35 bps, a decrease of 9 bps since the end of January 2020.

Global 10-year Treasury Yields



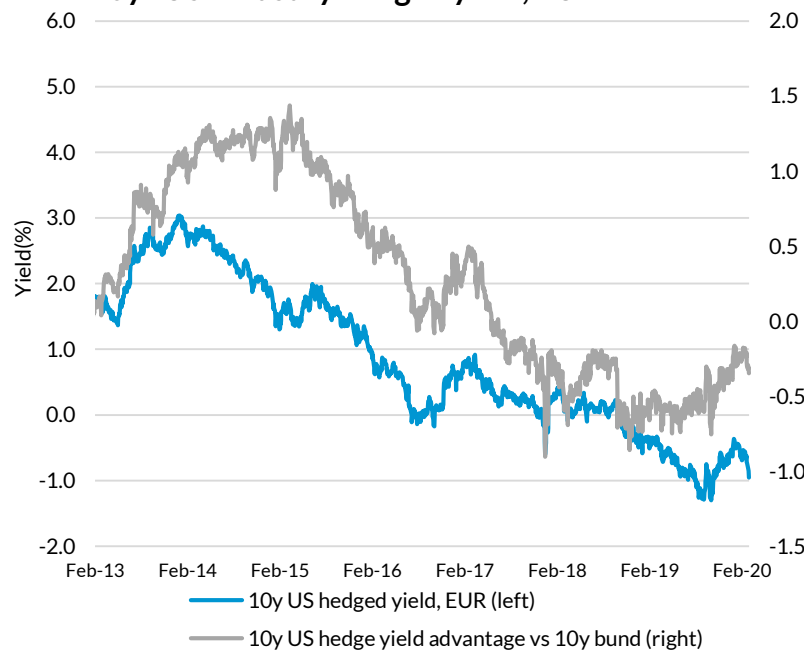
Sources: Bloomberg and State Street Global Advisors. Note: Data as of February 2020.

10yr US Treasury hedged yield, JPY



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

10yr US Treasury hedged yield, EUR

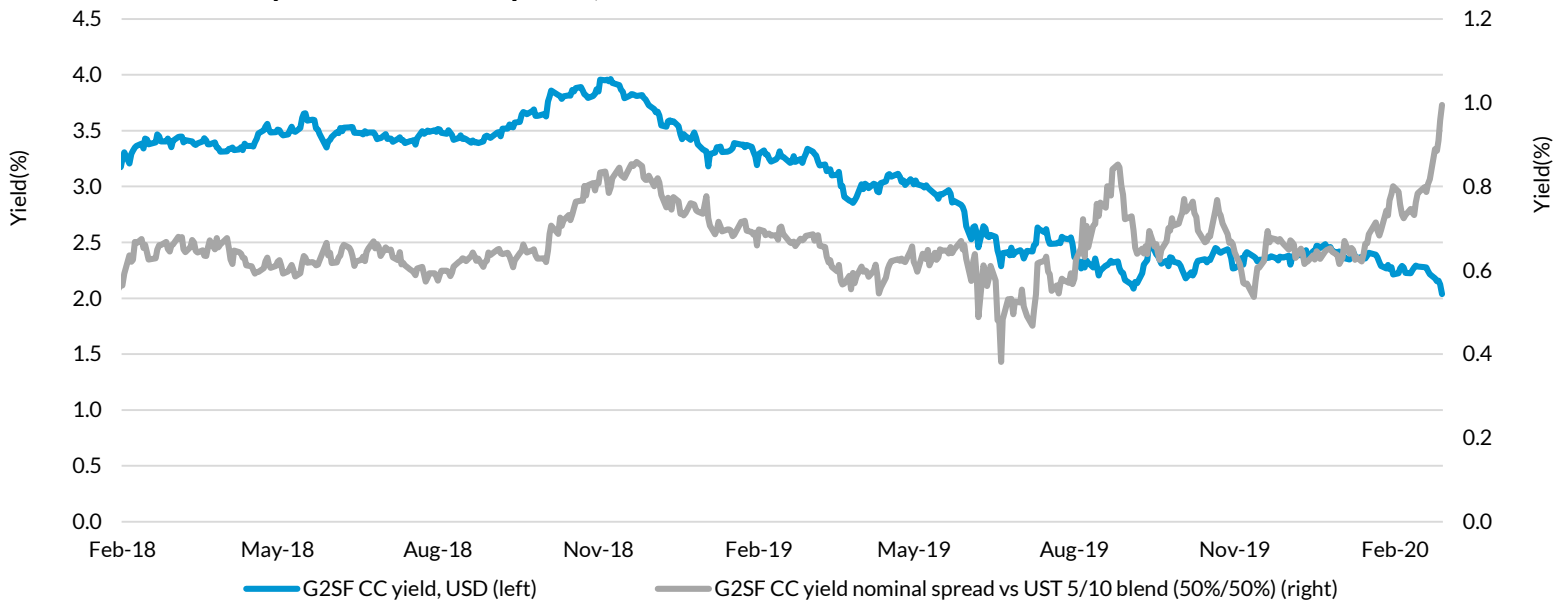


Sources: Bloomberg and State Street Global Advisors. Note: Data as of February 2020.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

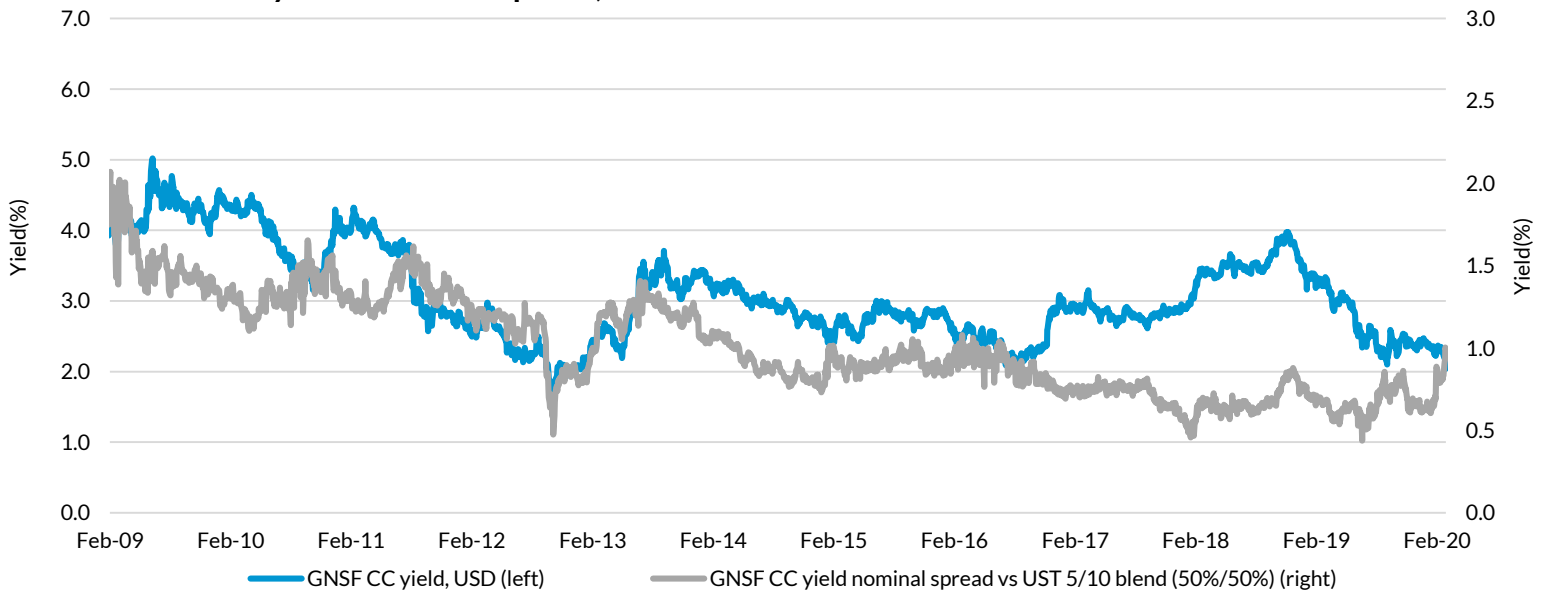
Nominal yields fell in February 2020, with GNMA II yields declining 17 bps to 2.04% and GNMA I yields declining 26 bps to 2.04% respectively. Current coupon Ginnie Mae securities outyielded their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 99 bps on the G2SF and 100 bps on the GNSF, an increase of 19 and 11 bps respectively since last month.

G2SF CC yield & nominal spread, USD



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

GNSF CC yield & nominal spread, USD

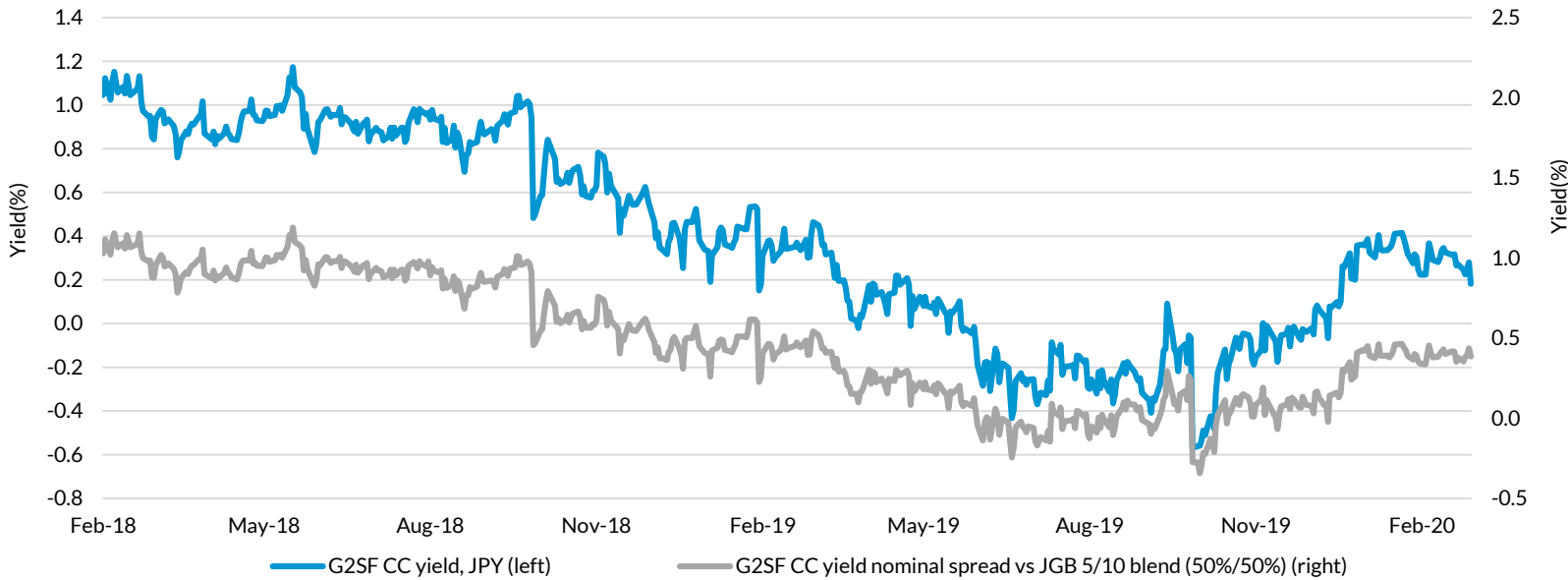


Sources: Bloomberg and State Street Global Advisors. Note: Data as of February 2020.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

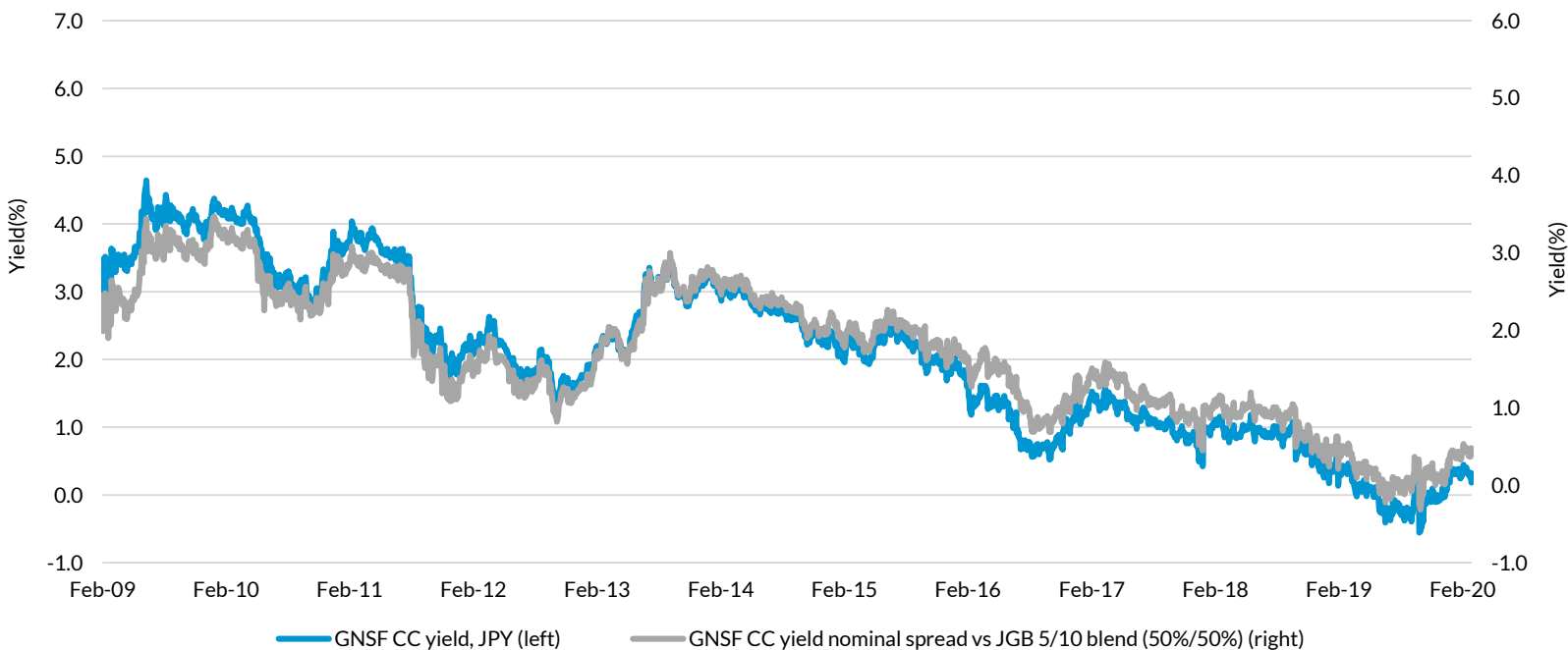
If Ginnie Mae securities are hedged into Japanese Yen, they look favorable on a yield basis versus the JGB 5/10 blend. More precisely, both the G2SF and GNSF hedged into Japanese yen have a yield of 39 bps, versus the JGB 5/10 blend. This represents an 5 bp widening for the G2SF and a 4 bp tightening for the GNSF since the end of January 2020.

G2SF CC yield & nominal spread, JPY



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

GNSF CC yield & nominal spread, JPY

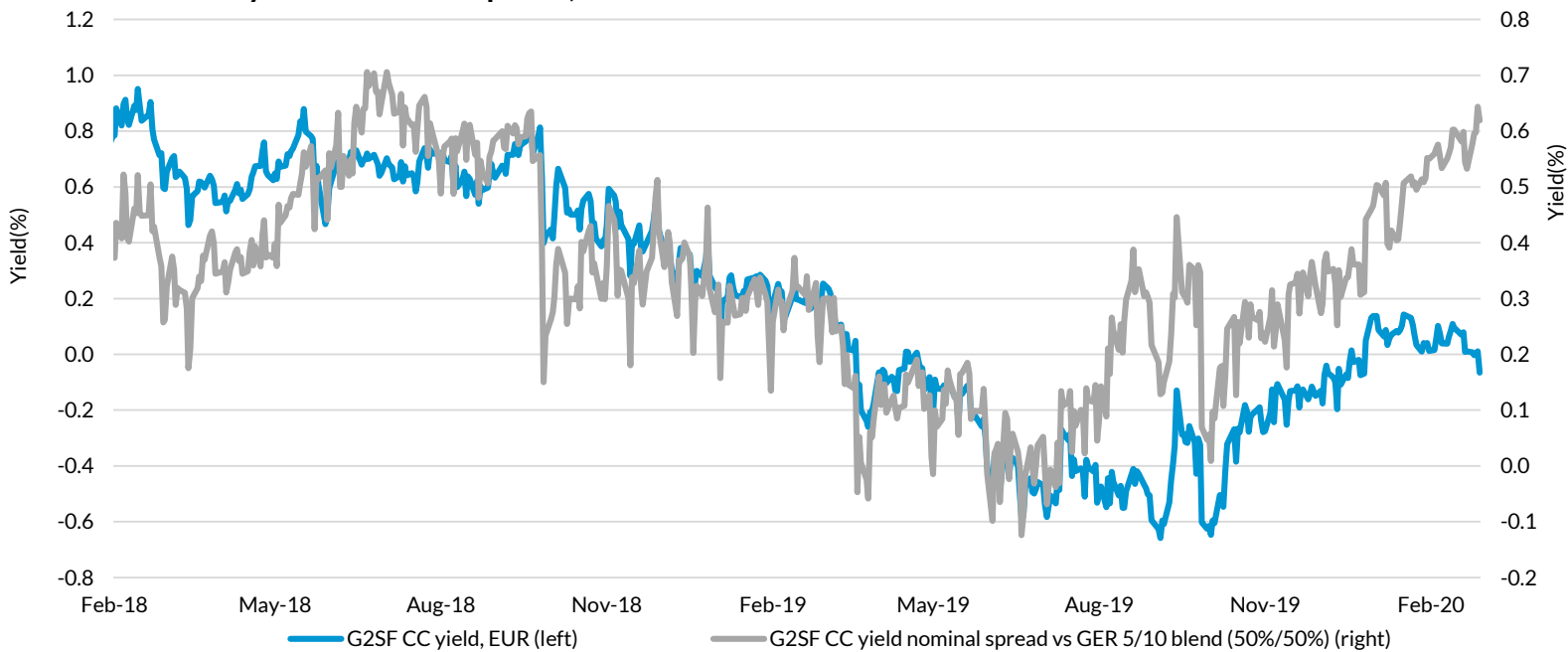


Sources: Bloomberg and State Street Global Advisors. Note: Data as of February 2020.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

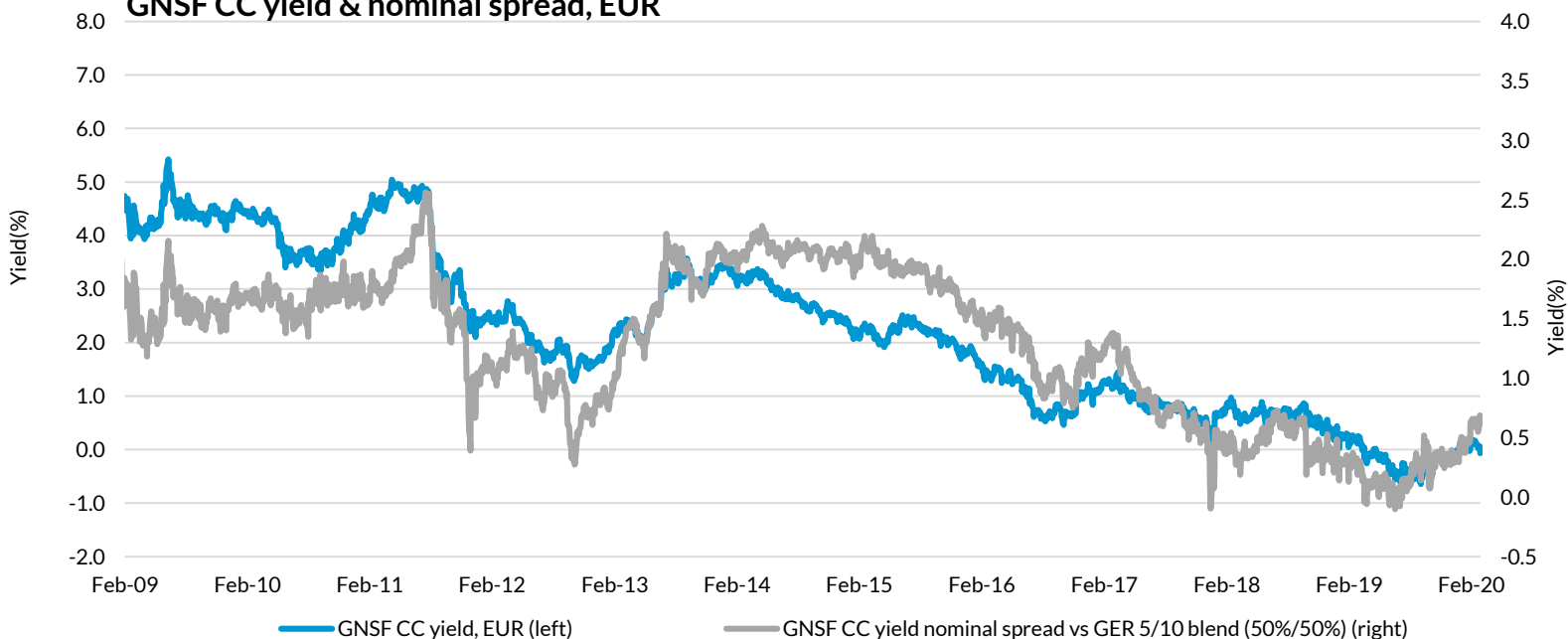
If Ginnie Mae securities are hedged into Euros, they look favorable on a yield basis versus the German 5/10 Blend. The figures below show that at the end of February, the current coupon G2SF and GNSF hedged into euros each have a 62 bp higher yield than the average of the German 5/10. This represents a 7 bp increase for the G2SF and a 2 bp decrease for the GNSF since the end of January 2020.

G2SF CC yield & nominal spread, EUR



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

GNSF CC yield & nominal spread, EUR

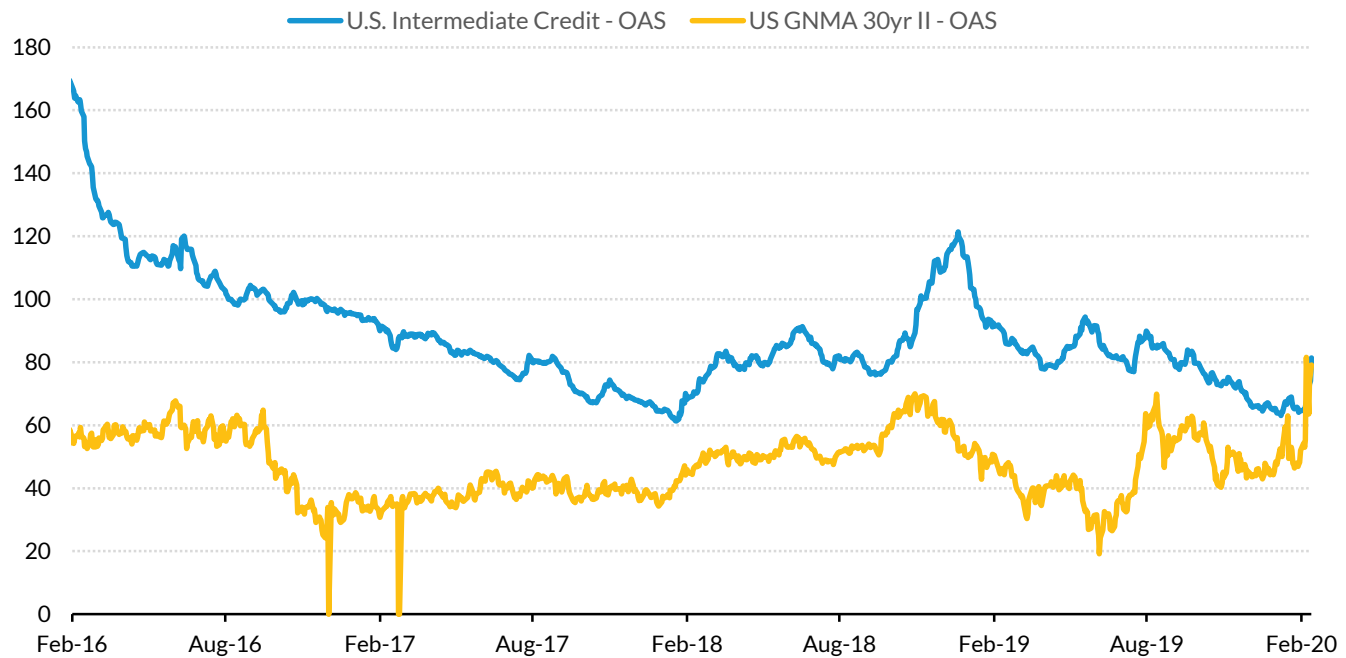


Sources: Bloomberg and State Street Global Advisors. Note: Data as of February 2020.

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 2020, the spread on both GNMA and corporates widened, in response to the COVID-19 panic. Surprisingly, Ginnie Mae OAS spreads widened more than corporate spreads did, resulting in a further tightening of the spread differentials between the securities. In the event COVID-19 leads to an economic downturn, we would expect Ginnie Mae securities to outperform as investor concern about corporate credit risk moves front and center.

G2 30 MBS versus Intermediate Credit



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

G2 30 MBS and Intermediate Credit OAS

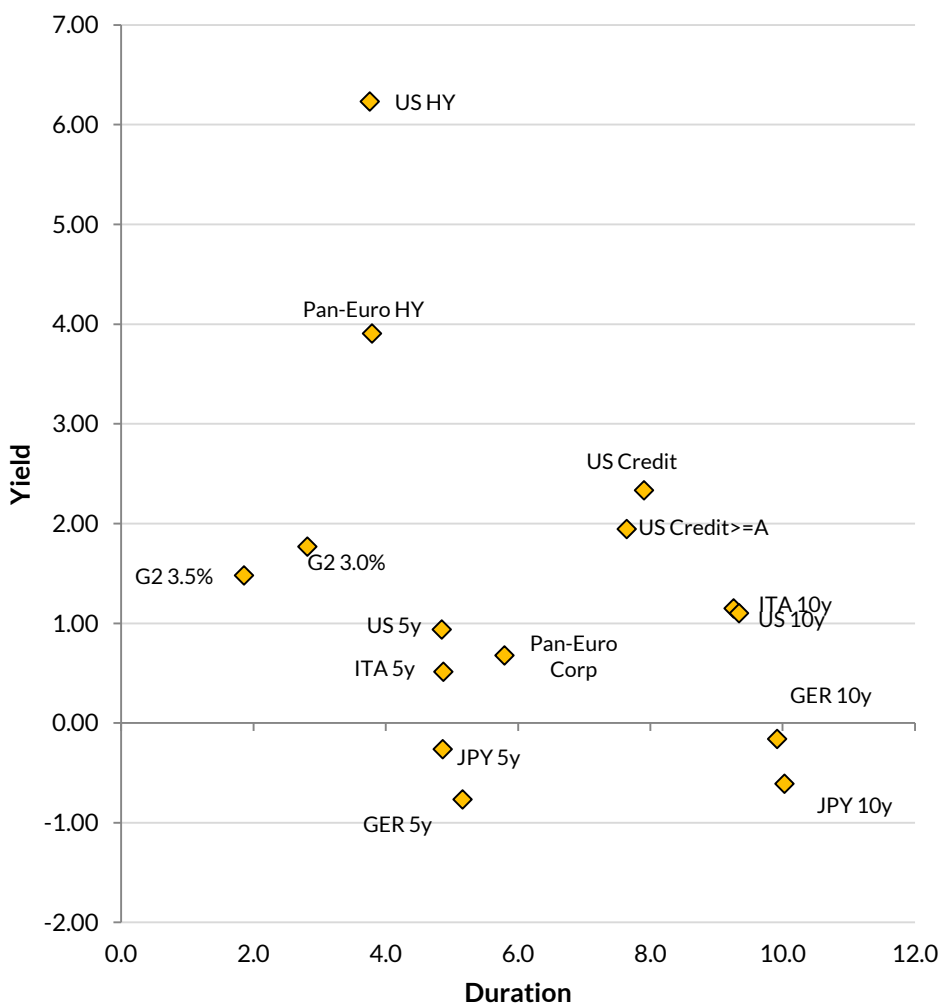


Sources: State Street Global Advisors. Note: Data as of February 2020.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

US MBS yields are about the same or higher than most securities with the same or longer durations. The only asset class with significantly more yields are the US and Pan-Euro high yield indices. Duration, a measure of sensitivity to interest rate changes, does not fully capture the volatility of the high yield asset classes, as there is a large credit component.

Yield versus duration



Security	Duration	Yield
US 5y	4.8	0.94
US 10y	9.3	1.15
GNMA II 3.0%	2.8	1.77
GNMA II 3.5%	1.9	1.48
JPY 5y	4.9	-0.26
JPY 10y	9.9	-0.16
GER 5y	5.2	-0.77
GER 10y	10.0	-0.61
ITA 5y	4.9	0.51
ITA 10y	9.3	1.10
US credit	7.9	2.33
US credit >= A	7.6	1.95
US HY	3.8	6.23
Pan-Euro Corp	5.8	0.68
Pan-Euro HY	3.8	3.91

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

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The average return on the Ginnie Mae index over the past decade is equal to the US Treasury index. However, the standard deviation of the Ginnie Mae index is the lowest of any sector, as it has the least price volatility over a 1, 3, 5 and 10 year horizon. The result: The Sharpe Ratio, or excess return per unit of risk over the 10-year horizon is only marginally lower than most of the corporate indices, although a good bit higher than the US Treasury Index.

Average Return (Per Month)

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.53	0.97	1.24	0.50	0.50	0.44
3 year	0.27	0.40	0.55	0.23	0.40	0.29
5 year	0.21	0.27	0.41	0.16	0.43	0.29
10 year	0.26	0.29	0.47	0.39	0.60	0.62

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	0.38	0.82	1.08	0.56	0.35	0.49
3 year	0.13	0.26	0.41	0.29	0.26	0.35
5 year	0.12	0.18	0.32	0.22	0.34	0.35
10 year	0.21	0.24	0.42	0.41	0.55	0.64

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	0.48	1.49	1.15	0.82	1.09	1.21
3 year	0.62	1.13	1.10	0.68	1.19	1.10
5 year	0.57	1.07	1.14	0.93	1.52	1.34
10 year	0.65	1.05	1.19	1.14	1.69	1.69

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	0.78	0.55	0.94	0.67	0.32	0.41
3 year	0.21	0.23	0.37	0.42	0.22	0.32
5 year	0.21	0.16	0.28	0.23	0.23	0.26
10 year	0.33	0.23	0.36	0.36	0.33	0.38

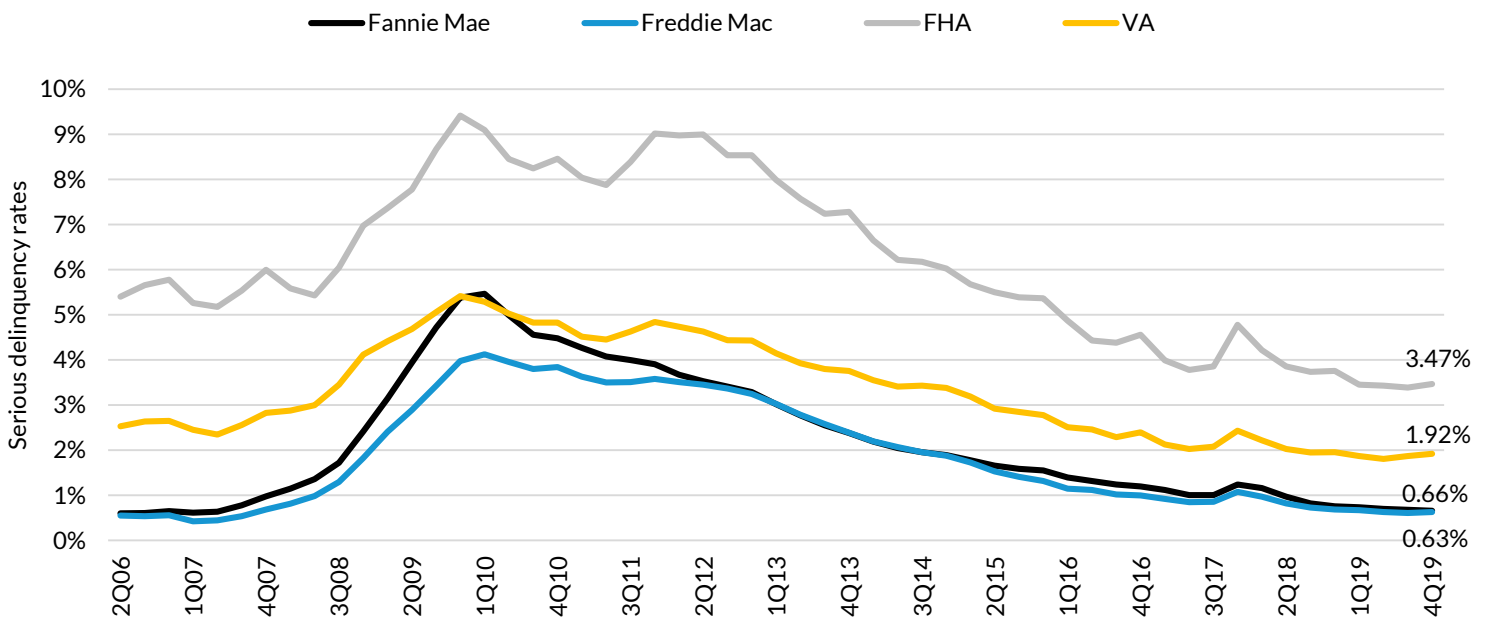
*Assumes 2% capitalization max per issuer on high yield indices

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

State of the US Housing Market

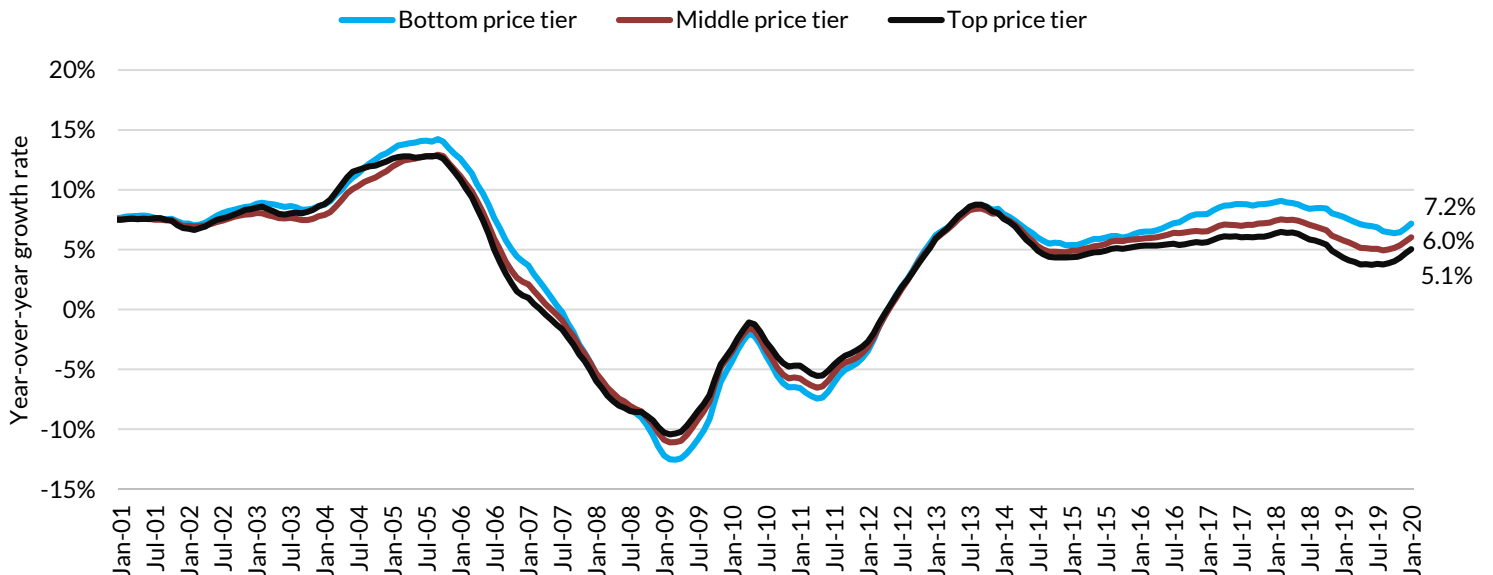
Serious delinquencies rates for single-family GSE loans, FHA loans and VA loans grew slightly in Q4 2019. GSE delinquencies remain just above their 2006-2007 level, while FHA and VA delinquencies (which are higher than their GSE counterparts) are well below 2006-2007 levels. The bottom chart shows nationwide 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. Despite the slower rate of appreciation in 2019, prices at the lower end of the market rose by 7.2 percent for 12 months ended January 2020, much higher than the 5.1 percent for the top end of the market.

Serious Delinquency Rates: Single-Family Loans



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

State of the US Housing Market

Nationally, nominal home prices have increased by 55.0 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 15.6 percent. The picture is very different across states, with many states well in excess of the prior peak, while a few states remain 9 percent or more below peak levels: Connecticut (13.0% below), Nevada(9.2% below), Maryland (9.2% below), and Illinois (9.8% below).

State	HPI Changes				YOY	Current HPI % Above Peak
	2000 to Peak	Peak to Trough	Trough to Current			
National	75.3%	-25.4%	55.0%	5.1%	15.6%	
Alabama	43.9%	-15.2%	33.0%	6.7%	12.7%	
Alaska	69.4%	-3.0%	23.1%	3.5%	19.4%	
Arizona	110.0%	-47.9%	86.3%	7.7%	-3.0%	
Arkansas	41.4%	-10.4%	26.3%	4.2%	13.2%	
California	155.0%	-43.3%	90.9%	4.1%	8.2%	
Colorado	40.3%	-12.8%	80.4%	5.2%	57.2%	
Connecticut	92.3%	-24.7%	15.5%	2.9%	-13.0%	
Delaware	94.9%	-23.9%	31.9%	5.2%	0.4%	
District of Columbia	174.4%	-13.6%	56.2%	4.1%	34.9%	
Florida	128.7%	-46.9%	73.7%	5.0%	-7.8%	
Georgia	38.3%	-31.8%	67.2%	6.4%	14.1%	
Hawaii	162.8%	-22.5%	49.4%	1.5%	15.8%	
Idaho	71.8%	-28.7%	91.8%	12.7%	36.7%	
Illinois	61.4%	-34.5%	37.7%	2.4%	-9.8%	
Indiana	21.3%	-7.8%	37.2%	6.7%	26.6%	
Iowa	28.3%	-4.7%	26.5%	4.2%	20.6%	
Kansas	34.6%	-9.2%	46.6%	7.5%	33.2%	
Kentucky	29.7%	-7.5%	33.4%	5.5%	23.4%	
Louisiana	48.8%	-5.1%	23.6%	3.0%	17.3%	
Maine	82.1%	-12.4%	45.0%	10.3%	27.1%	
Maryland	129.3%	-28.6%	27.2%	3.6%	-9.2%	
Massachusetts	92.4%	-22.9%	56.4%	5.4%	20.5%	
Michigan	23.9%	-39.5%	76.1%	5.0%	6.5%	
Minnesota	66.4%	-27.8%	54.9%	5.2%	11.9%	
Mississippi	41.1%	-13.7%	28.7%	5.0%	11.2%	
Missouri	42.7%	-14.9%	36.1%	5.6%	15.8%	
Montana	81.6%	-11.2%	51.2%	6.8%	34.3%	
Nebraska	26.6%	-6.6%	42.5%	5.3%	33.0%	
Nevada	126.9%	-59.2%	122.5%	3.6%	-9.2%	
New Hampshire	90.7%	-23.6%	43.7%	7.5%	9.8%	
New Jersey	117.9%	-28.0%	28.4%	4.0%	-7.5%	
New Mexico	67.0%	-16.2%	26.6%	7.9%	6.0%	
New York	98.2%	-15.1%	42.6%	4.7%	21.0%	
North Carolina	40.7%	-15.7%	38.2%	6.0%	16.5%	
North Dakota	53.4%	-3.8%	55.4%	4.0%	49.5%	
Ohio	21.1%	-18.4%	37.7%	6.4%	12.4%	
Oklahoma	37.5%	-2.4%	20.7%	5.4%	17.8%	
Oregon	82.0%	-28.0%	79.9%	5.6%	29.5%	
Pennsylvania	70.0%	-11.7%	25.5%	4.7%	10.9%	
Rhode Island	130.7%	-34.6%	55.9%	8.0%	2.0%	
South Carolina	44.9%	-19.5%	37.1%	5.8%	10.4%	
South Dakota	45.1%	-3.8%	46.9%	4.4%	41.3%	
Tennessee	35.2%	-11.9%	47.2%	7.5%	29.7%	
Texas	33.4%	-5.7%	52.5%	4.3%	43.7%	
Utah	54.6%	-21.9%	77.9%	8.3%	38.9%	
Vermont	83.5%	-7.5%	35.9%	8.1%	25.8%	
Virginia	99.4%	-22.8%	28.0%	5.1%	-1.1%	
Washington	85.3%	-28.7%	89.1%	7.6%	34.8%	
West Virginia	42.7%	-6.6%	28.1%	5.5%	19.7%	
Wisconsin	44.7%	-16.3%	35.5%	4.9%	13.4%	
Wyoming	77.4%	-5.7%	32.3%	7.5%	24.7%	

Sources: Black Knight and Urban Institute. Note: HPI data as of December 2019. Negative sign indicates that state is above earlier peak. Peak refers to the month when HPI reached the highest level for each state/US during the housing boom period, ranging from 09/2005 to 09/2008. Trough represents the month when HPI fell to the lowest level for each state/US after the housing bust, ranging from 01/2009 to 03/2012. Current is 12/2019, 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 32.6 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 49.4 percent in Alaska. In general, the Ginnie Mae share is higher in states with lower home prices.

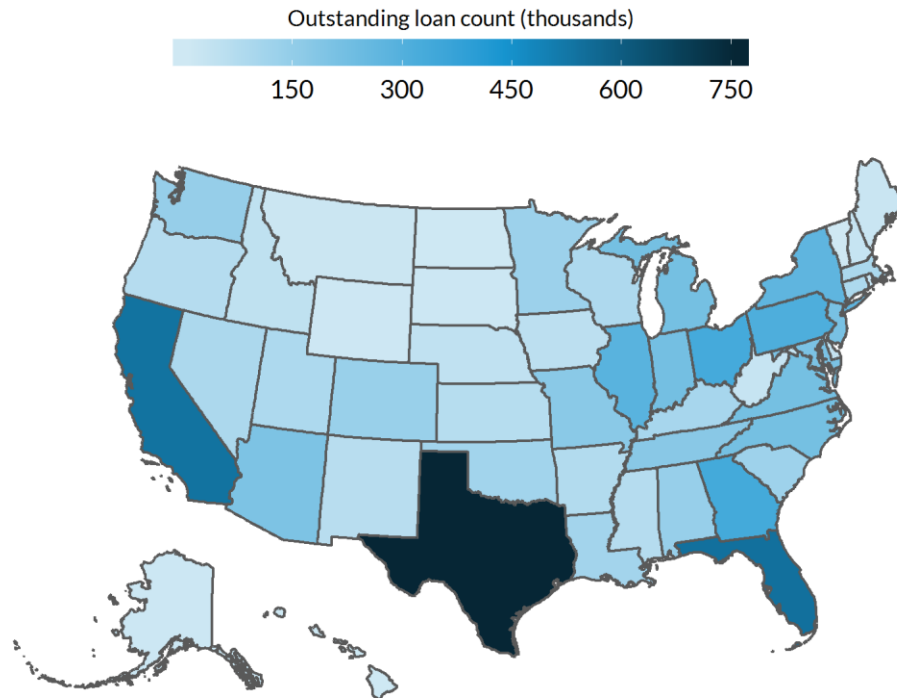
State	Agency Issuance (past 1 year)				Agency Outstanding			
	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)	GNMA Share	GNMA Loan Count	GNMA Avg. Loan Size (000)	GSE Avg. Loan Size (000)
National	32.6%	2,088,183	238.8	257.9	28.4%	11,452,036	163.4	191.1
Alabama	44.6%	37,908	180.7	203.2	43.0%	238,312	128.2	153.7
Alaska	52.8%	5,824	299.4	266.8	49.4%	38,886	231.1	200.8
Arizona	32.7%	75,403	236.2	241.5	27.9%	320,471	164.8	182.8
Arkansas	42.6%	20,660	155.4	182.3	42.6%	139,952	110.8	139.1
California	26.8%	188,542	378.8	371.2	18.6%	792,223	264.9	271.9
Colorado	32.1%	64,056	319.0	308.7	23.8%	239,280	219.3	231.2
Connecticut	31.8%	17,162	226.2	244.8	28.3%	110,487	181.7	189.4
Delaware	39.0%	9,164	229.7	243.4	34.5%	52,300	178.8	185.6
District of Columbia	17.6%	1,625	456.9	406.8	14.3%	10,076	298.0	307.1
Florida	40.8%	182,199	229.1	226.4	33.7%	843,412	166.8	174.0
Georgia	40.6%	94,937	204.0	231.3	36.6%	519,494	143.4	172.6
Hawaii	44.5%	7,732	529.8	421.7	27.8%	31,699	380.7	318.9
Idaho	31.9%	16,690	235.3	233.5	28.4%	80,030	155.7	173.0
Illinois	24.7%	60,950	191.7	220.4	23.2%	375,791	140.1	161.7
Indiana	35.8%	51,770	159.4	177.2	35.2%	309,910	110.9	128.6
Iowa	24.9%	13,913	160.5	183.2	23.9%	87,857	113.4	133.3
Kansas	34.5%	16,253	169.9	195.8	33.6%	106,709	119.7	140.8
Kentucky	38.2%	28,668	164.9	185.2	37.0%	169,956	121.0	134.7
Louisiana	43.4%	30,756	182.1	209.4	40.5%	189,682	136.9	160.2
Maine	33.4%	7,477	200.9	219.9	30.1%	41,253	151.7	163.0
Maryland	43.6%	55,053	303.8	294.3	37.0%	307,059	230.0	221.0
Massachusetts	22.1%	26,180	318.2	319.3	17.5%	125,521	235.8	232.9
Michigan	23.5%	50,793	163.4	191.3	23.3%	312,019	113.2	137.1
Minnesota	23.2%	30,639	218.9	233.5	21.7%	192,423	155.7	173.6
Mississippi	50.9%	18,295	165.8	186.6	48.8%	116,431	120.4	143.3
Missouri	33.0%	43,912	168.4	193.8	32.8%	267,702	120.3	141.1
Montana	30.5%	6,559	238.1	241.6	27.1%	37,122	169.4	180.5
Nebraska	32.0%	11,168	183.5	188.8	30.8%	74,525	122.1	139.5
Nevada	38.3%	35,052	275.0	256.9	31.4%	143,705	188.5	196.5
New Hampshire	31.0%	8,851	255.3	248.1	26.7%	45,433	192.8	184.4
New Jersey	28.6%	44,257	272.7	294.1	25.4%	251,810	209.2	221.3
New Mexico	42.4%	14,810	197.1	207.8	40.7%	99,027	140.6	154.7
New York	24.6%	44,716	265.0	297.7	23.9%	339,239	186.5	217.3
North Carolina	35.1%	76,729	201.8	227.8	31.7%	434,143	141.1	168.9
North Dakota	28.4%	2,972	227.5	224.9	24.4%	16,966	166.4	168.6
Ohio	33.5%	69,472	158.2	174.5	33.7%	458,079	112.0	128.4
Oklahoma	45.2%	27,572	166.3	187.3	46.1%	197,970	119.2	141.7
Oregon	28.7%	28,552	284.5	283.4	21.2%	128,411	199.4	211.7
Pennsylvania	31.2%	61,307	181.0	214.7	30.8%	422,131	135.6	160.0
Rhode Island	36.8%	7,141	250.5	244.1	31.7%	37,424	188.7	185.4
South Carolina	40.4%	45,272	203.6	214.6	35.5%	229,434	147.2	163.2
South Dakota	35.8%	5,681	195.0	204.9	33.5%	31,255	142.9	152.3
Tennessee	39.4%	54,123	205.8	224.3	37.0%	299,599	139.1	167.9
Texas	35.2%	176,204	217.8	235.2	33.8%	1,094,242	143.7	178.0
Utah	26.4%	29,887	275.1	281.2	23.8%	128,484	191.7	214.5
Vermont	24.9%	2,189	204.4	219.5	19.4%	13,001	163.8	160.7
Virginia	43.7%	79,794	295.9	295.3	38.5%	454,422	219.5	219.5
Washington	30.9%	61,269	321.5	324.4	24.5%	274,360	219.1	235.5
West Virginia	50.7%	9,319	167.3	169.8	44.8%	55,416	125.8	128.0
Wisconsin	21.1%	23,750	185.4	198.9	19.1%	139,597	133.1	143.4
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 January 2020. Ginnie Mae issuance is based on the last 12 months, from January 2019 to January 2020.

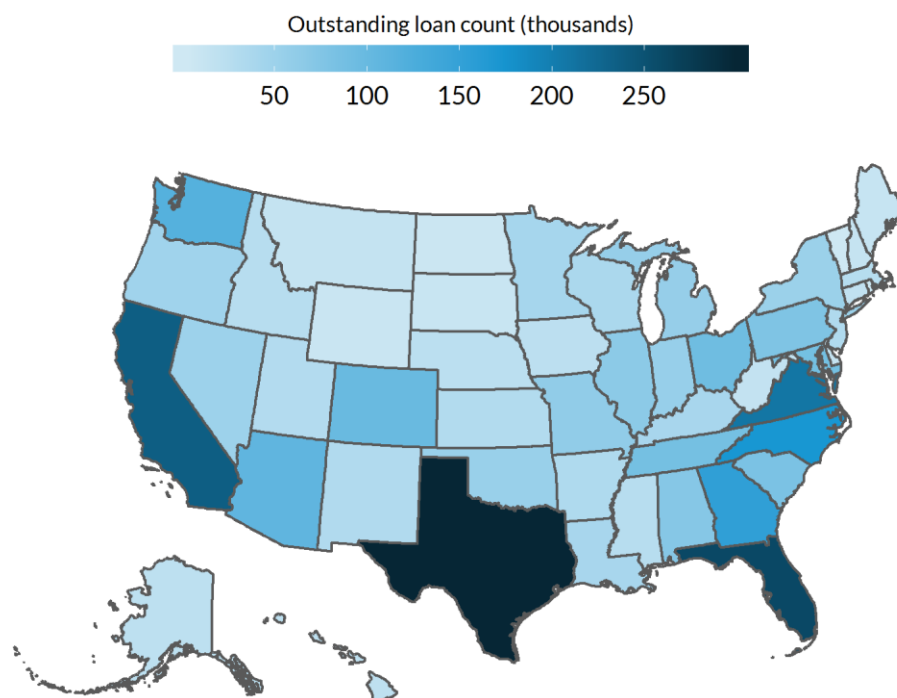
FHA and VA Outstanding Loan Count

Texas, Florida, and California are the top 3 states for FHA and VA lending as measured by the number of loans outstanding. As of January 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 540,000 FHA and 240,000 VA loans outstanding. Virginia ranks 4th for number of VA loans outstanding and 13th for number of FHA loans outstanding.

FHA Outstanding Loan Count by State



VA Outstanding Loan Count by State

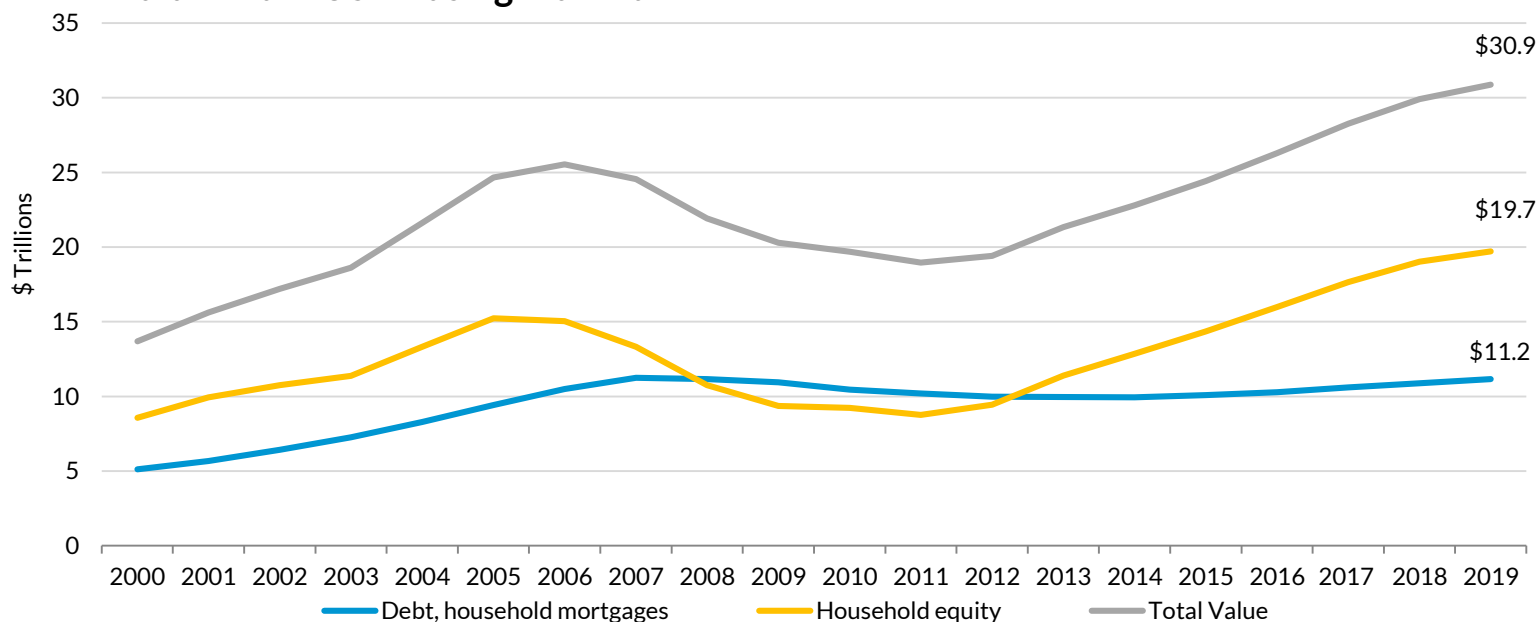


Sources: eMBS and Urban Institute. Note: Ginnie Mae outstanding share are based on loan balance as of January 2020.

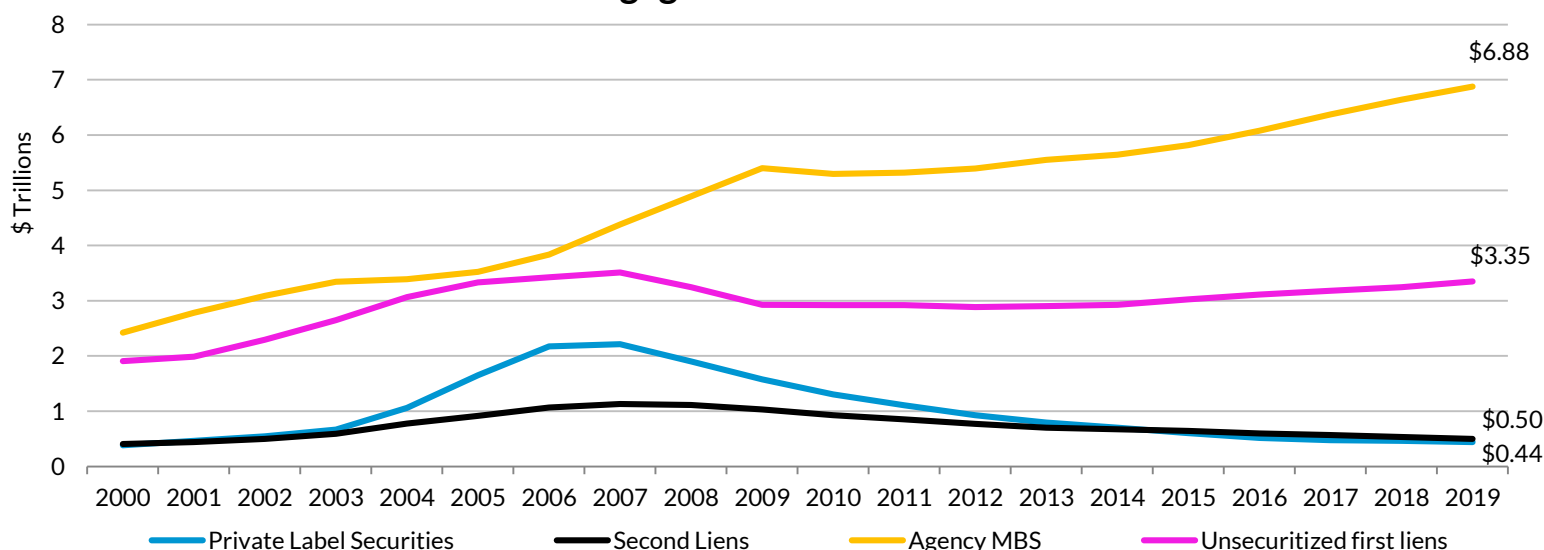
State of the US Housing Market

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



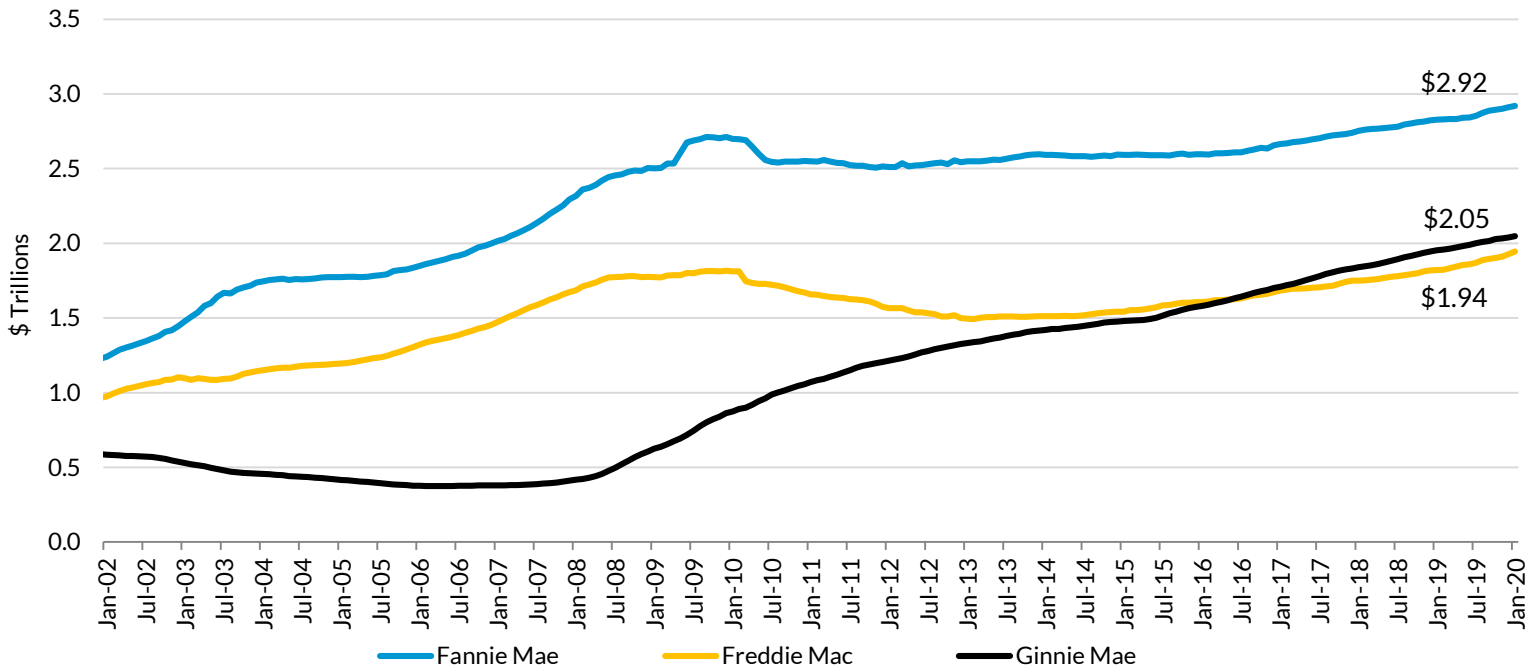
Sources: Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.

Note: Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions.

State of the US Housing Market

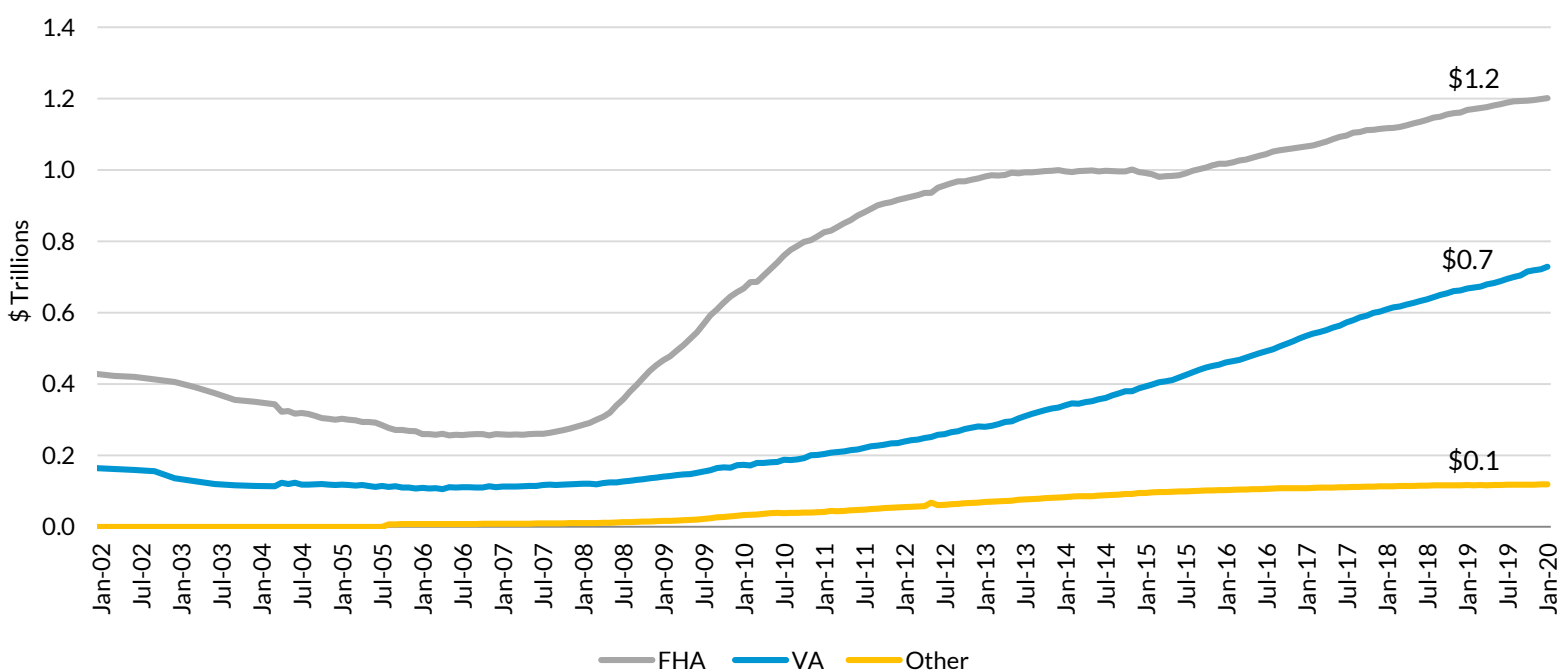
As of January 2020, outstanding securities in the agency market totaled \$6.91 trillion: 42.2 percent Fannie Mae, 28.1 percent Freddie Mac, and 29.6 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. FHA comprises 58.6 percent of total Ginnie Mae MBS outstanding, while VA comprises 35.6 percent.

Outstanding Agency Mortgage-Backed Securities



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

Outstanding Ginnie Mae Mortgage-Backed Securities

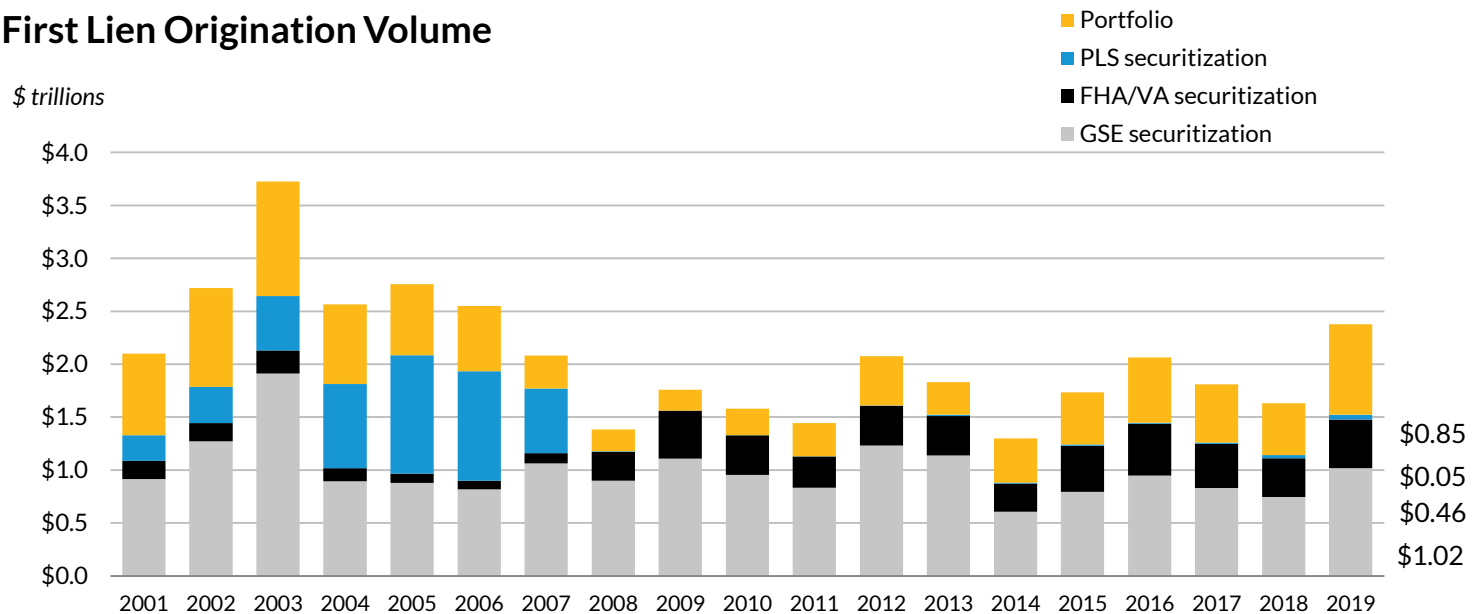


Sources: eMBS and Urban Institute. Note: Data as of January 2020.

State of the US Housing Market

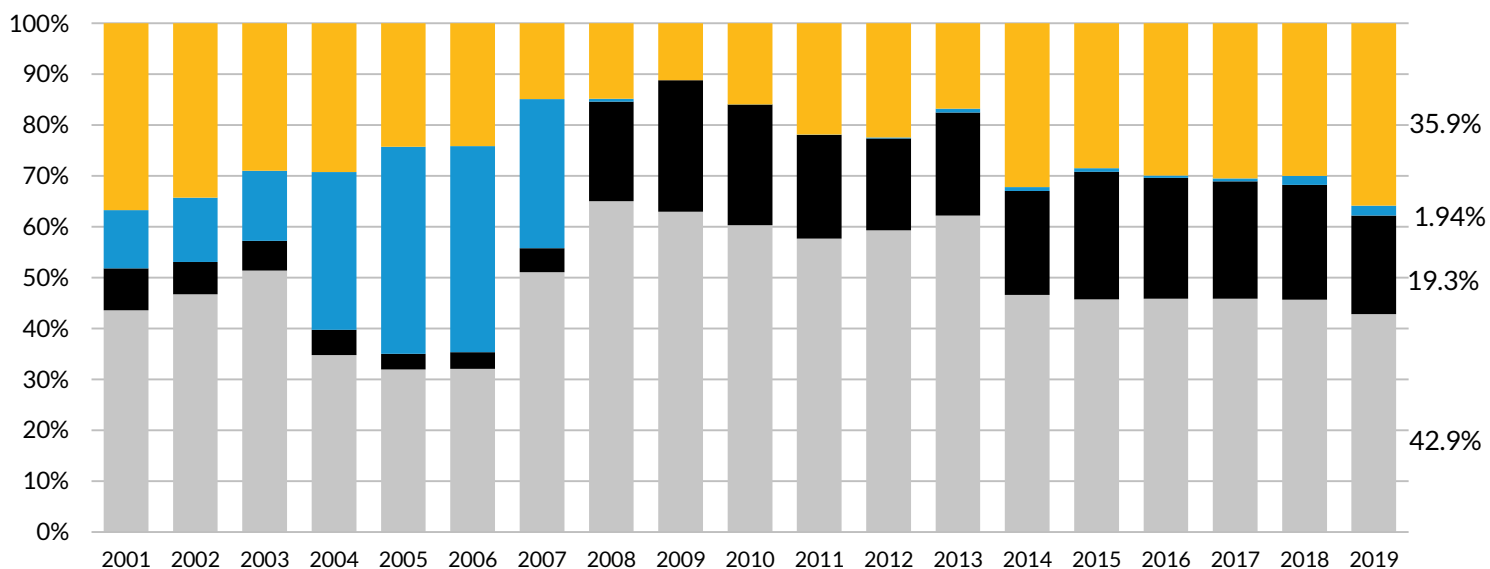
For full-year 2019, first lien originations totaled \$2.38 trillion, up from the full year 2018 volume of \$1.63 trillion. The share of portfolio originations was 35.9 percent in 2019, a significant jump from the 30.0 percent share in 2018. The 2019 GSE share was down at 42.9 percent, compared to 45.7 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 in the first month of 2020, with gross issuance of \$169 billion, up 107.2 percent from the weak January 2019 levels. Ginnie Mae gross issuance was up by 93.1 percent and GSE gross issuance was up by 115.0 percent. Within the Ginnie Mae market, FHA was up by 68.7 percent and VA origination was up by 134.0 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	\$61.7	\$51.4	\$113.1	\$56.0	\$169.0
2020 % Change YOY	85.0%	167.1%	115.0%	93.1%	107.2%
2020 Ann.	\$740.2	\$616.4	\$1,356.6	\$671.8	\$2,028.4

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	\$27.8	\$26.6	\$1.6	\$56.0
2020 % Change YOY	68.7%	134.0%	37.4%	93.1%
2020 Ann.	\$333.6	\$319.4	\$18.7	\$671.8

Sources: eMBS and Urban Institute (top and bottom).

Note: Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of January 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 in January 2020, with net agency issuance totaling \$34.2 billion, up 94.7 percent compared with the first month of 2019. Ginnie Mae net issuance was \$8.6 billion, comprising 31.8 percent of total agency net issuance. Ginnie Mae net issuance in the first month of 2020 was comprised of 75.0 percent VA and 22.0 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	\$9.1	\$16.5	\$25.6	\$8.6	\$34.2
2020 % Change YOY	55.2%	568.4%	207.4%	-7.0%	94.7%
2020 Ann.	\$109.1	\$198.1	\$307.2	\$103.0	\$410.2

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	\$1.9	\$6.4	\$0.3	\$8.6
2020 % Change YOY	-62.0%	60.8%	2.5%	-7.0%
2020 Ann.	\$22.7	\$77.3	\$3.0	\$103.0

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 January 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 January 2020 gross agency issuance of \$169.0 billion is well above the January 2019 level of \$81.6 billion, as lower rates gave borrowers a stronger incentive to refinance, contributing to a sharp increase in refinancing volume.

Monthly Agency Issuance

Date	Gross Issuance				Net Issuance			
	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-17	\$55.6	\$38.5	\$42.6	\$136.6	\$8.5	\$10.7	\$10.3	\$29.5
Feb-17	\$37.6	\$27.4	\$33.1	\$98.1	\$2.5	\$6.5	\$9.4	\$18.5
Mar-17	\$39.5	\$24.4	\$31.3	\$95.2	\$9.7	\$6.2	\$9.7	\$25.6
Apr-17	\$39.3	\$21.2	\$36.4	\$97.0	\$3.3	\$0.4	\$11.7	\$15.4
May-17	\$40.3	\$22.6	\$36.4	\$99.3	\$7.7	\$2.7	\$13.3	\$23.8
Jun-17	\$45.7	\$25.1	\$39.9	\$110.7	\$7.9	\$2.4	\$13.3	\$23.5
Jul-17	\$45.3	\$27.6	\$40.6	\$113.5	\$5.6	\$3.5	\$12.3	\$21.5
Aug-17	\$49.1	\$29.3	\$42.8	\$121.1	\$12.0	\$6.7	\$15.4	\$34.1
Sep-17	\$47.3	\$27.9	\$40.2	\$115.5	\$7.7	\$3.8	\$10.6	\$22.0
Oct-17	\$42.9	\$34.6	\$38.4	\$115.9	\$5.5	\$12.5	\$11.0	\$28.9
Nov-17	\$43.5	\$37.2	\$37.8	\$118.5	\$3.9	\$13.6	\$8.3	\$25.8
Dec-17	\$45.3	\$30.0	\$36.2	\$111.5	\$9.2	\$8.1	\$7.0	\$24.4
Jan-18	\$47.4	\$21.4	\$35.2	\$104.0	\$12.1	\$0.2	\$7.7	\$20.0
Feb-18	\$40.3	\$21.5	\$31.9	\$93.7	\$8.3	\$2.2	\$7.1	\$17.6
Mar-18	\$35.6	\$21.3	\$29.0	\$85.9	\$4.9	\$3.0	\$6.3	\$14.1
Apr-18	\$36.3	\$26.2	\$32.7	\$95.2	\$1.7	\$6.0	\$8.8	\$16.5
May-18	\$38.9	\$27.5	\$33.7	\$100.1	\$5.1	\$7.2	\$10.5	\$22.8
Jun-18	\$38.2	\$28.8	\$35.6	\$102.5	\$2.5	\$6.8	\$10.3	\$19.6
Jul-18	\$40.3	\$26.2	\$35.6	\$102.1	\$4.2	\$3.7	\$10.4	\$18.3
Aug-18	\$50.4	\$29.9	\$37.5	\$117.8	\$15.8	\$7.9	\$12.5	\$36.1
Sep-18	\$41.8	\$30.1	\$34.8	\$106.6	\$5.9	\$6.2	\$9.0	\$21.1
Oct-18	\$39.8	\$27.4	\$33.2	\$100.3	\$9.7	\$7.1	\$11.4	\$28.2
Nov-18	\$35.1	\$30.1	\$32.4	\$97.6	\$3.6	\$11.0	\$9.8	\$24.4
Dec-18	\$36.9	\$23.9	\$28.4	\$89.1	\$8.2	\$6.4	\$8.2	\$22.8
Jan-19	\$33.3	\$19.2	\$29.0	\$81.6	\$5.9	\$2.5	\$9.2	\$17.6
Feb-19	\$27.3	\$19.9	\$23.5	\$70.7	\$1.4	\$3.4	\$4.6	\$9.3
Mar-19	\$29.6	\$27.3	\$26.6	\$83.5	\$1.8	\$10.3	\$5.6	\$17.6
Apr-19	\$33.1	\$30.8	\$32.9	\$96.8	\$1.3	\$10.8	\$8.3	\$20.4
May-19	\$44.5	\$34.3	\$38.8	\$117.6	\$6.7	\$9.8	\$9.4	\$26.0
Jun-19	\$44.6	\$34.0	\$43.3	\$121.9	\$1.9	\$5.9	\$9.0	\$16.8
Jul-19	\$51.7	\$36.9	\$45.9	\$134.5	\$10.9	\$10.1	\$11.0	\$32.0
Aug-19	\$71.1	\$50.4	\$51.2	\$172.6	\$20.8	\$17.1	\$8.7	\$46.6
Sep-19	\$67.1	\$43.0	\$52.0	\$162.1	\$14.1	\$7.5	\$6.5	\$28.0
Oct-19	\$65.0	\$46.2	\$58.4	\$169.6	\$7.4	\$7.1	\$11.9	\$26.5
Nov-19	\$68.1	\$50.7	\$54.3	\$173.1	\$5.2	\$8.6	\$4.1	\$18.0
Dec-19	\$52.5	\$62.1	\$52.7	\$167.3	\$10.1	\$17.3	\$7.4	\$34.7
Jan-20	\$51.4	\$61.7	\$56.0	\$169.0	\$9.1	\$16.5	\$8.6	\$34.2

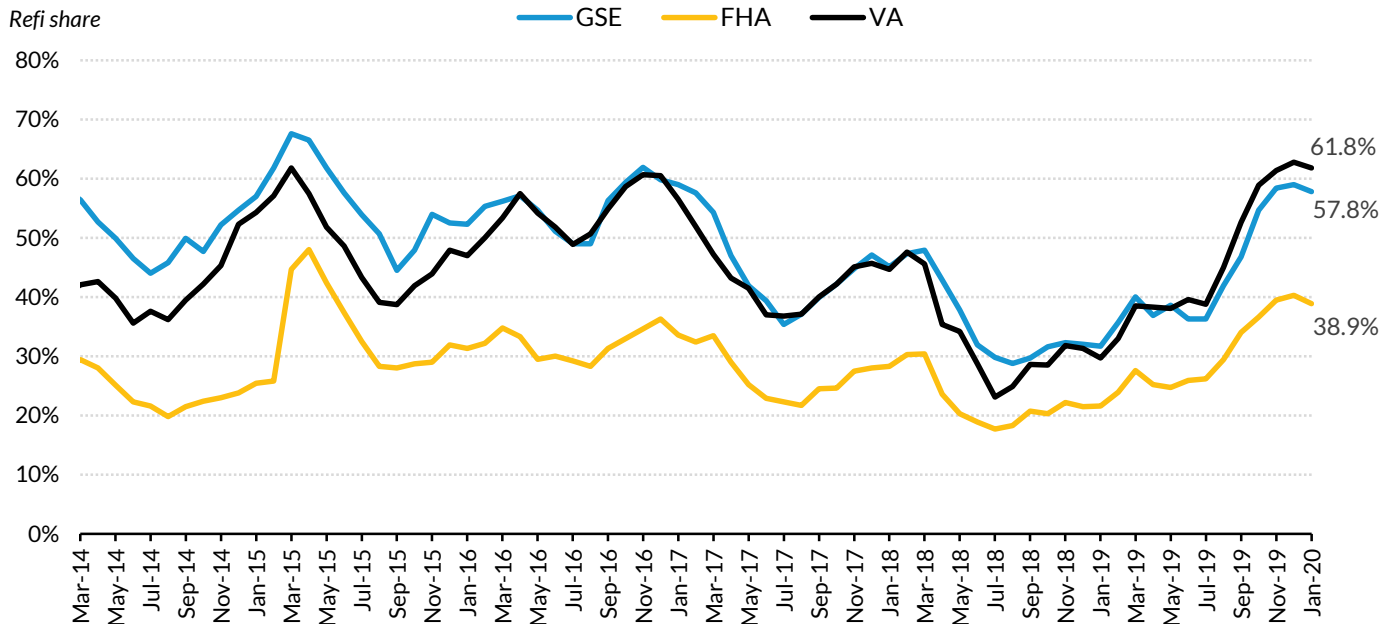
Sources: eMBS and Urban Institute.

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 January 2020.

US Agency Market, Originations

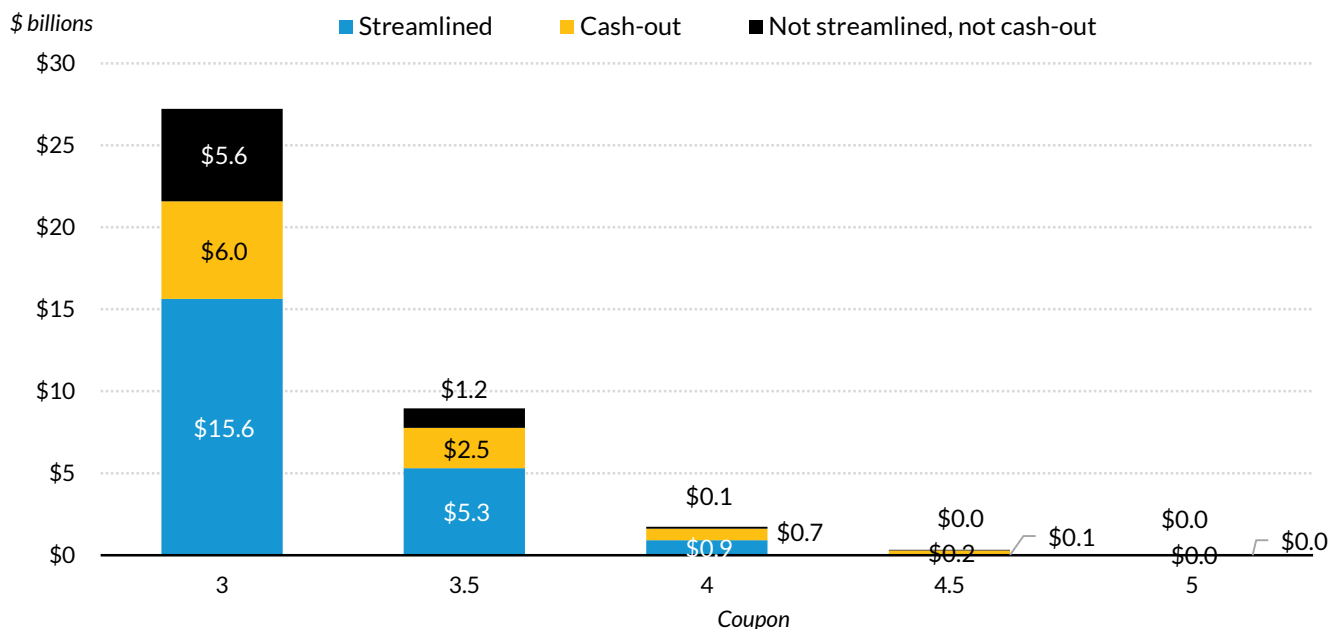
The FHA refinance share stood at 38.9 percent in January 2020, below the 61.8 percent refi share for VA originations and the 57.8 percent share for the GSEs. Refinances as a share of all originations grew during most of 2019 as interest rates were low. The bottom section shows that nearly all of 2020 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 January 2020.

Ginnie Mae Refinance Issuance by Type: 2020 YTD

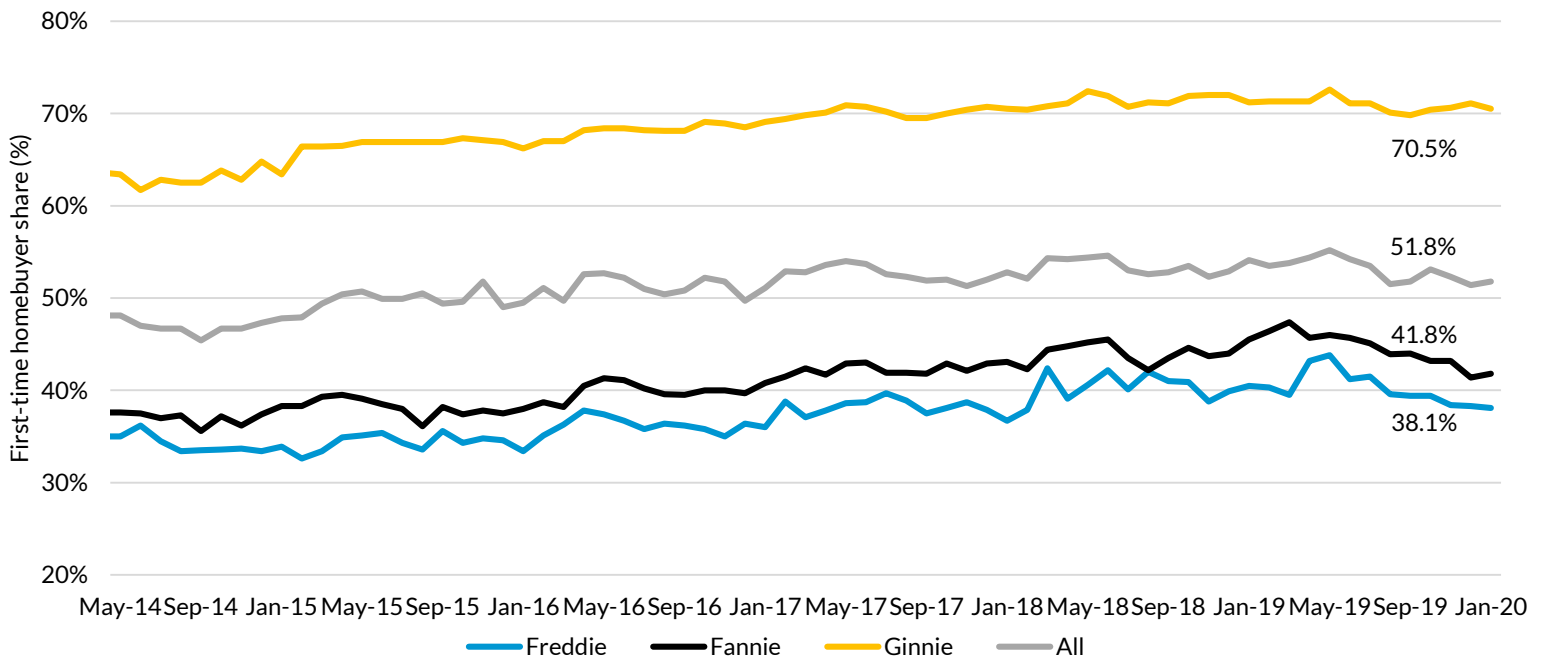


Sources: eMBS and Urban Institute. Note: Based on at-issuance balance. Data as of January 2020.

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 70.5 percent in January 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 41.8 percent and 38.1 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in January 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 January 2020.

	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	260,472	286,244	266,706	288,203	227,034	274,804	244,184	283,676
Credit Score	743.4	755.4	746.7	757.7	682.4	703.9	712.0	741.5
LTV (%)	87.6	78.9	87.0	79.7	96.8	95.4	92.3	83.9
DTI (%)	35.4	36.5	35.2	36.1	41.6	42.5	38.6	38.1
Loan Rate (%)	4.0	3.9	3.9	3.9	3.9	3.7	3.9	3.8

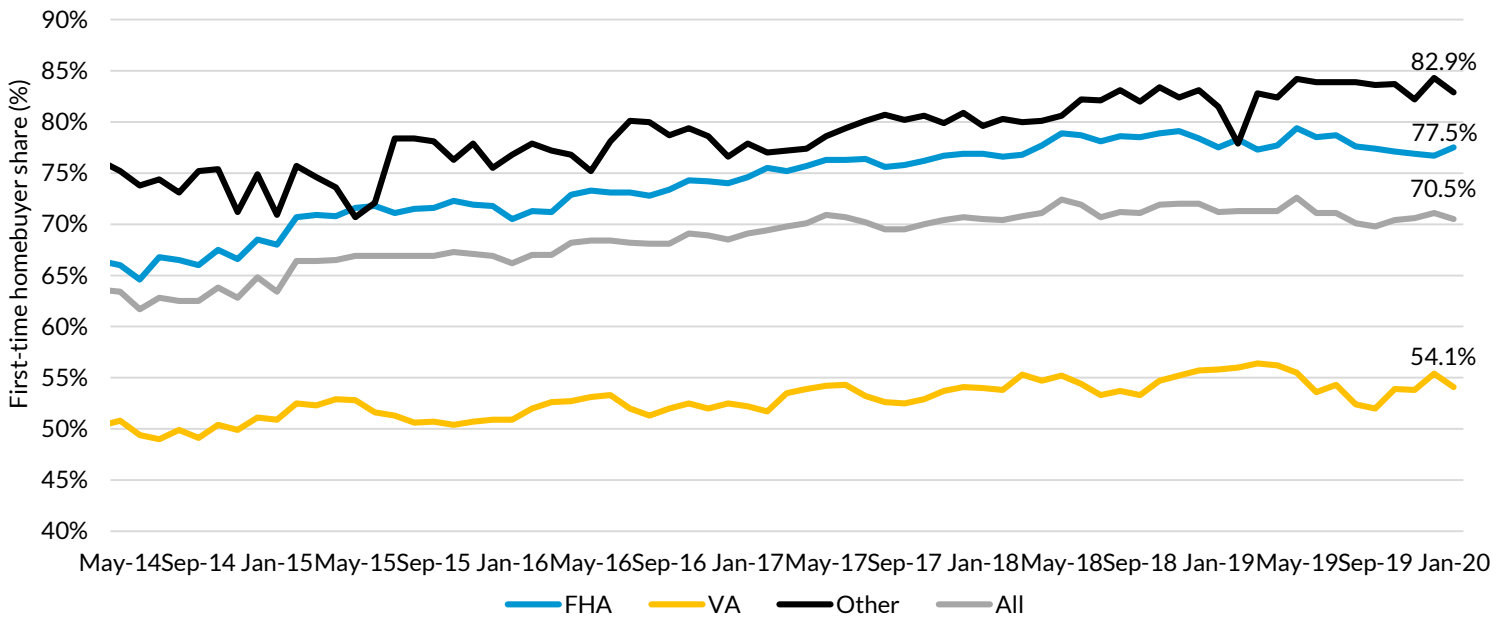
Sources: eMBS and Urban Institute.

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 January 2020.

Credit Box

Within the Ginnie Mae purchase market, 77.5 percent of FHA loans, 54.1 percent of VA loans and 82.9 percent of other loans represent financing for first-time home buyers in January 2020. The bottom table shows that based on mortgages originated in January 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 January 2020.

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	222,548	239,863	266,865	317,104	157,145	170,472	227,034	274,804
Credit Score	672.8	675.2	702.7	730.3	696.2	704.0	682.4	703.9
LTV (%)	95.5	94.0	99.5	96.4	99.2	98.8	96.8	95.4
DTI (%)	43.1	44.2	40.2	41.6	35.0	35.5	41.6	42.5
Loan Rate (%)	3.9	3.9	3.7	3.6	3.8	3.8	3.9	3.7

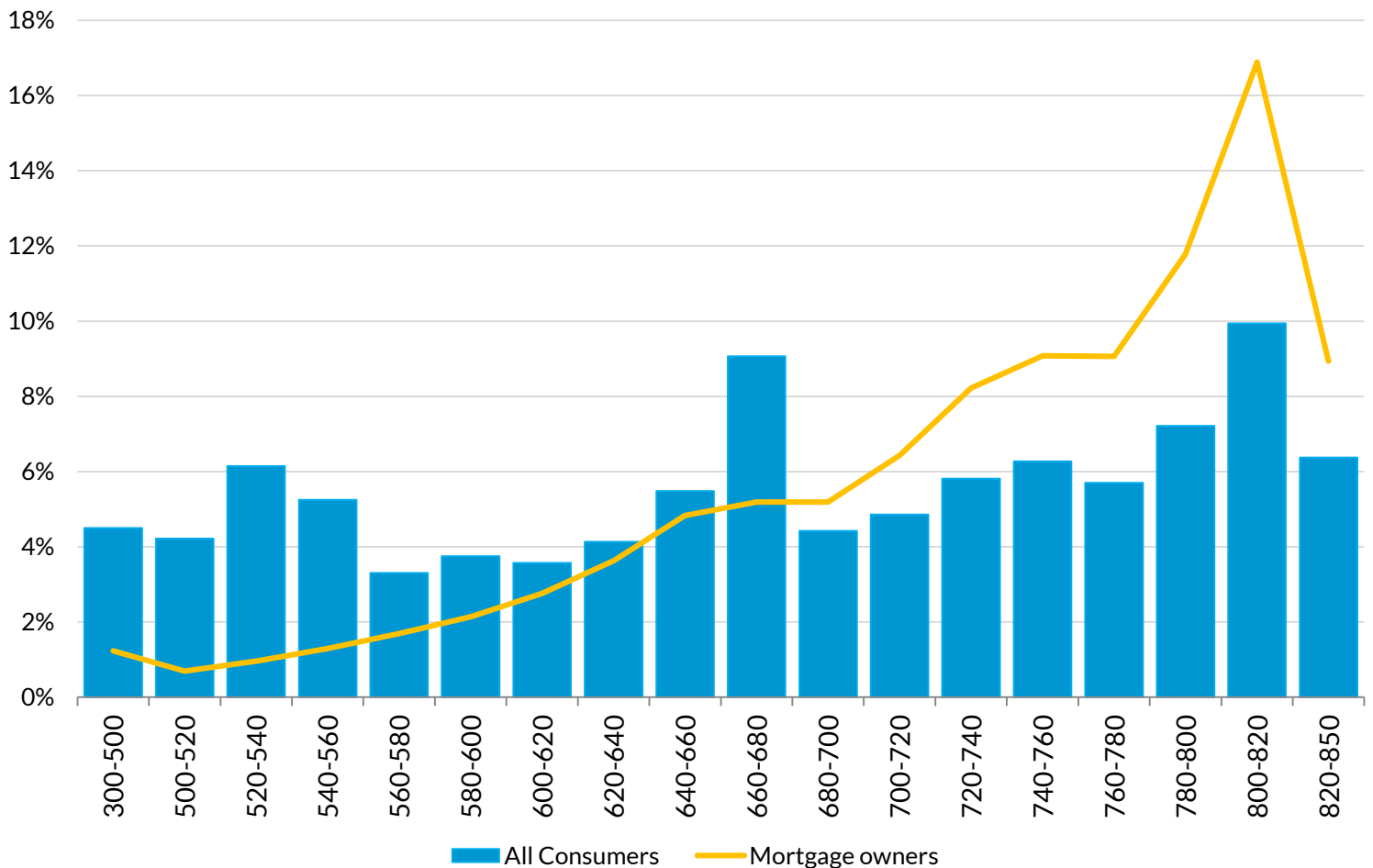
Sources: eMBS and Urban Institute. Note: Data as of January 2020. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed 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.

January 2020 Credit Box at a Glance

In January 2020, the median Ginnie Mae FICO score was 685 versus 758 for Fannie Mae and 759 for Freddie Mac. Note that the FICO score for the 10th percentile was 623 for Ginnie Mae, versus 688 for Fannie Mae and 689 for Freddie Mac. Within the Ginnie Mae market, FHA loans have a median FICO score of 667, VA loans have a median FICO score of 719 and other loans have a median FICO score of 694.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	284,670	644	684	737	778	798	728
Fannie	90,797	690	722	759	787	802	752
Freddie	83,619	694	726	762	789	802	754
Ginnie	110,254	623	646	680	730	774	689

Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	321,647	659	699	745	780	799	736
Fannie	135,072	688	720	757	785	801	750
Freddie	104,296	686	718	756	784	801	748
Ginnie	82,279	624	653	692	744	782	696

All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	606,317	651	692	741	779	798	732
Fannie	225,869	688	721	758	786	801	751
Freddie	187,915	689	722	759	786	801	751
Ginnie	192,533	623	649	685	736	778	692

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	110,254	623	646	680	730	774	689
FHA	66,036	618	640	667	703	743	673
VA	35,150	631	665	718	769	795	715
Other	9,068	639	659	694	734	767	698

Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	82,279	624	653	692	744	782	696
FHA	33,869	611	639	666	697	734	669
VA	47,879	639	674	719	766	793	716
Other	531	639	664	699	744	775	699

All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	192,533	623	649	685	736	778	692
FHA	99,905	616	640	667	701	740	672
VA	83,029	635	670	719	767	794	716
Other	9,599	639	660	694	734	768	698

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

January 2020 Credit Box at a Glance

In January 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, 98.5 for VA and 100.8 for other programs.

Purchase LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	284,826	72.0	80.0	95.0	96.5	100.0	87.6
Fannie	90,696	63.0	77.0	80.0	95.0	97.0	82.1
Freddie	83,664	63.0	79.0	80.0	95.0	95.0	81.9
Ginnie	110,466	92.5	96.5	96.5	100.0	101.5	96.4

Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	333,173	49.0	62.8	75.0	85.0	96.4	73.2
Fannie	135,078	44.0	58.0	70.0	79.0	84.0	66.8
Freddie	104,307	45.0	59.0	72.0	80.0	85.0	68.0
Ginnie	93,788	71.4	81.4	90.7	98.0	100.0	88.0

All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	617,999	55.0	70.0	80.0	95.0	97.8	79.8
Fannie	225,774	49.0	63.0	75.0	85.0	95.0	73.0
Freddie	187,971	50.0	66.0	78.0	85.0	95.0	74.2
Ginnie	204,254	79.6	89.9	96.5	99.0	101.0	92.5

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	110,466	92.5	96.5	96.5	100.0	101.5	96.4
FHA	66,160	92.8	96.5	96.5	96.5	96.5	95.1
VA	35,194	91.1	100.0	100.0	102.2	103.0	98.1
Other	9,112	95.1	99.0	100.9	101.0	101.0	99.1

Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	93,788	71.4	81.4	90.7	98.0	100.0	88.0
FHA	38,823	72.1	81.4	87.8	97.0	98.3	86.6
VA	54,362	70.7	82.7	91.8	99.3	101.0	88.9
Other	603	85.9	93.7	99.2	101.0	102.3	95.6

All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	204,254	79.6	89.9	96.5	99.0	101.0	92.5
FHA	104,983	80.8	90.4	96.5	96.5	97.1	92.0
VA	89,556	76.0	88.1	98.5	100.0	102.2	92.5
Other	9,715	94.5	98.8	100.8	101.0	101.0	98.9

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

January 2020 Credit Box at a Glance

In January 2020, the median Ginnie Mae debt-to-income ratio (DTI) was 42.0 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.

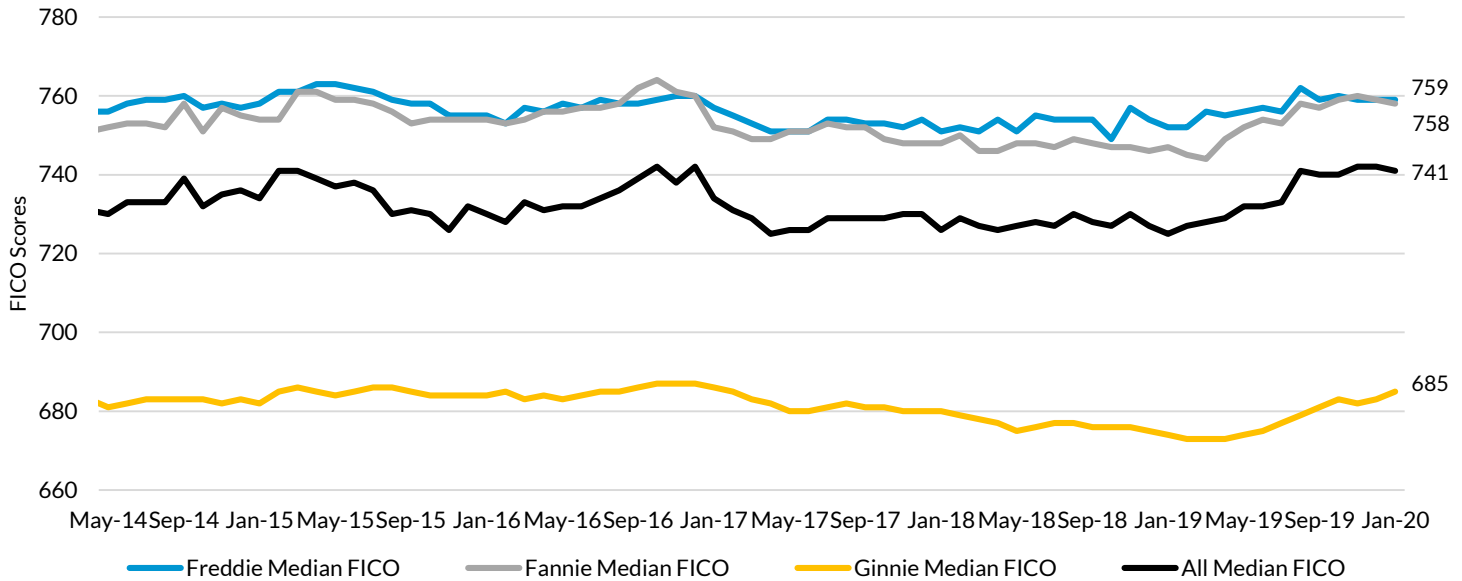
Purchase DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	284,681	24.0	31.1	39.0	45.0	50.0	38.1
Fannie	90,894	22.0	29.0	37.0	43.0	47.0	35.8
Freddie	83,658	22.0	29.0	37.0	43.0	47.0	35.6
Ginnie	110,129	28.6	35.4	42.5	49.2	54.3	41.8
Refi DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	280,995	22.0	28.0	36.0	43.0	48.0	35.4
Fannie	135,069	21.0	28.0	36.0	43.0	47.0	34.6
Freddie	104,306	21.0	28.0	36.0	43.0	46.0	34.8
Ginnie	41,620	24.5	32.0	40.2	48.3	53.9	39.6
All DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	565,676	23.0	30.0	38.0	44.0	49.0	36.7
Fannie	225,963	22.0	28.0	36.0	43.0	47.0	35.1
Freddie	187,964	22.0	28.0	36.0	43.0	47.0	35.1
Ginnie	151,749	27.5	34.3	42.0	49.0	54.2	41.2
Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	110,129	28.6	35.4	42.5	49.2	54.3	41.8
FHA	66,140	30.6	37.4	44.3	50.4	54.8	43.3
VA	34,893	26.7	33.8	41.4	48.4	54.0	40.8
Other	9,096	25.7	30.6	35.9	40.2	42.9	35.0
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	41,620	24.5	32.0	40.2	48.3	53.9	39.6
FHA	20,984	27.5	34.3	42.9	49.7	54.5	41.6
VA	20,250	22.4	30.0	37.6	46.1	52.8	37.7
Other	386	14.4	20.7	29.5	36.6	41.4	28.9
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	151,749	27.5	34.3	42.0	49.0	54.2	41.2
FHA	87,124	29.8	36.7	44.0	50.2	54.7	42.9
VA	55,143	25.0	32.0	40.1	47.7	53.6	39.7
Other	9,482	25.1	30.3	35.7	40.1	42.9	34.8

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

Credit Box: Historical

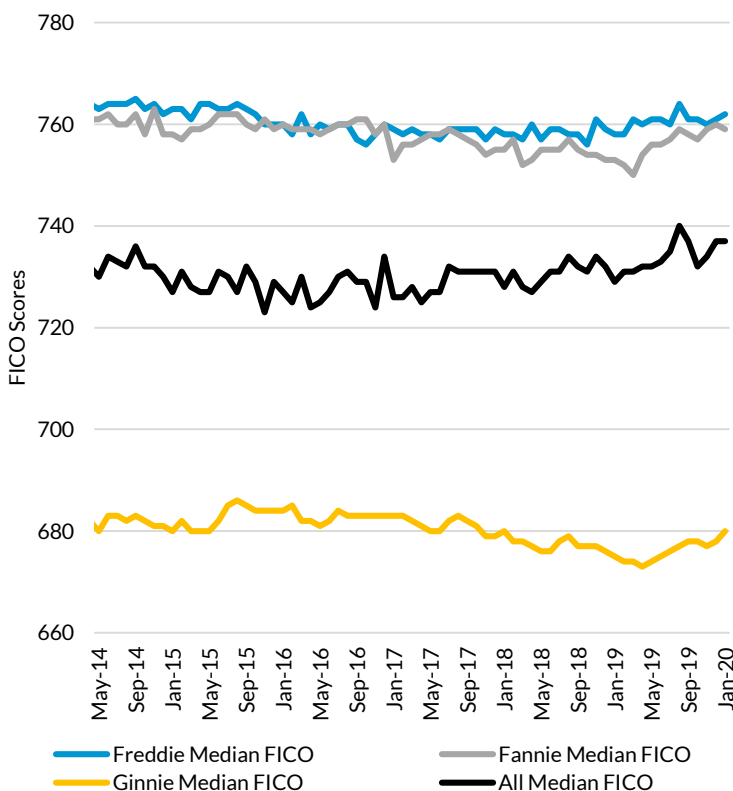
The median FICO score for all agency loans originated in January 2020 was 741, up considerably since the start of last year, owing to the refinance wave, which higher FICO borrowers take advantage of with greater frequency. The figures show that the median FICO score for Ginnie Mae borrowers has always 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



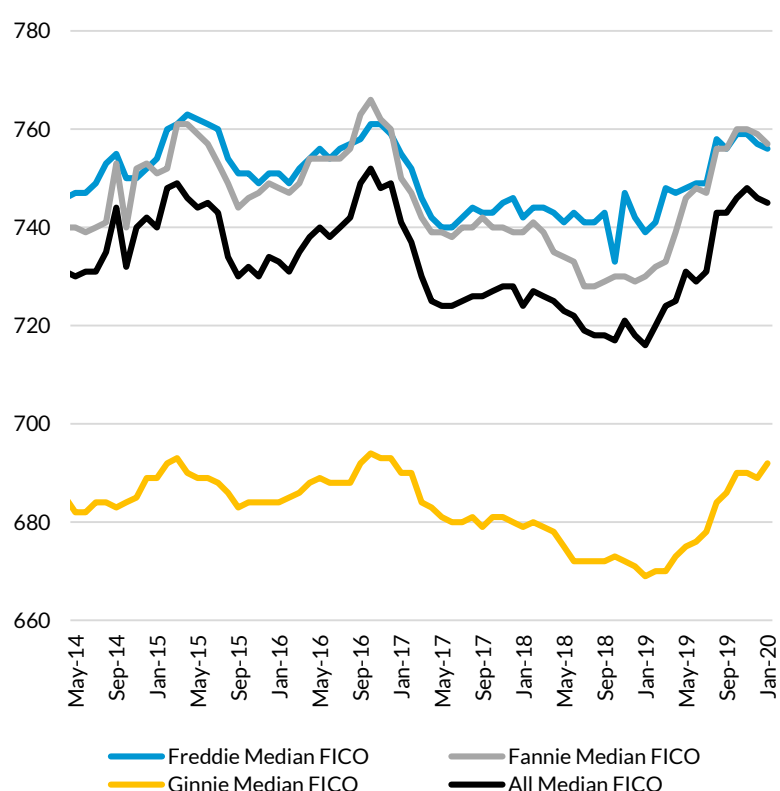
Sources: eMBS and Urban Institute. Note: Data as of January 2020.

FICO Scores for Purchase Loans



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

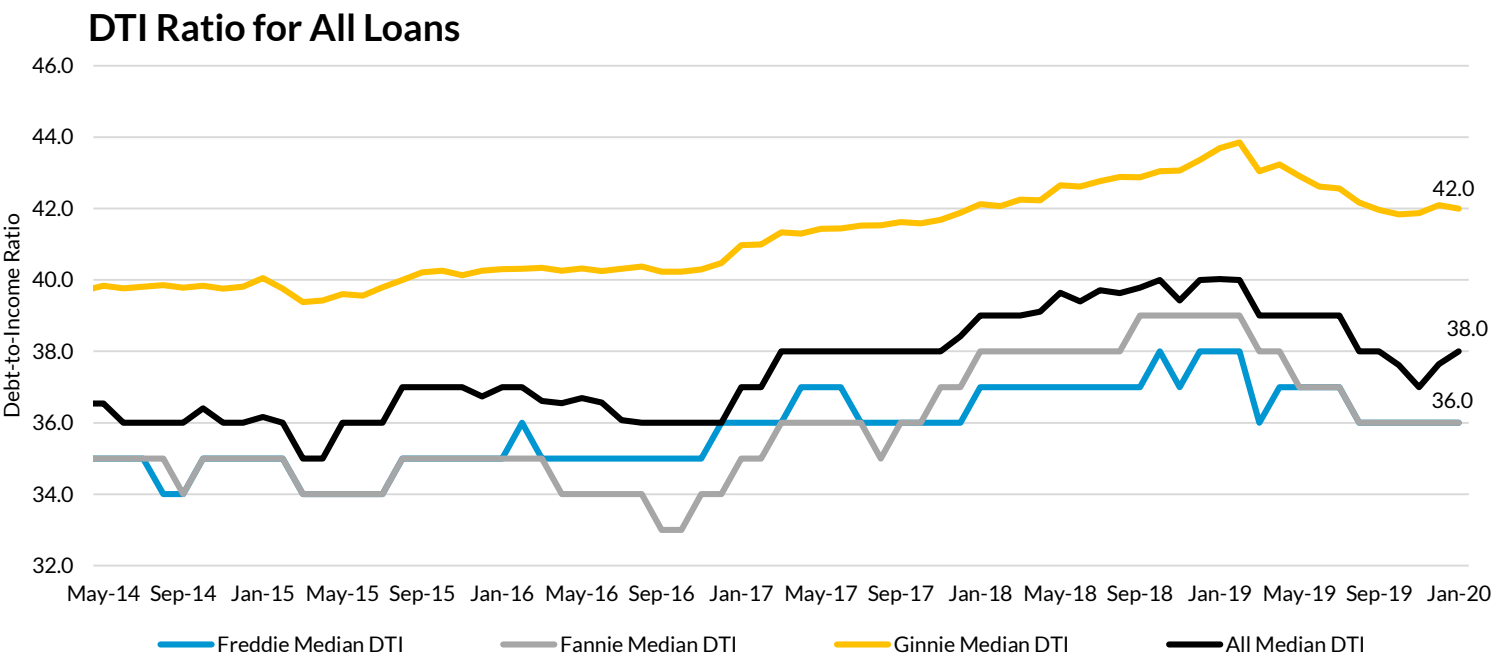
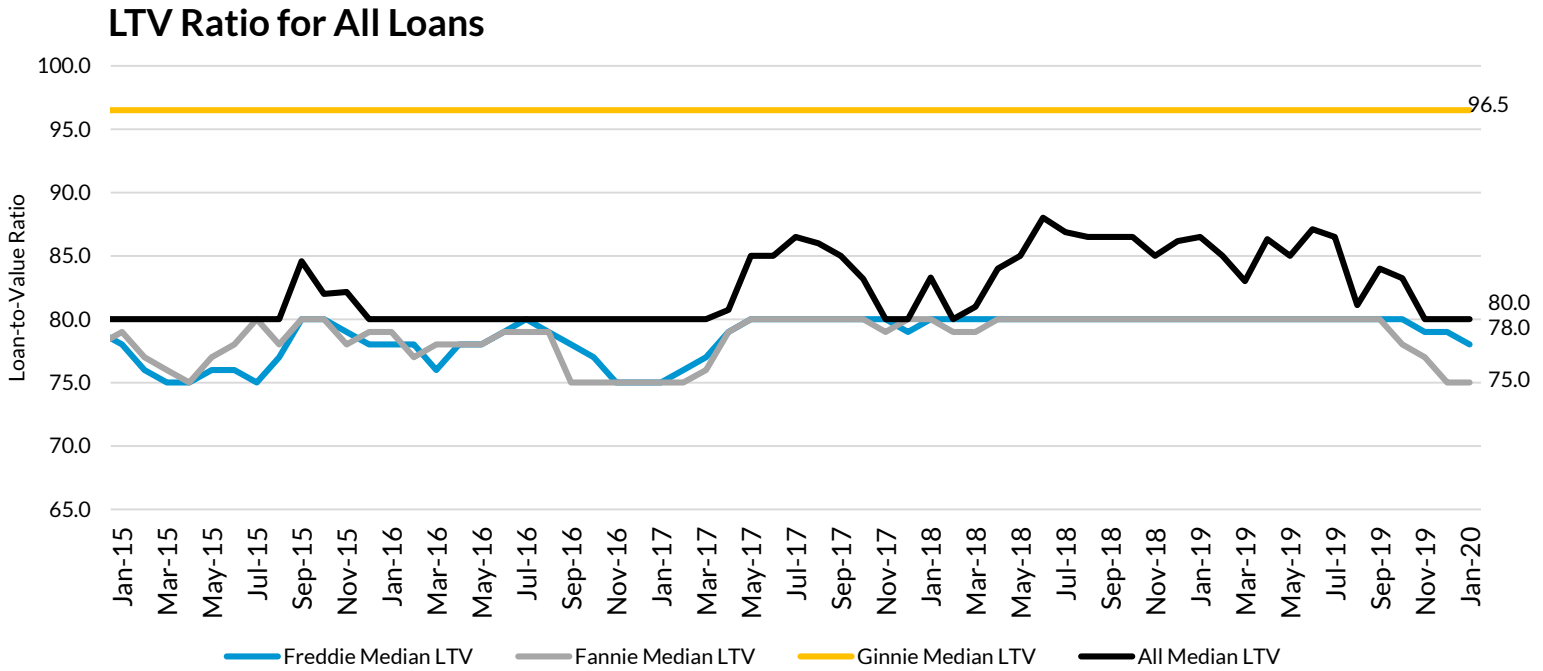
FICO Scores for Refinance Loans



Sources: eMBS and Urban Institute. Note: Data as of January 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.

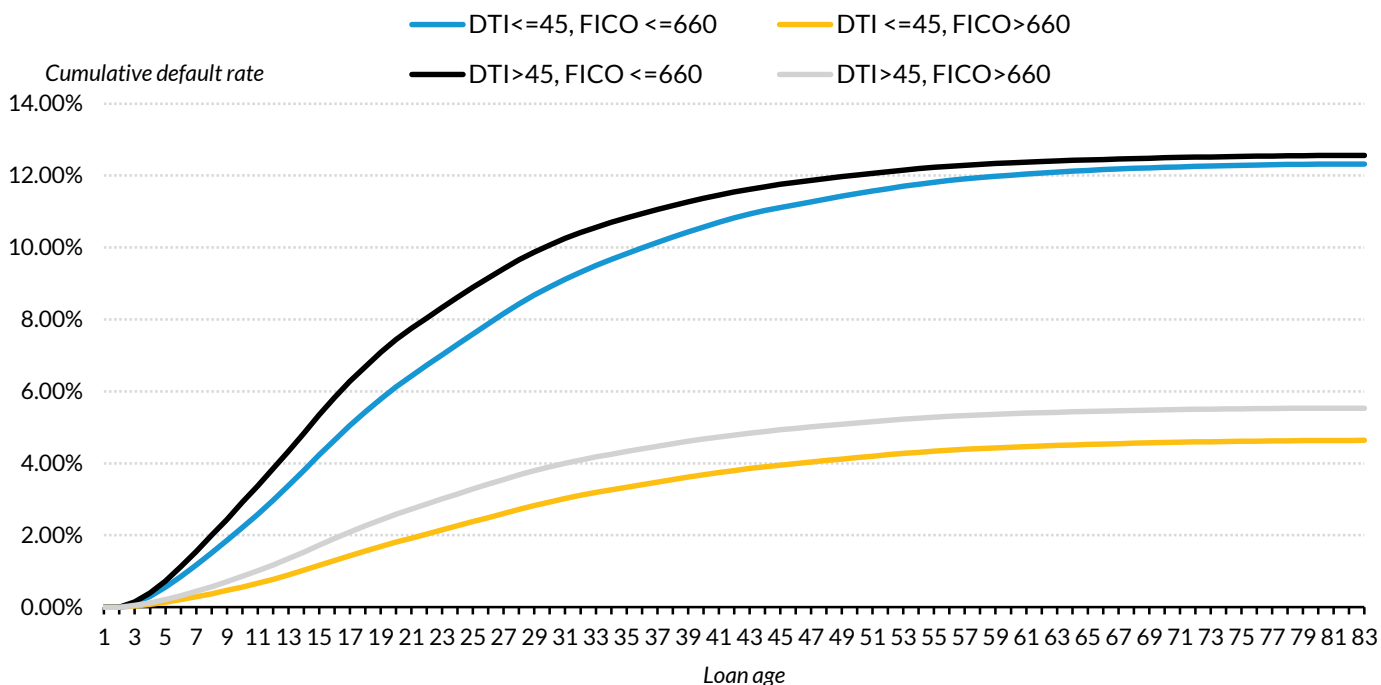


Sources: eMBS and Urban Institute. Note: In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting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

Credit Box: Historical

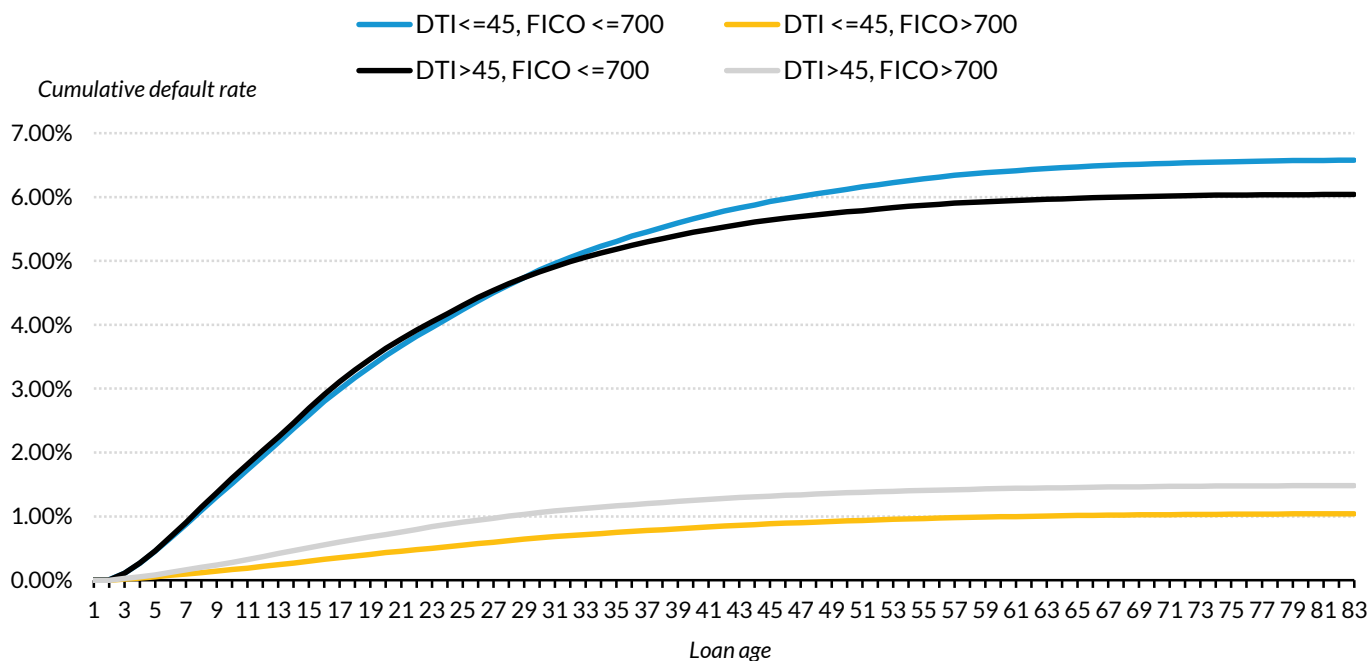
DTI is a much weaker predictor of performance than FICO score. The top chart shows FHA borrowers with higher DTIs do default more than those with lower DTIs, but the differences are modest, as evidenced by the fact that the black line is very close to the blue line and the grey line is not that much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

FHA Cumulative Default Rate by DTI and FICO



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

VA Cumulative Default Rate by DTI and FICO

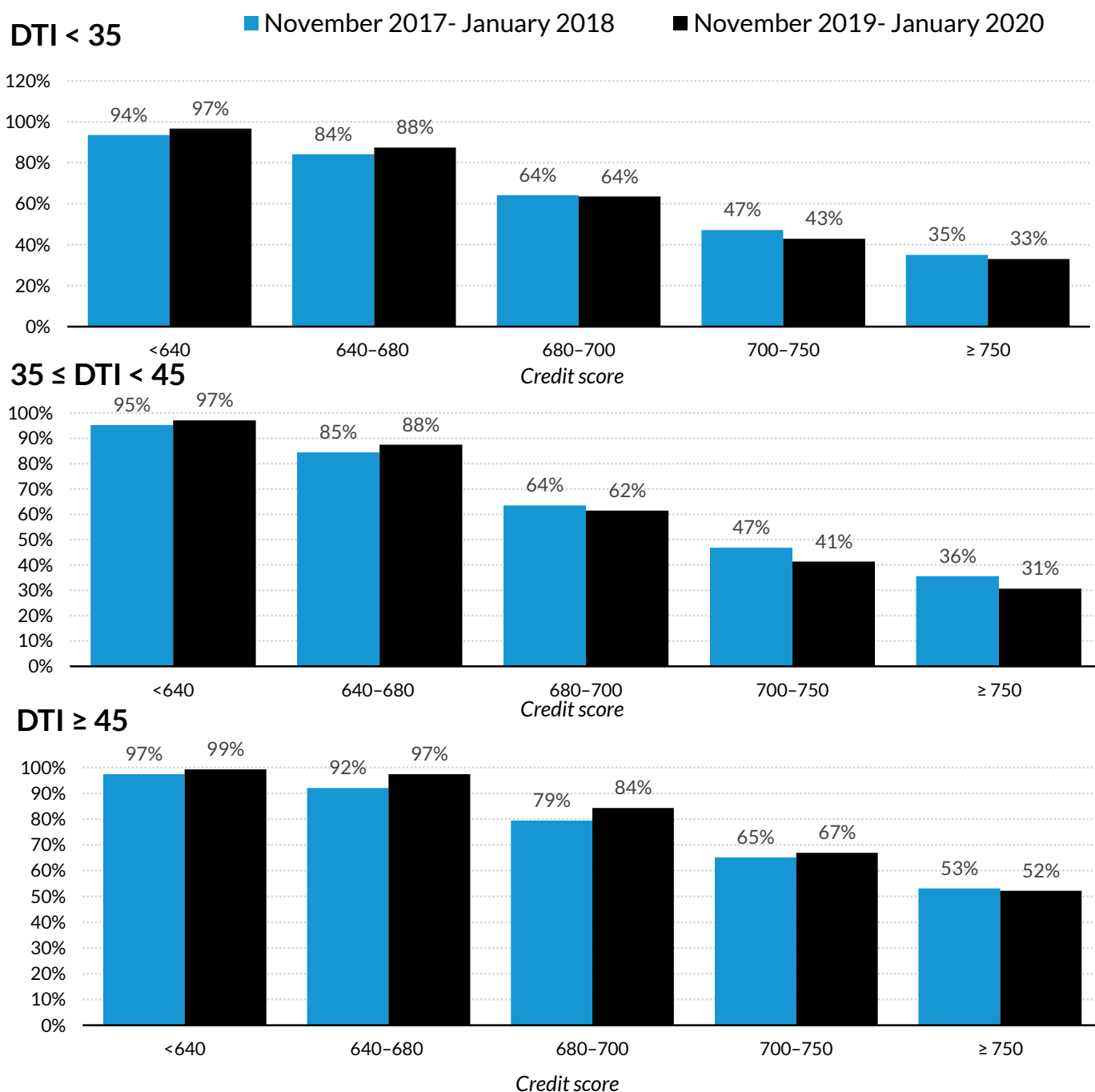


Sources: eMBS and Urban Institute. Note: Defaults = 180 days delinquent. Data as of January 2020.

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 November 2019- January 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 November 2019- January 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 84 percent; it was 62-64 percent for the same FICO in the lower DTI buckets. Comparing this period to 2 years earlier, it is clear the GSEs have marginally stepped up their higher LTV lending for borrowers with FICO's of 700 or more, taking a small amount of market share in high LTV/higher FICO borrowers from Ginnie Mae.

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



Sources: eMBS and Urban Institute.

High LTV Loans: Ginnie Mae vs. GSEs

Ginnie Mae dominates high-LTV lending, with 65.7 percent of its issuances in the November 2019-January 2020 period having LTVs of 95 or above, compared to 13.4 percent for the GSEs. The GSEs have decreased their high-LTV lending share from 16.4 percent in November 2017-January 2018. Ginnie Mae's high-LTV lending is down just slightly over the same period from 68.2 percent. The share of high-LTV agency loans going to highest FICO borrowers (i.e. above 750) has increased from the November 2017-January 2018 period to the November 2019-January 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
November 2017- January 2018	68.2%	16.4%	32.3%
November 2019- January 2020	65.7%	13.4%	26.9%

Agency Market Share by DTI and FICO for Loans with LTV ≥ 95 November 2017-January 2018

DTI	FICO					All
	<640	640-680	680-700	700-750	≥ 750	
< 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%

November 2019-January 2020

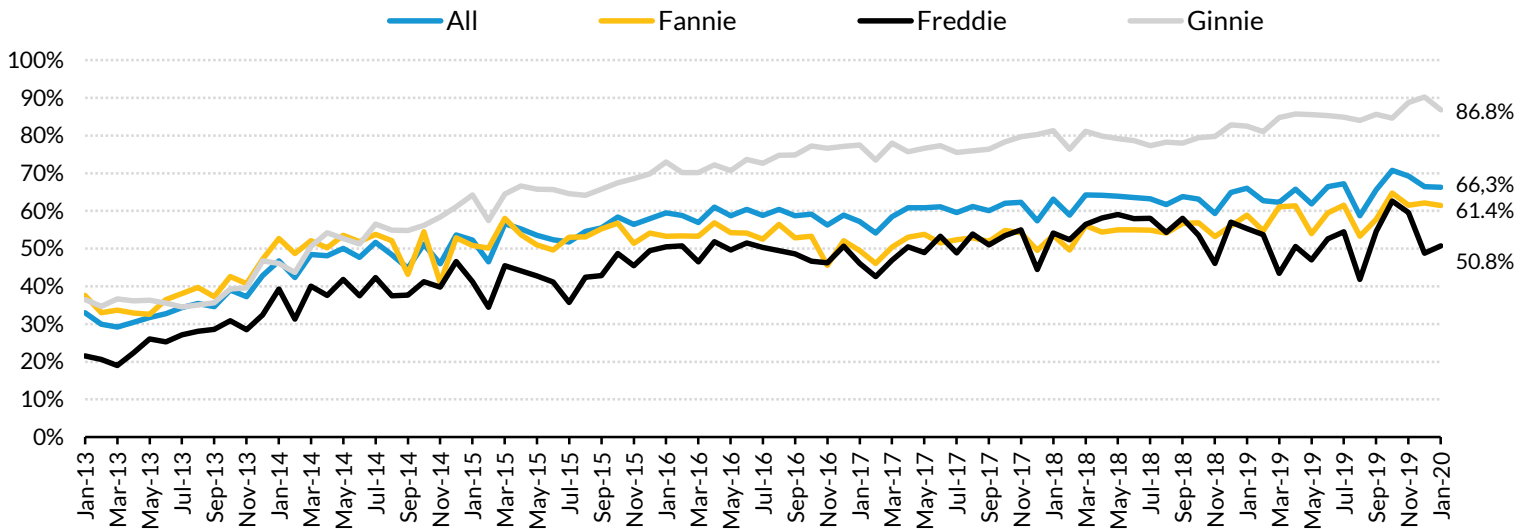
DTI	FICO					All
	<640	640-680	680-700	700-750	≥ 750	
< 35	2.8%	4.7%	2.7%	7.7%	10.6%	28.4%
35 -45	4.9%	8.4%	4.7%	11.7%	10.9%	40.6%
≥ 45	4.5%	8.0%	3.9%	8.4%	6.3%	31.0%
All	12.2%	21.1%	11.2%	27.8%	27.7%	100.0%

Sources: eMBS and Urban Institute.

Nonbank Originators

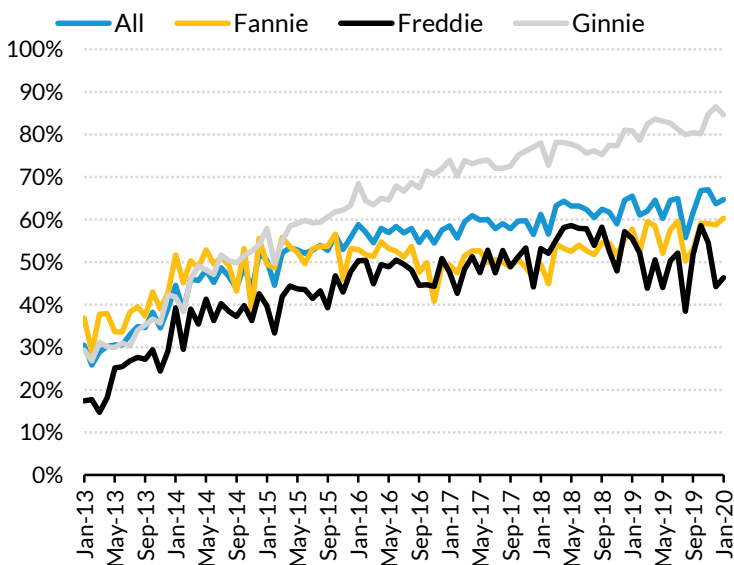
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, standing at 86.8 percent in January 2020, down from a record high of 90.2 percent in December 2019. Freddie's nonbank share grew slightly to 50.8 percent, while Fannie's nonbank share fell slightly to 61.4 percent in January (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

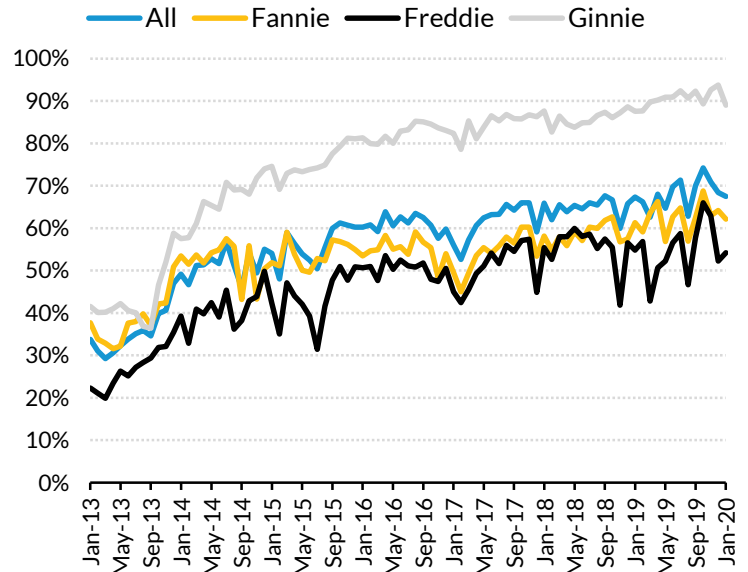


Sources: eMBS and Urban Institute
 Note: Data as of January 2020.

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

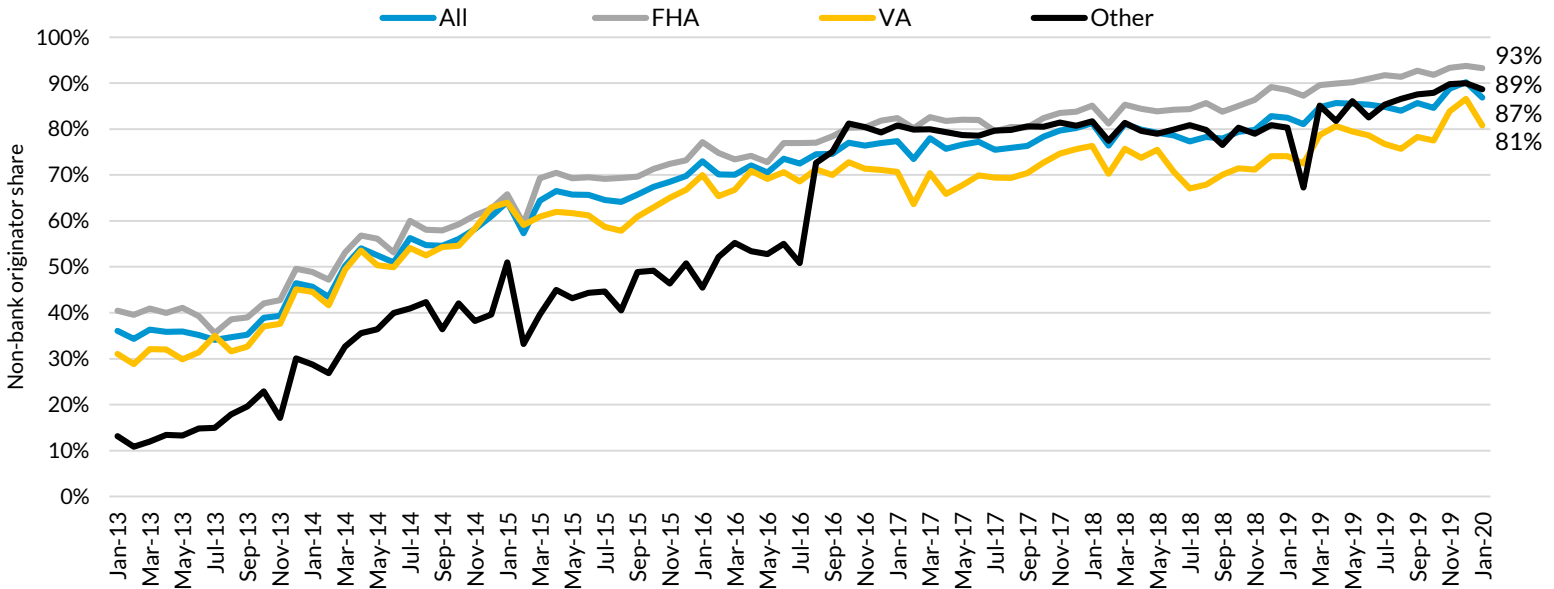


Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of January 2020.

Ginnie Mae Nonbank Originators

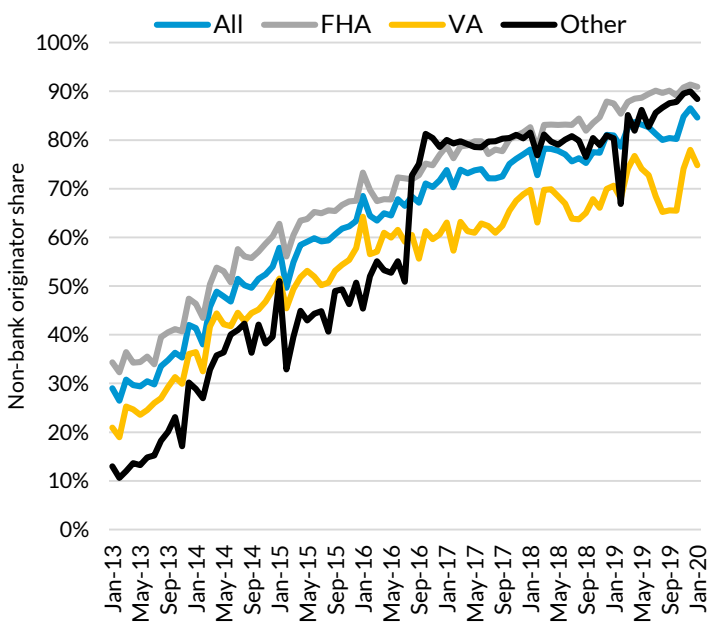
In January 2020, Ginnie Mae's nonbank share fell to 86.8 percent. The nonbank originator share for FHA fell slightly to 93 percent in January, just off the high reached in December 2019. The nonbank originator share for VA was lower than last month at 80.8 percent and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, fell slightly to 88.7 percent.

Ginnie Mae Nonbank Originator Share: All Loans

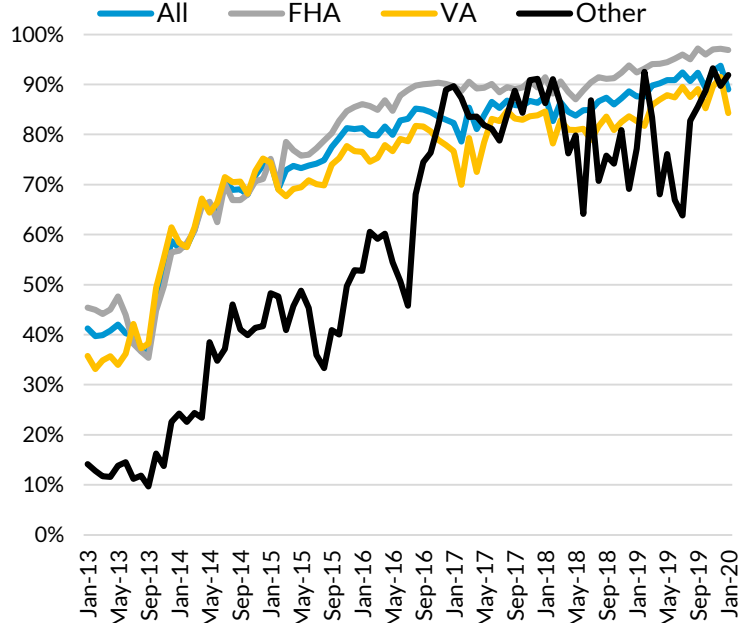


Sources: eMBS and Urban Institute
 Note: Data as of January 2020.

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

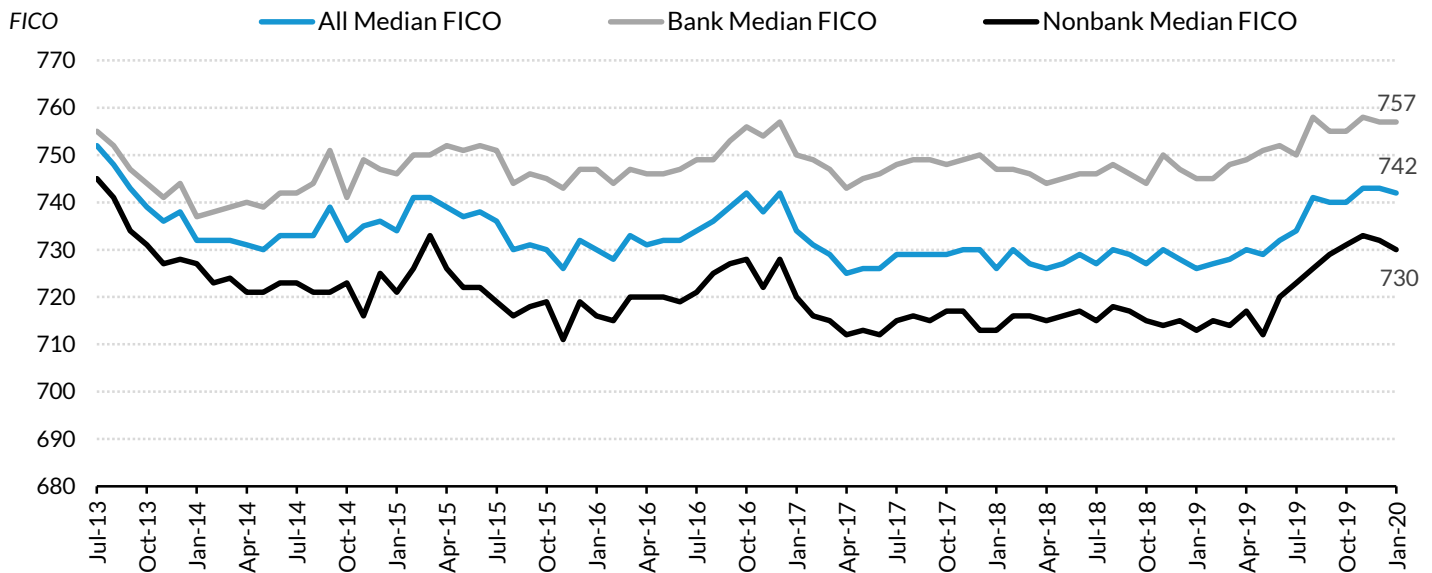


Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of January 2020.

Nonbank Credit Box

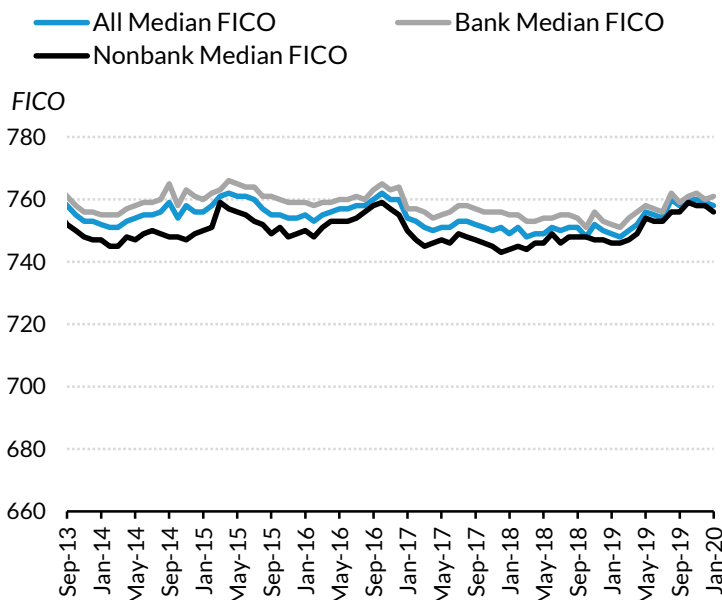
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICO scores have increased since 2014. In contrast, within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

Agency FICO: Bank vs. Nonbank



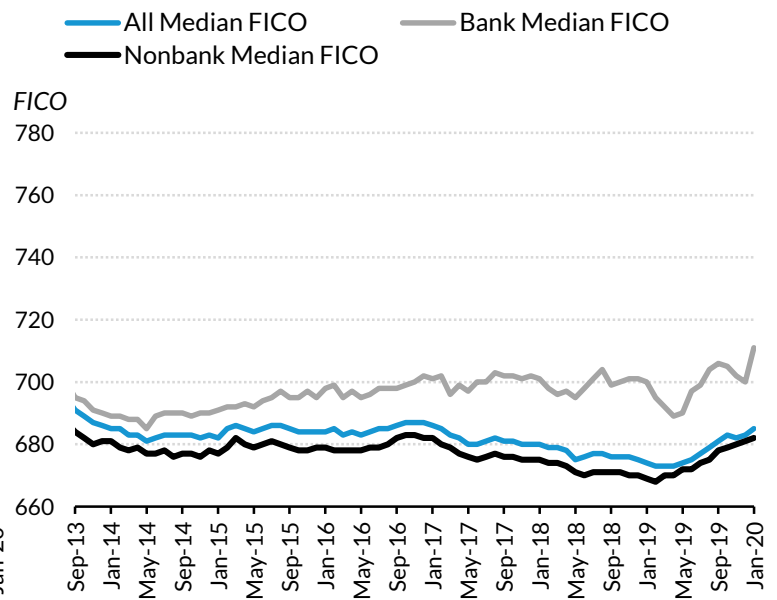
Sources: eMBS and Urban Institute. Note: Data as of January 2020.

GSE FICO: Bank vs. Nonbank



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

Ginnie Mae FICO: Bank vs. Nonbank

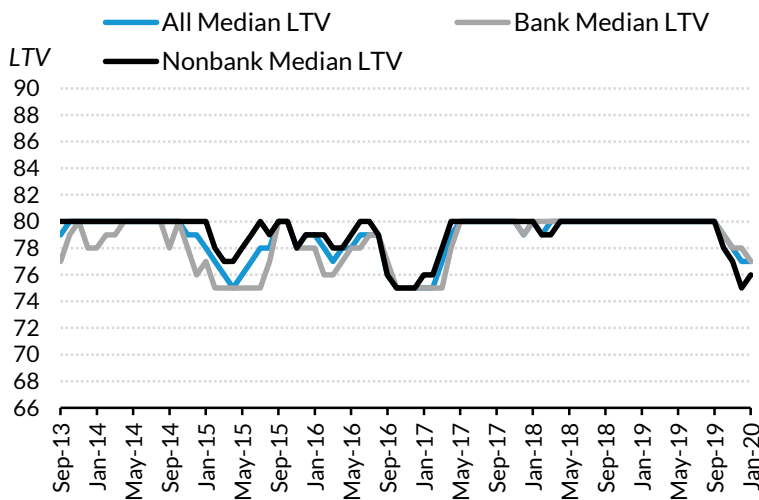


Sources: eMBS and Urban Institute. Note: Data as of January 2020.

Nonbank Credit Box

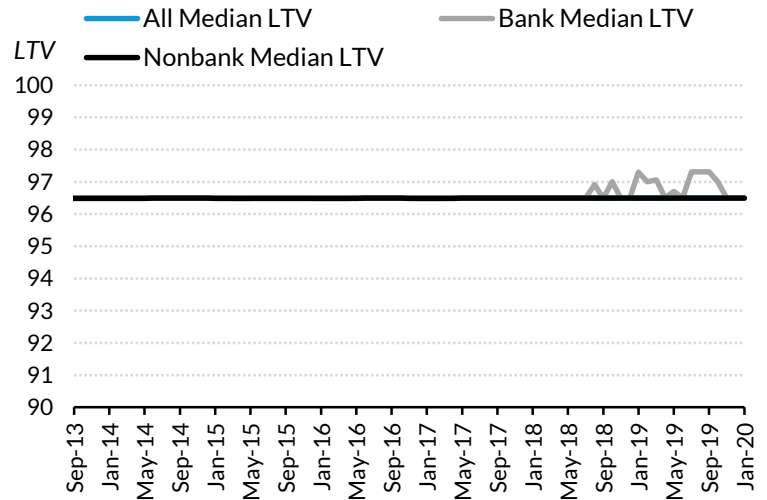
The median LTVs for nonbank and bank originations are comparable, while the median DTI for nonbank loans is higher than for bank loans, indicating that nonbanks are more accommodating in both this and the FICO dimension. Since early 2017, there has been a substantial increase in DTIs, which has mostly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

GSE LTV: Bank vs. Nonbank



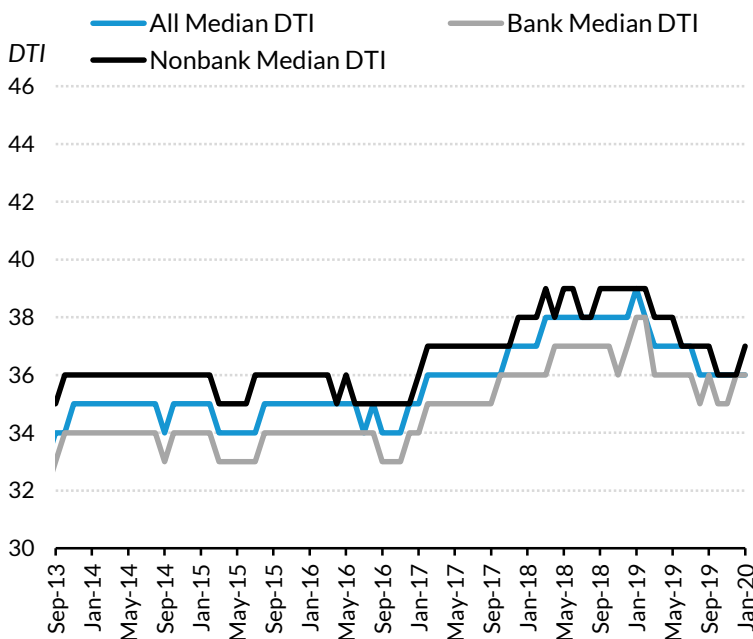
Sources: eMBS and Urban Institute. Note: Data as of January 2020.

Ginnie Mae LTV: Bank vs. Nonbank



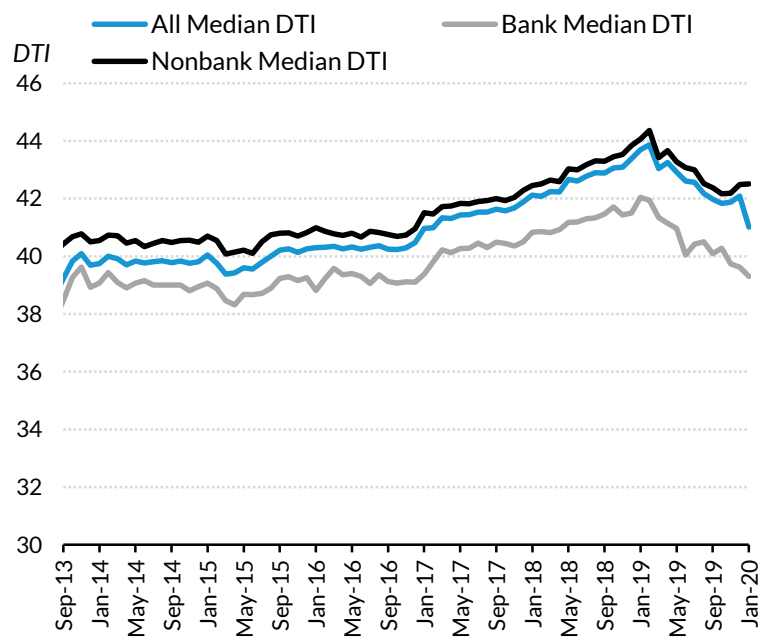
Sources: eMBS and Urban Institute. Note: Data as of January 2020.

GSE DTI: Bank vs. Nonbank



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

Ginnie Mae DTI: Bank vs. Nonbank

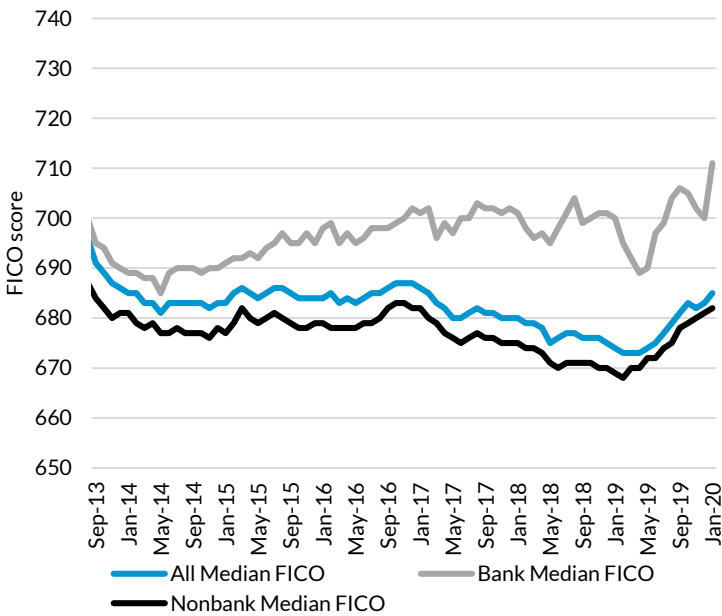


Sources: eMBS and Urban Institute. Note: Data as of January 2020.

Ginnie Mae Nonbank Originators: Credit Box

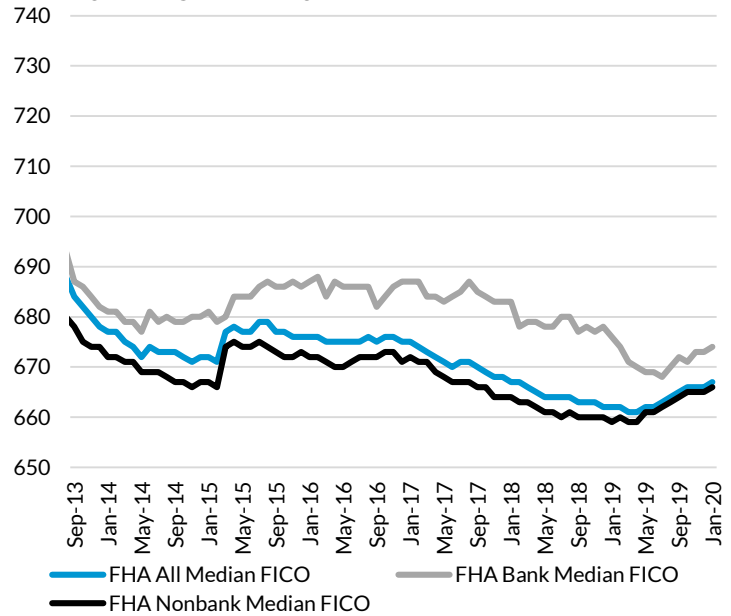
The median FICO score for Ginnie Mae bank originators increased by about 10 points in January 2020, widening the gap between non-bank and bank median FICO lending. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



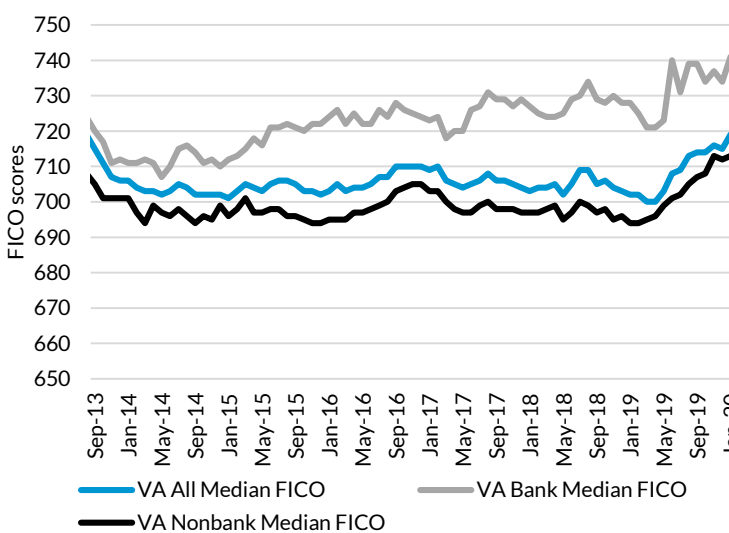
Sources: eMBS and Urban Institute Note: Data as of January 2020.

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



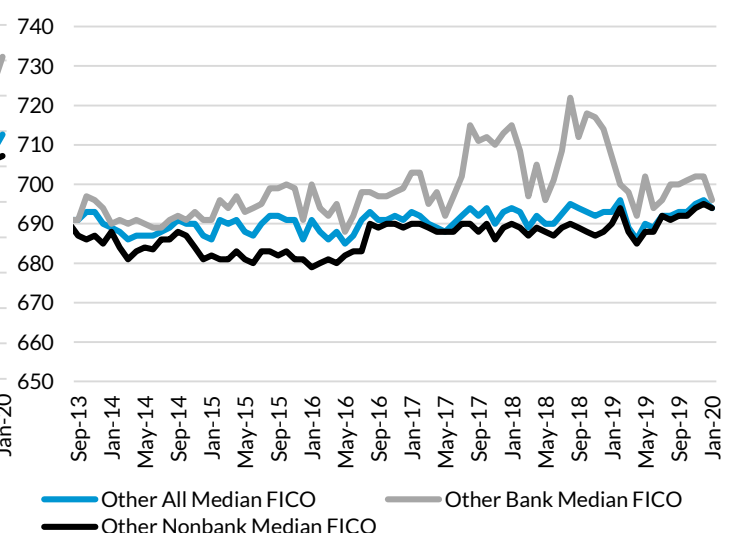
Sources: eMBS and Urban Institute Note: Data as of January 2020.

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



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

Ginnie Mae Other FICO Scores: Bank vs. Nonbank

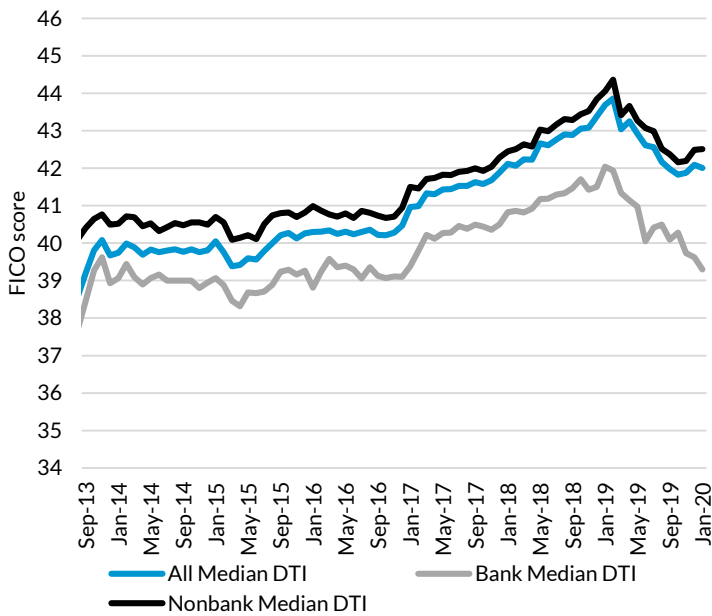


Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of January 2020.

Ginnie Mae Nonbank Originators: Credit Box

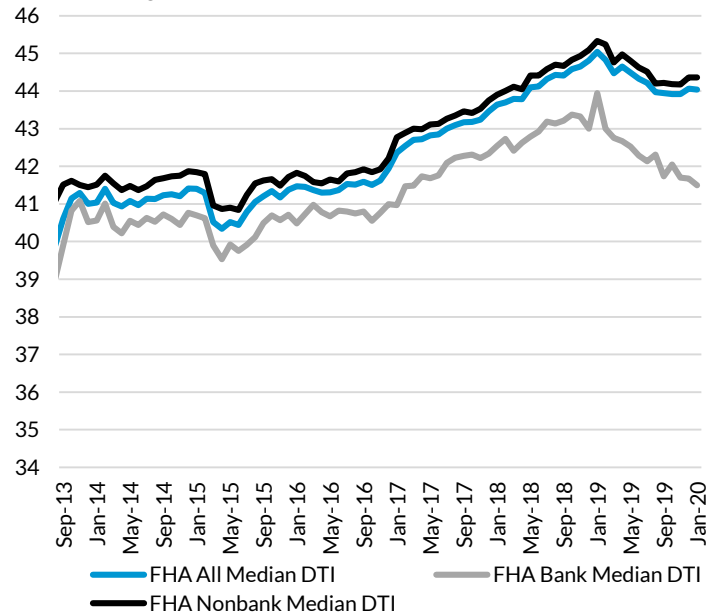
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA borrowers experienced notable increases during 2017 and 2018 for both banks and nonbank originators, while the Other origination DTIs stayed relatively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



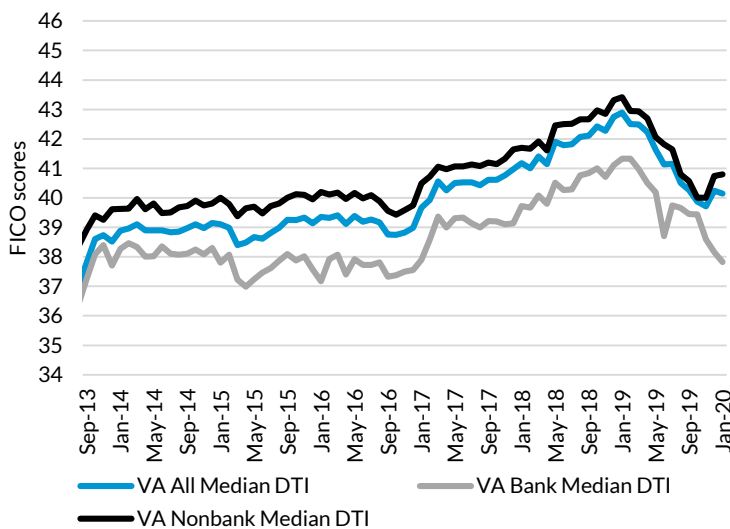
Sources: eMBS and Urban Institute Note: Data as of January 2020.

Ginnie Mae FHA DTI: Bank vs. Nonbank



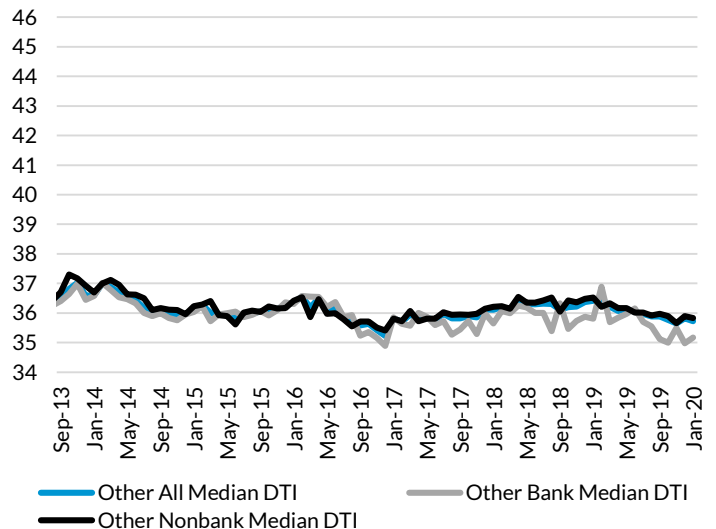
Sources: eMBS and Urban Institute Note: Data as of January 2020.

Ginnie Mae VA DTI: Bank vs. Nonbank



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

Holders of Ginnie Mae MSR s

This table shows 30 largest owners of mortgage servicing rights (MSR) by UPB for Ginnie Mae securitizations. As of January 2020, over half (52.8 percent) of the Ginnie Mae MSR s are owned by the top six firms. The top 30 firms collectively own 85.6 percent. Eighteen of these 30 are non-depositories, the remaining 12 are depository institutions.

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

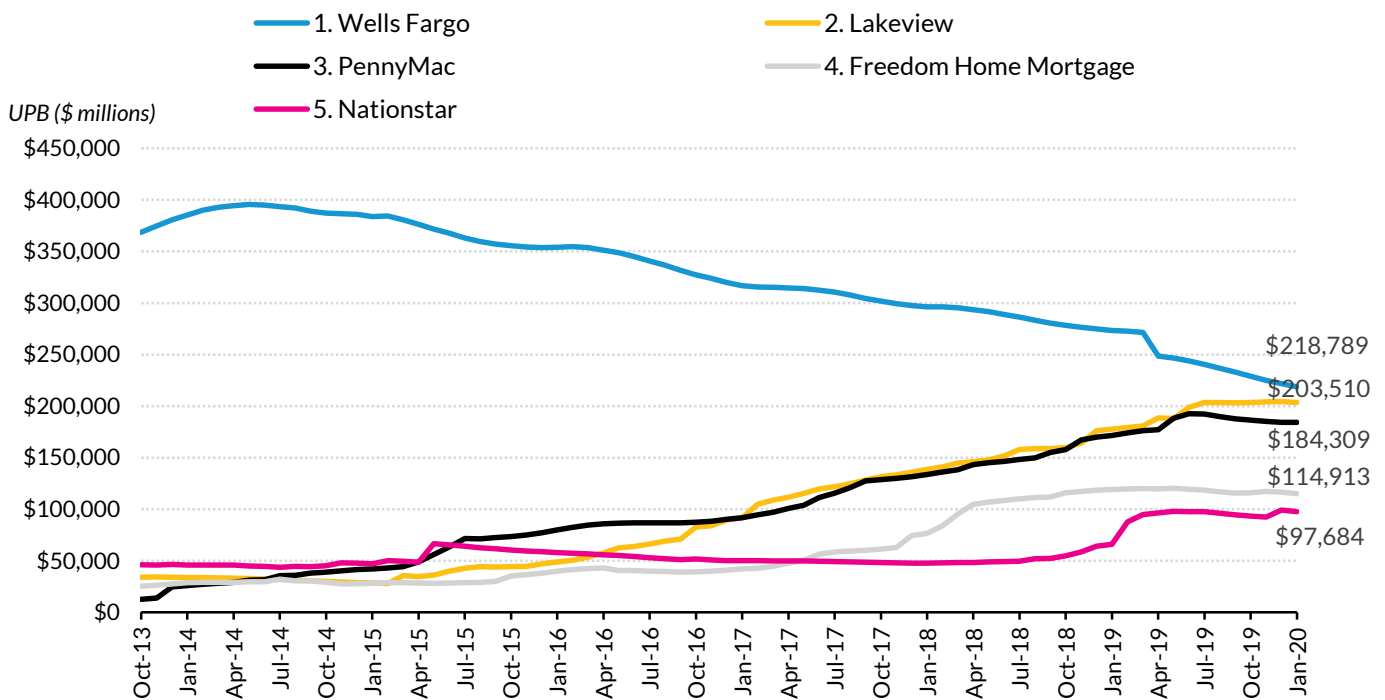
Rank	MSR Holder	UPB (\$ millions)	Share	Cumulative Share
1	Wells Fargo	\$218,789	13.1%	13.1%
2	Lakeview	\$203,510	12.2%	25.2%
3	PennyMac	\$184,309	11.0%	36.2%
4	Freedom Home Mortgage	\$114,913	6.9%	43.1%
5	Nationstar	\$97,684	5.9%	49.0%
6	Quicken Loans	\$63,905	3.8%	52.8%
7	US Bank	\$57,621	3.4%	56.3%
8	Carrington Home Mortgage	\$39,258	2.3%	58.6%
9	USAA Federal Savings Bank	\$37,716	2.3%	60.9%
10	Caliber Home Loans	\$36,339	2.2%	63.0%
11	JP Morgan Chase	\$33,743	2.0%	65.0%
12	Truist Bank	\$32,155	1.9%	67.0%
13	Amerihome	\$28,054	1.7%	68.6%
14	Navy Federal Credit Union	\$27,756	1.7%	70.3%
15	Newrez	\$25,335	1.5%	71.8%
16	The Money Source	\$21,549	1.3%	73.1%
17	Midfirst Bank	\$20,502	1.2%	74.3%
18	Ditech Financial	\$18,569	1.1%	75.4%
19	Home Point Financial	\$18,402	1.1%	76.5%
20	M&T Bank	\$18,301	1.1%	77.6%
21	Roundpoint	\$17,473	1.0%	78.7%
22	Loan Depot	\$15,578	0.9%	79.6%
23	Guild Mortgage	\$15,309	0.9%	80.5%
24	Flagstar Bank	\$13,649	0.8%	81.3%
25	PHH Mortgage	\$13,589	0.8%	82.1%
26	Citizens Bank	\$12,821	0.8%	82.9%
27	Pingora	\$12,536	0.7%	83.7%
28	Fifth Third Bank	\$10,669	0.6%	84.3%
29	Bank of America	\$10,663	0.6%	84.9%
30	Planet Home Lending	\$10,502	0.6%	85.6%

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

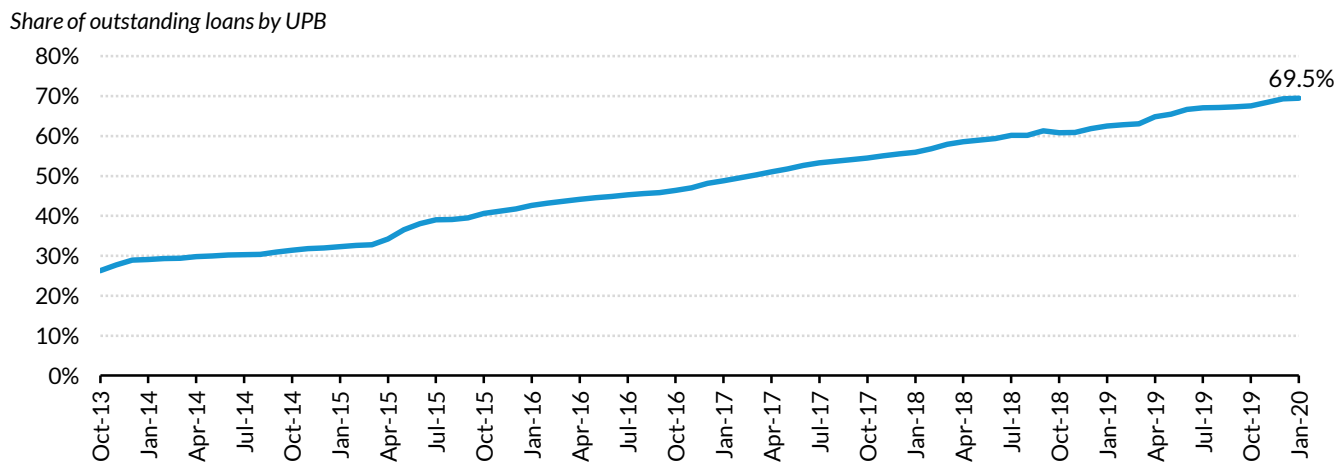
Holders of Ginnie Mae MSR

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 MSR, holding \$375 billion and \$139 billion in servicing UPB respectively. Although Wells Fargo is still the largest player, its portfolio has shrunk to \$219 billion. Lakeview, PennyMac, Freedom Home Mortgage, and Nationstar (all nonbanks) make up the remainder of the top five largest holders of MSR, owning \$204 billion, \$184 billion, \$114 billion, and \$98 billion respectively as of January 2020. As of January 2020, nonbanks collectively owned servicing rights for 69.5 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 MSR held by Nonbanks



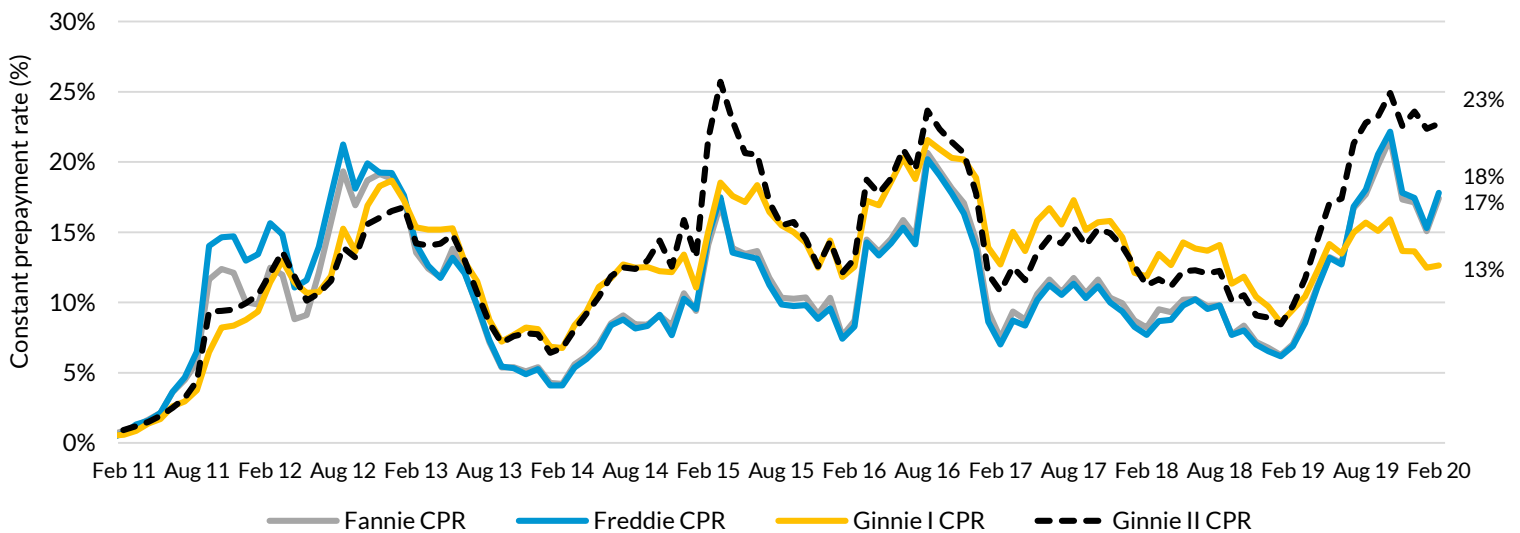
Sources: eMBS and Urban Institute. Note: Data as of January 2020.

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.

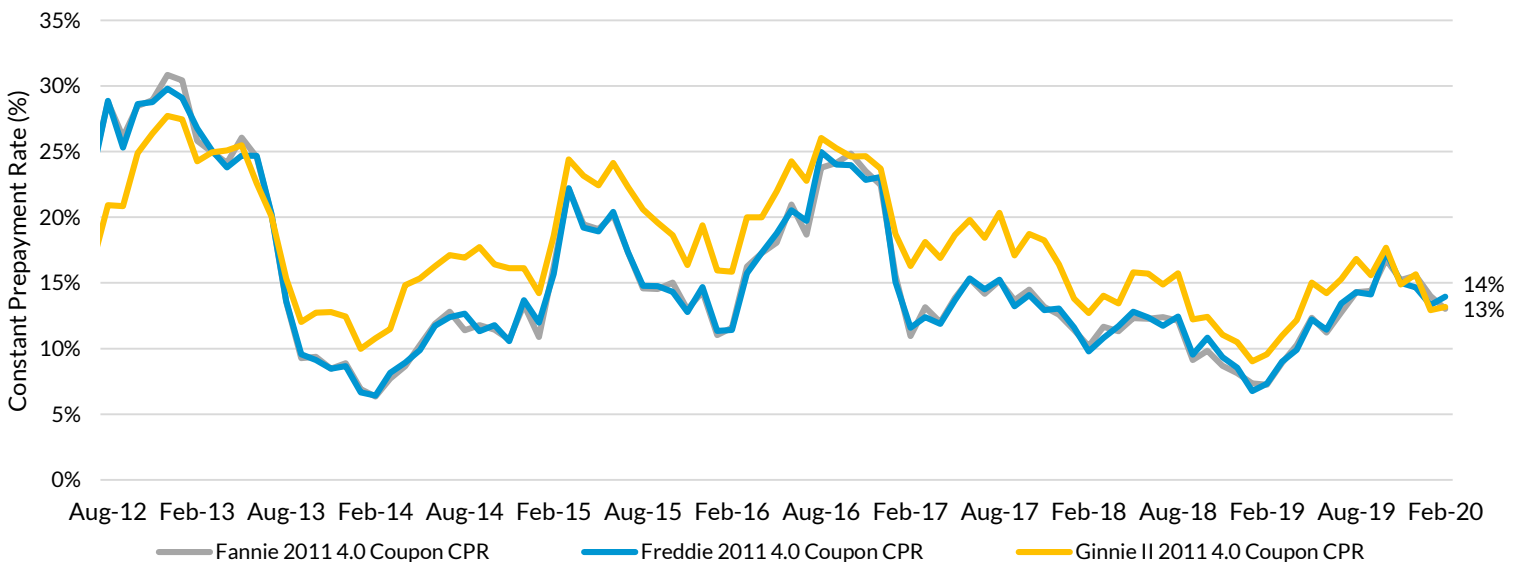
From late 2016 to later 2018, as interest rates increased, the bulk of the mortgage universe found it non-economic to refinance and the prepayment speeds for all agency MBS slowed substantially. The small month-to-month variation in speeds reflected primarily seasonality and changes in day count. With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

Aggregate Prepayments



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

2011 Issued 4.0 Coupon CPR



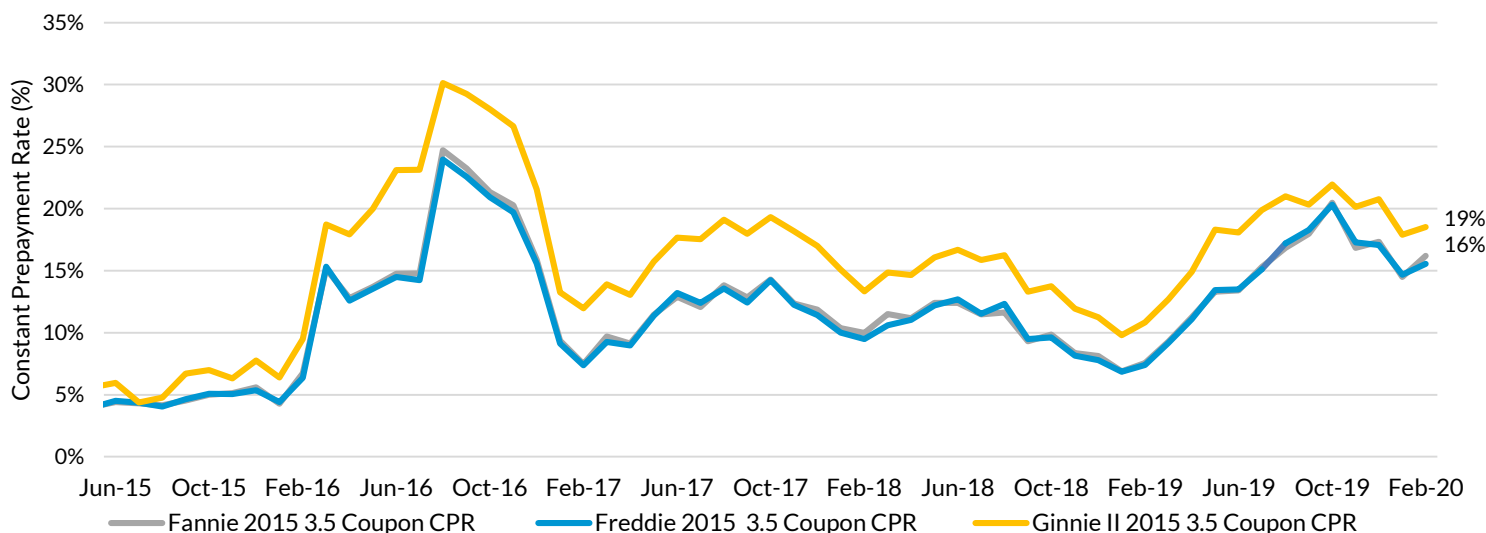
Sources: Credit Suisse and Urban Institute. Note: Data as of February 2020.

Prepayments

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

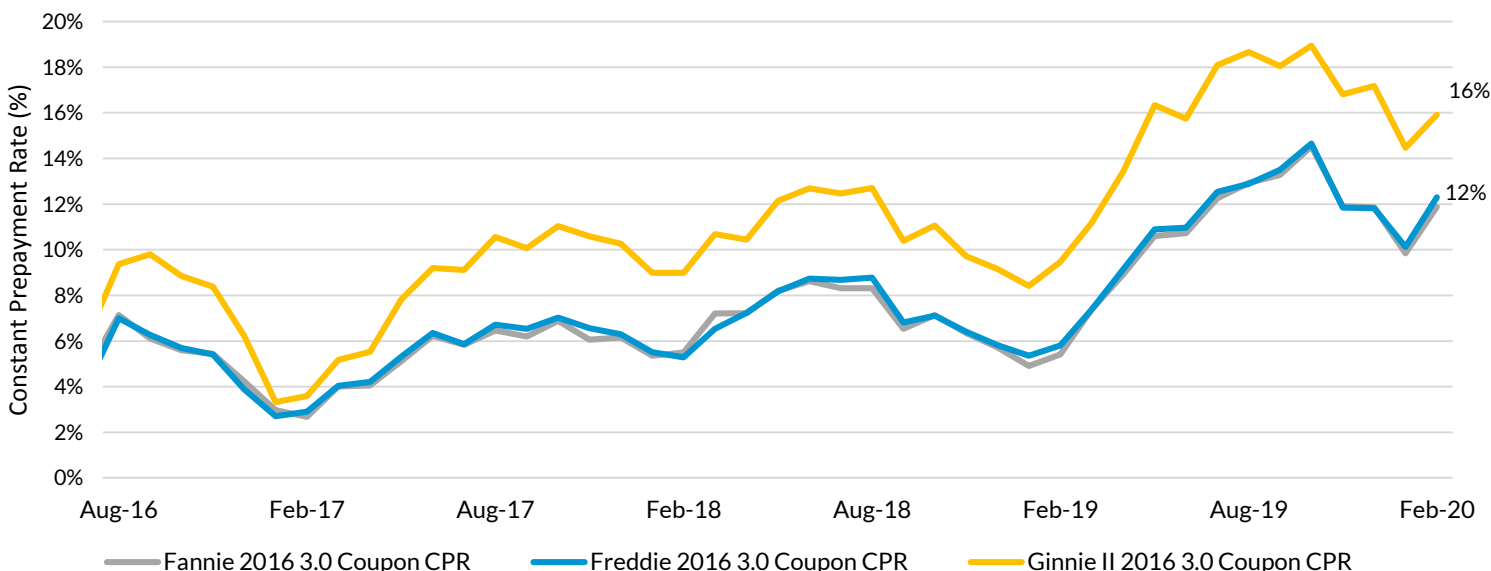
With the increase in interest rates over the 2 year period beginning in November 2016, the prepayment speeds for all agency MBS had slowed. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflected seasonality, changes in day count and changes in mortgage interest rates. With the drop in rates beginning in late 2018 and persisting through 2019, we have seen a notable pick up in prepayment activity. The recent drop in rates could accelerate speeds in the months ahead.

2015 Issued 3.5 Coupon CPR



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

2016 Issued 3.0 Coupon CPR

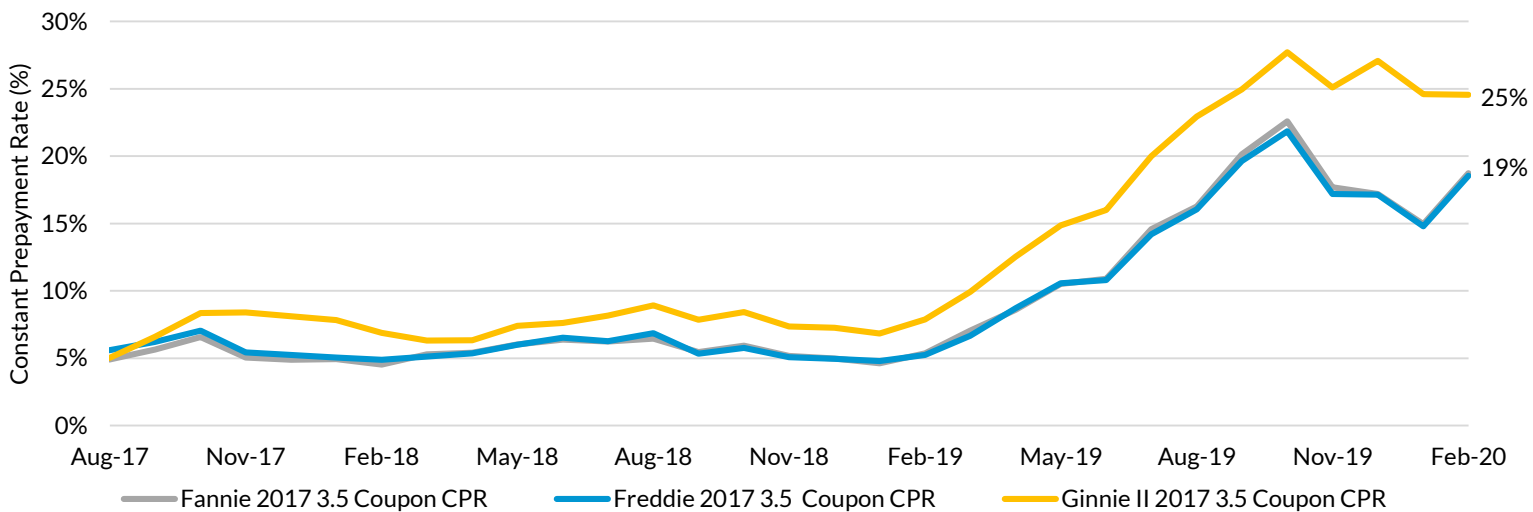


Sources: Credit Suisse and Urban Institute. Note: Data as of February 2020.

Prepayments

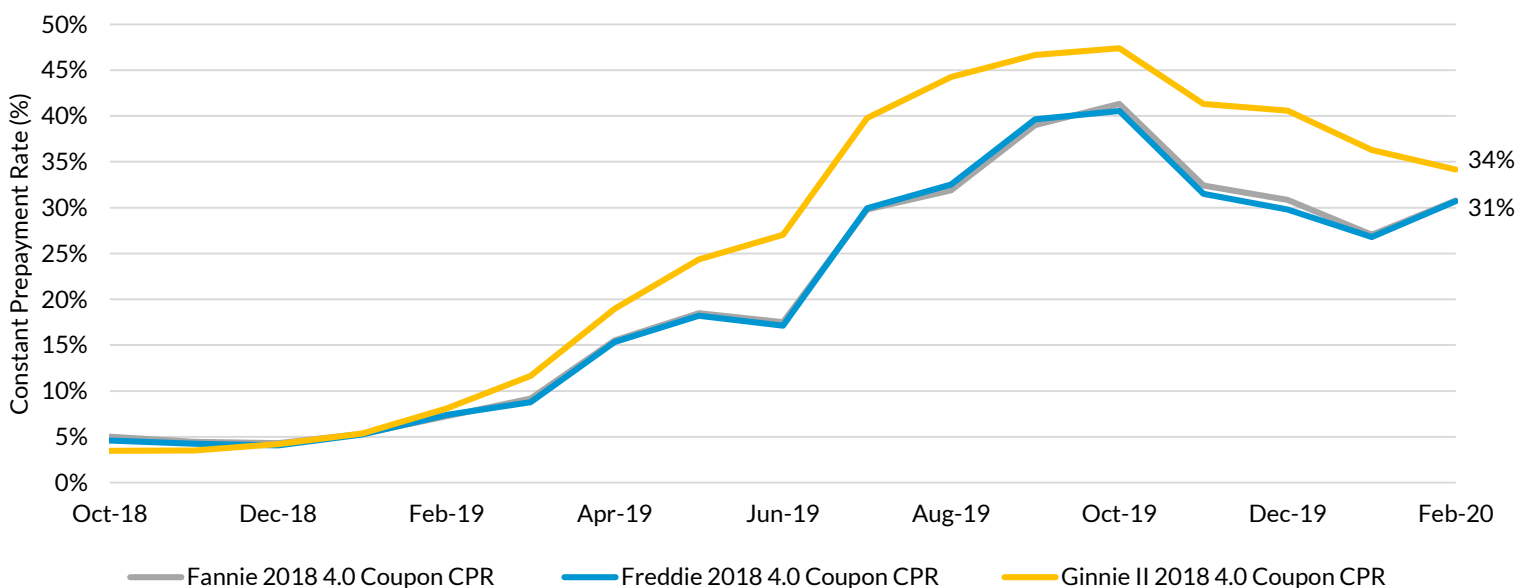
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayment in the early months but are more interest rate responsive thereafter. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of those vintage years. Despite slower seasoning, 2017 Ginnie II 3.5s have been prepaying faster than their conventional counterparts since late 2017, due primarily to fast VA prepayment speeds. Similarly, the 2018 Ginnie II 4.0s prepaid more slowly than their conventional counterparts until January of 2019. In 2019, speeds of all 2018 4.0s have accelerated, and Ginnie II speeds have accelerated more than their conventional counterparts.

2017 Issued 3.5 Coupon CPR



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

2018 Issued 4.0 Coupon CPR

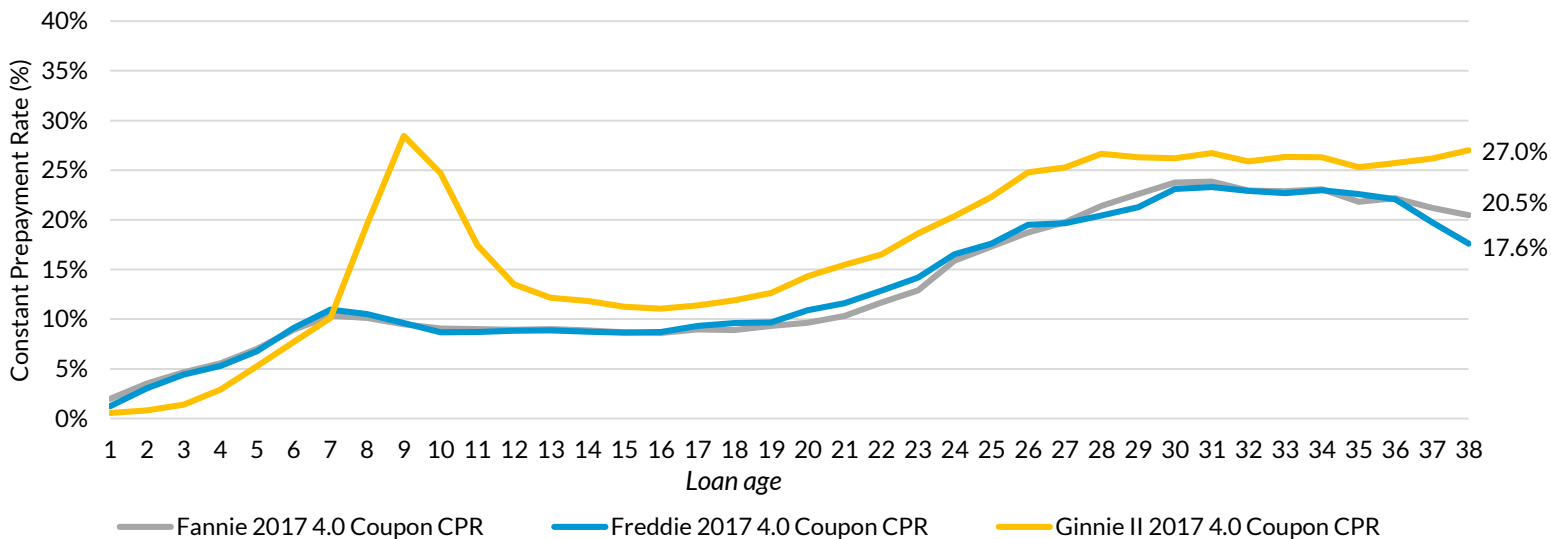


Sources: Credit Suisse and Urban Institute. Note: Data as of February 2020.

Prepayments

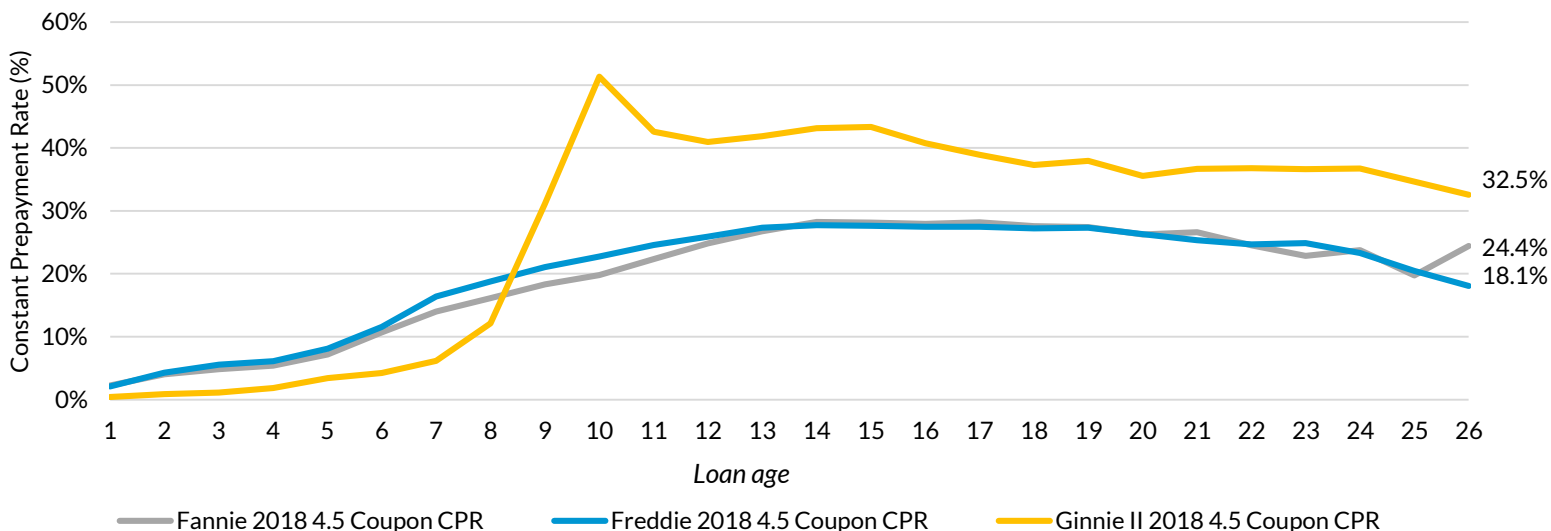
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined Refi program (IRRRL). The 2018 Ginnie II 4.5s do not show increased speeds until the 9-10 month point; reflecting both the effect of lower rates and the actions taken by both Ginnie Mae and the VA in H1 2018 to curb this abuse. Ginnie Mae actions have included suspending a few servicers whose VA prepayment speeds are especially high from selling VA loans into Ginnie Mae II securities, as well as rewriting the pooling requirements so that if loans that do not meet the seasoning requirement are refinanced, the new loan is ineligible for securitization. Ginnie’s latest action on this front became effective for securities issued on or after Nov 1 2019. It bars the securitization of over 90% LTV cash-out refinances into Ginnie I and Ginnie II pools (custom pools excepted). In addition, VA has implemented a net tangible benefit test, requiring the lender to show the borrower has obtained a benefit from the refinance. Even so, the recent experience of the 2018 Ginnie II 4.5s indicates they are much more responsive to interest rate changes than conventional mortgages.

2017 Issued 4.0 Coupon CPR, by Loan Age



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

2018 Issued 4.5 Coupon CPR, by Loan Age



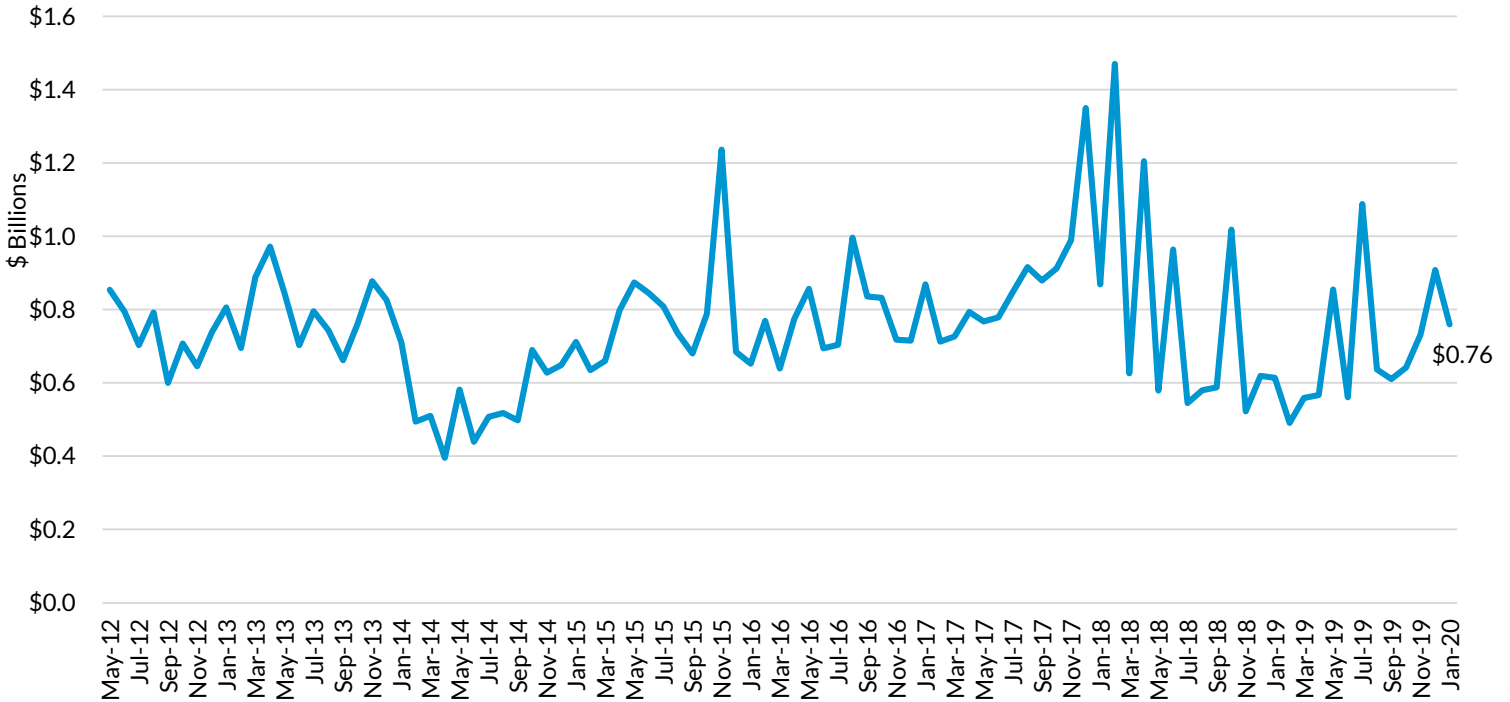
Sources: Credit Suisse and Urban Institute. Note: Data as of February 2020..

Other Ginnie Mae Programs

Reverse Mortgage Volumes

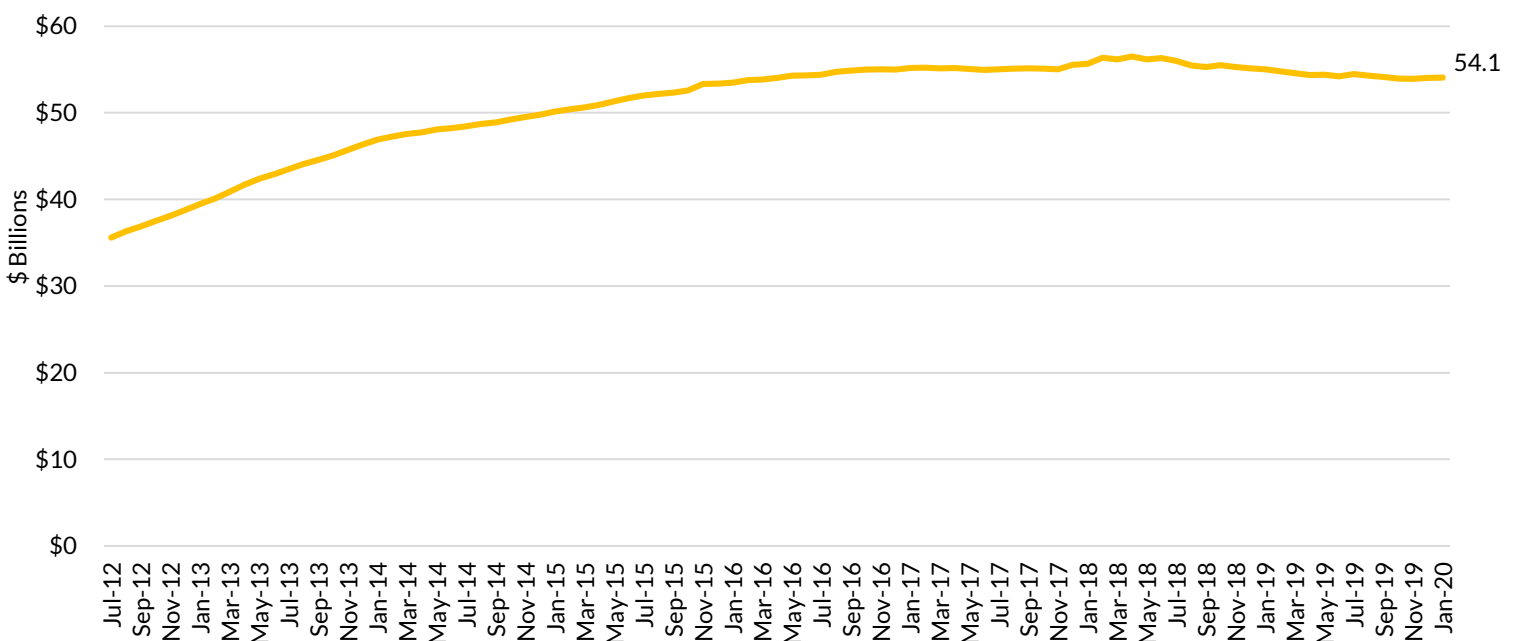
Ginnie Mae reverse mortgage issuance has been volatile in recent months; after falling consecutively in August and September 2019, volume rose to \$0.91 billion in December 2019 but it has fallen in January 2020 to \$0.76 billion. Issuance has been generally declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In January 2020, outstanding reverse mortgage securities totaled \$54 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 January 2020.

HMBS Outstanding



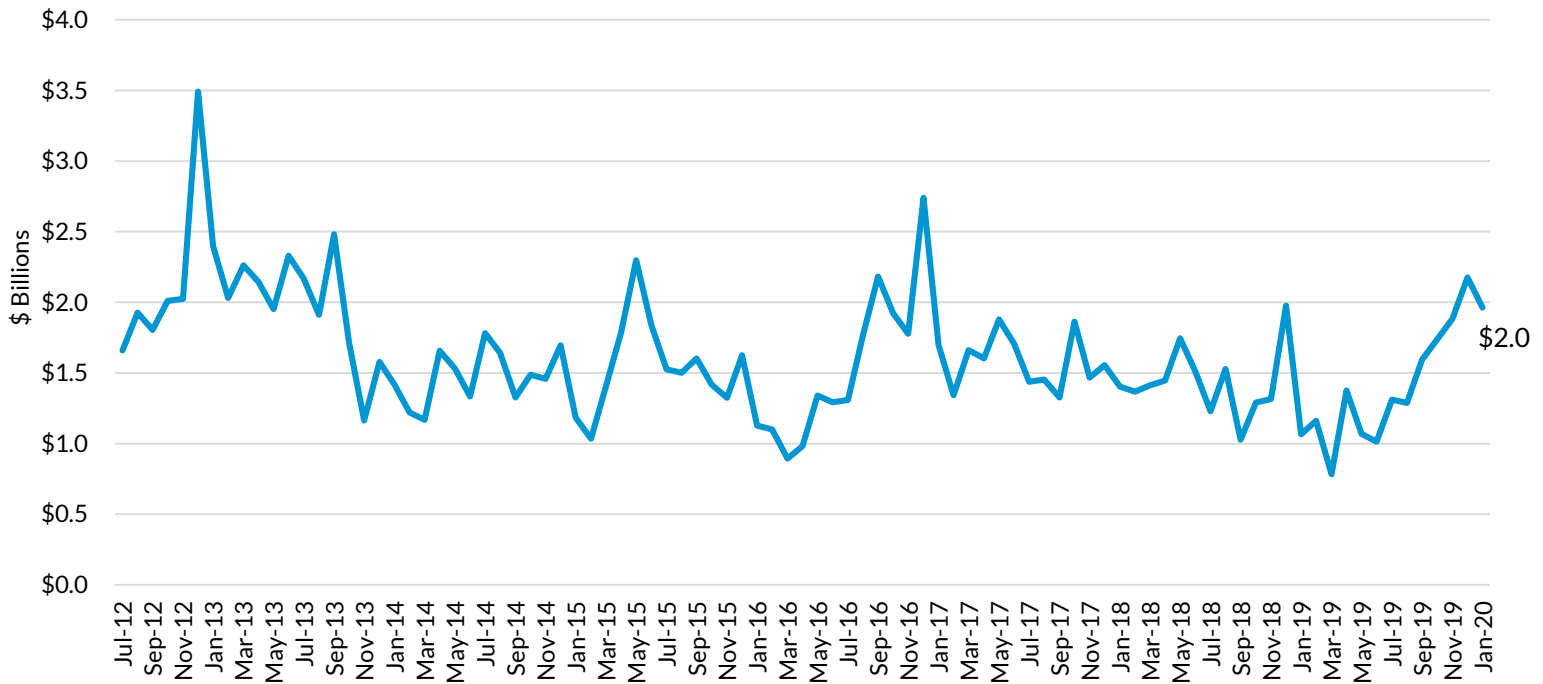
Sources: Ginnie Mae and Urban Institute. Note: Data as of January 2020.

Other Ginnie Mae Programs

Multifamily Market

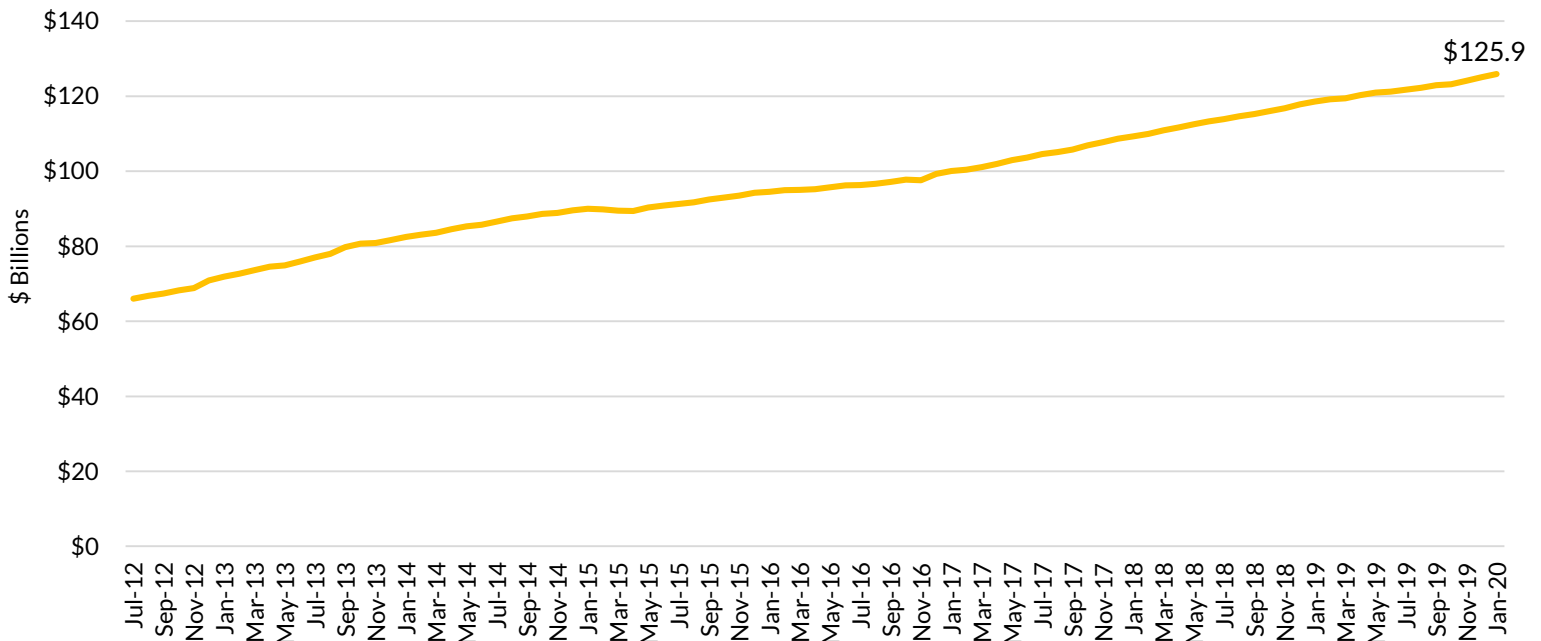
Ginnie Mae multifamily issuance volume in January 2020 totaled \$2.0 billion, a mild decrease from the past month. Outstanding multifamily securities totaled \$125.9 billion as of the first month of 2020.

Ginnie Mae Multifamily MBS Issuance



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

Ginnie Mae Multifamily MBS Outstanding

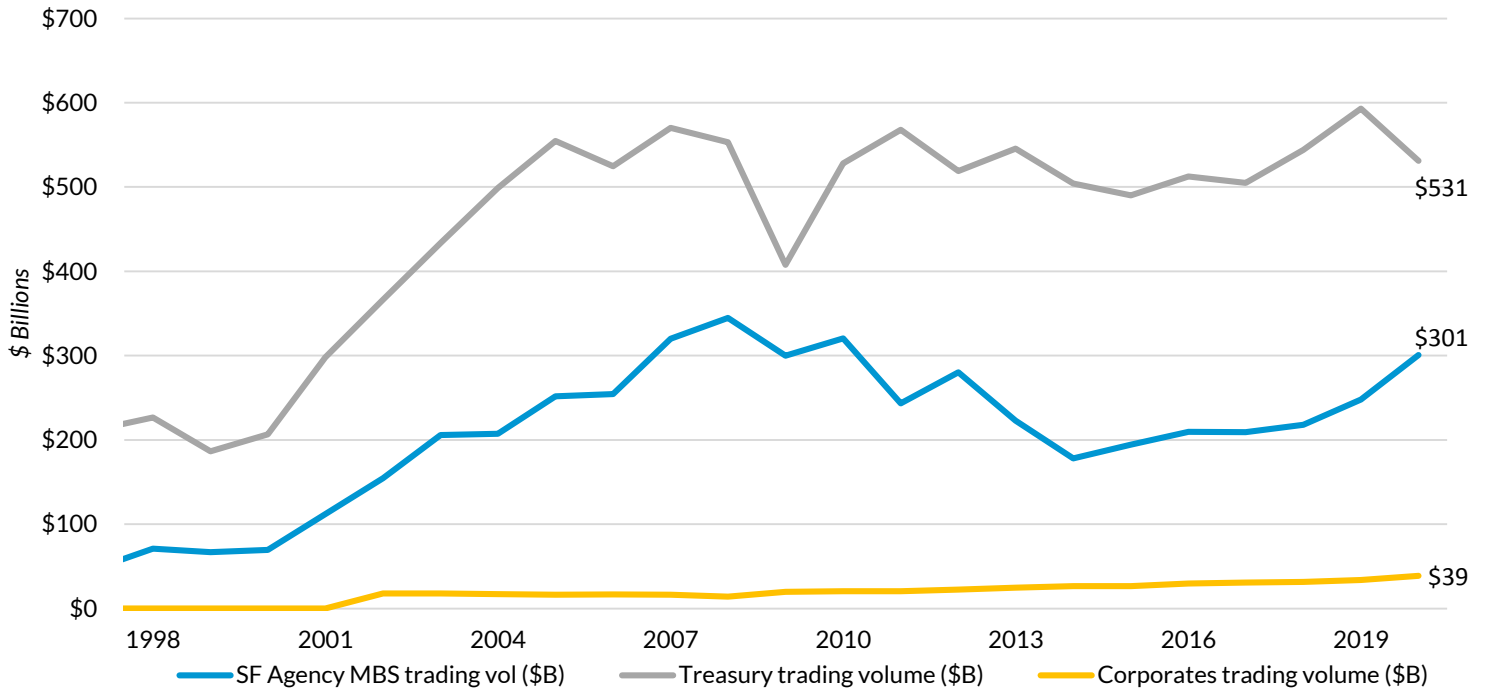


Sources: Ginnie Mae and Urban Institute. Note: Data as of January 2020.

Market Conditions

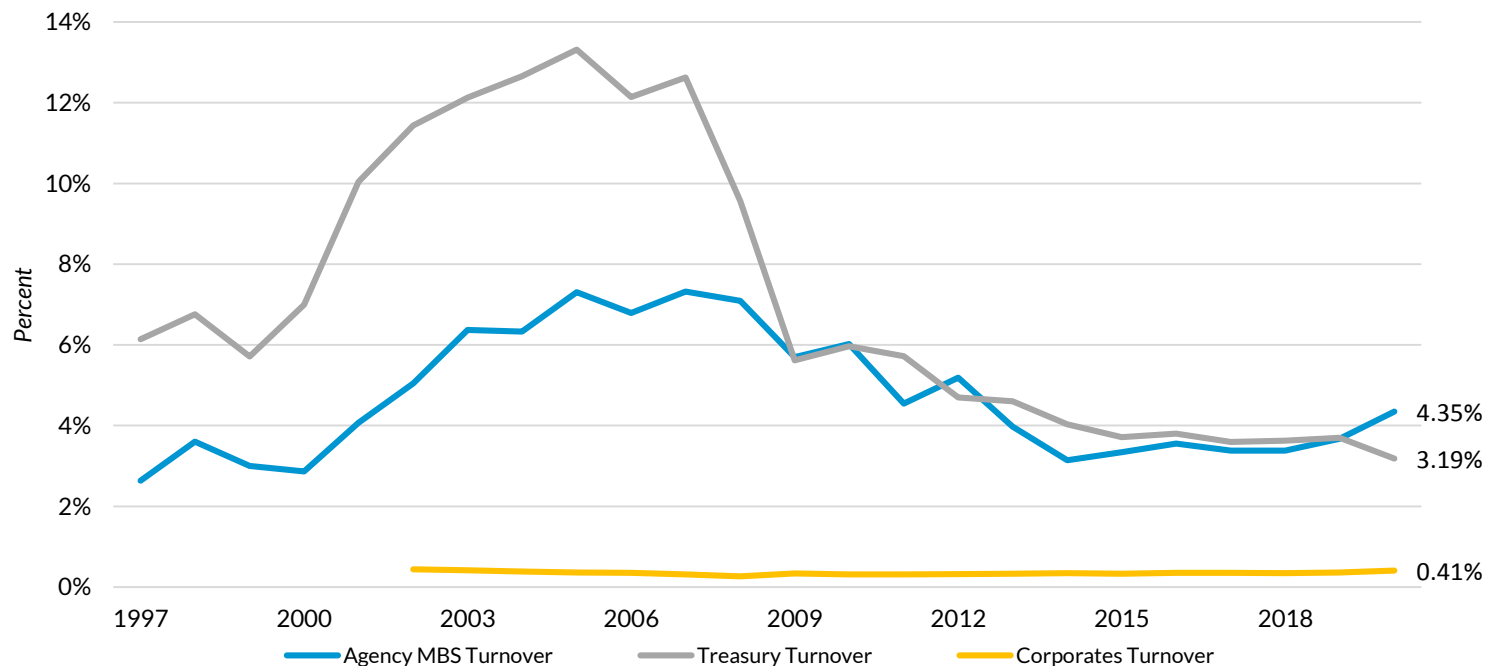
Agency MBS trading volume is \$301 billion/day on average in January 2020, more robust than in the 2014-2019 period, but still below the pre-crisis peak of \$345 billion in 2008. Average daily trading volume for Treasuries at the end of 2019 exceeded the pre-crisis peak but has now fallen back below 2008 levels. Agency MBS turnover in 2020 YTD also has been slightly higher than the 2014-2019 period; in 2020, average daily MBS turnover was 4.35 percent, above the 2019 average of 3.67 percent. Note that agency MBS turnover in January 2020 was 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 January 2020.

Average Daily Turnover by Sector

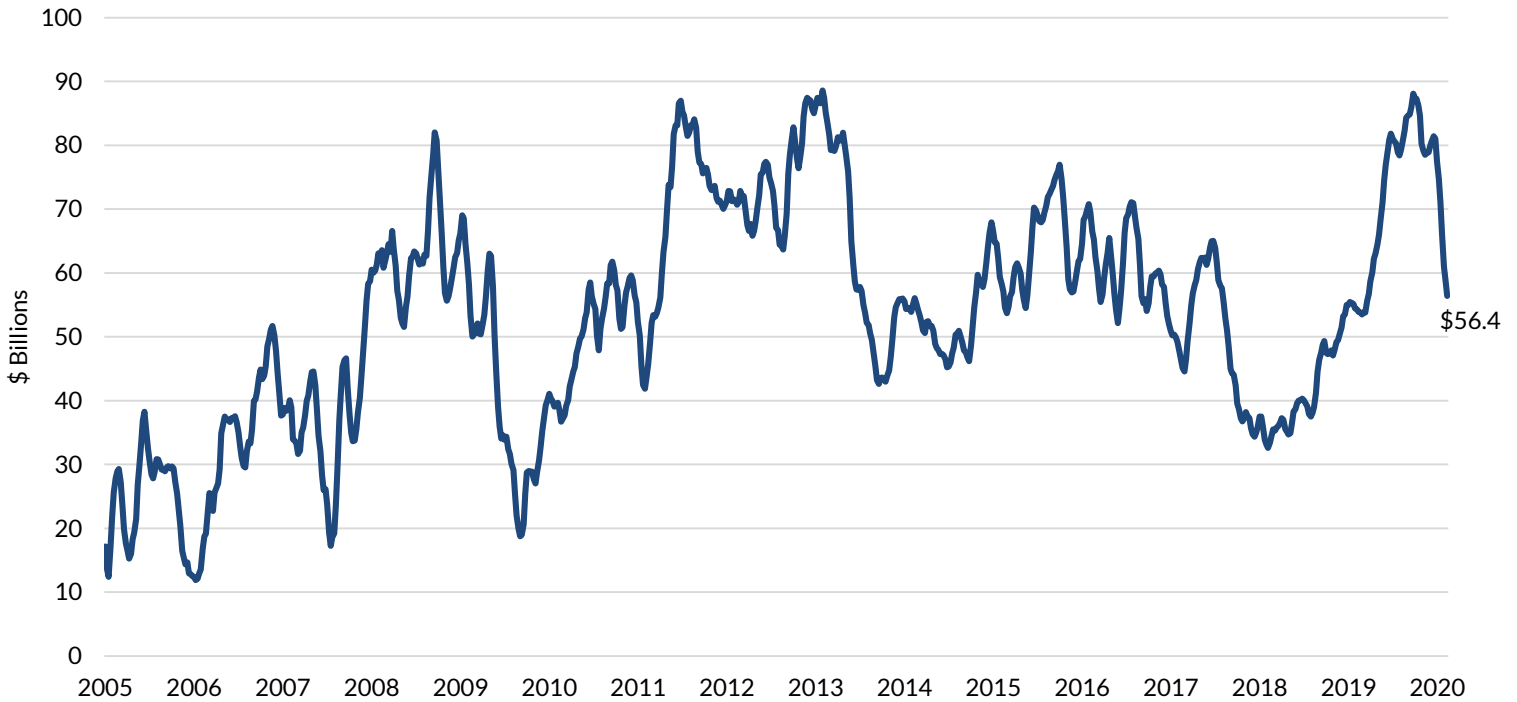


Sources: SIFMA and Urban Institute. Note: Data as of January 2020.

Market Conditions

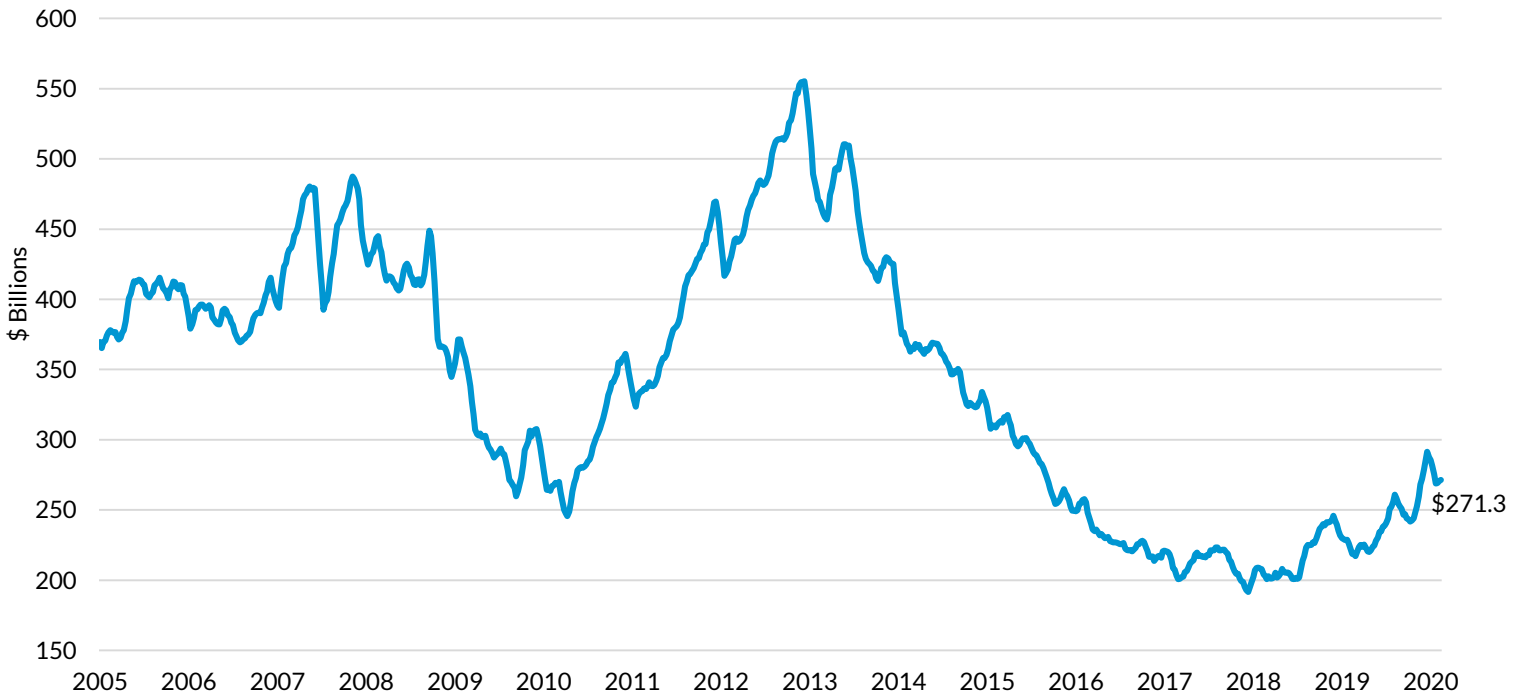
Dealer net positions are near their post-crisis average. By contrast, dealer gross positions have fallen dramatically. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

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 February 2020.

Repo Volume: Securities In



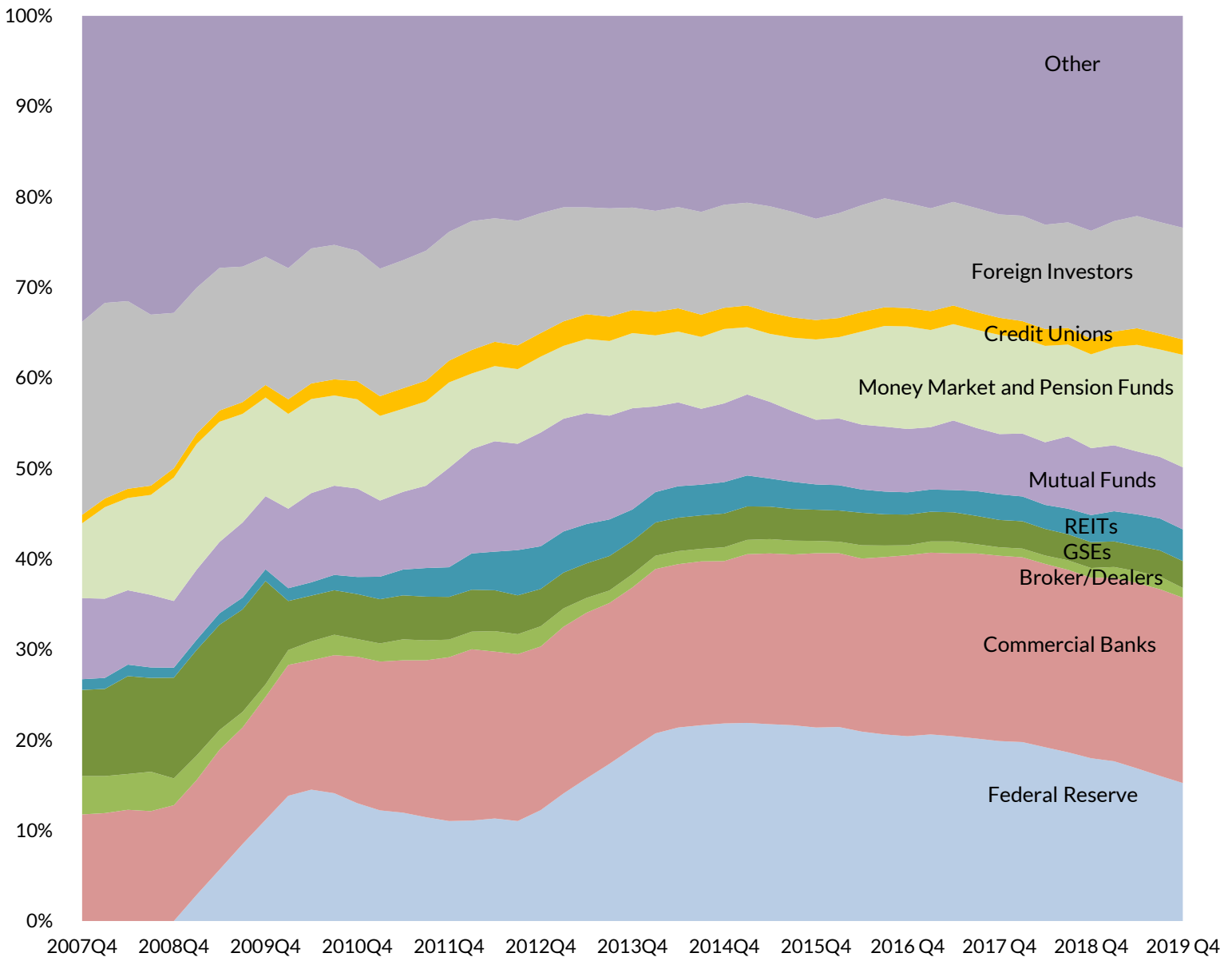
Sources: Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute. Note: Data as of February 2020.

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?

Share of Total Agency Debt by Owner

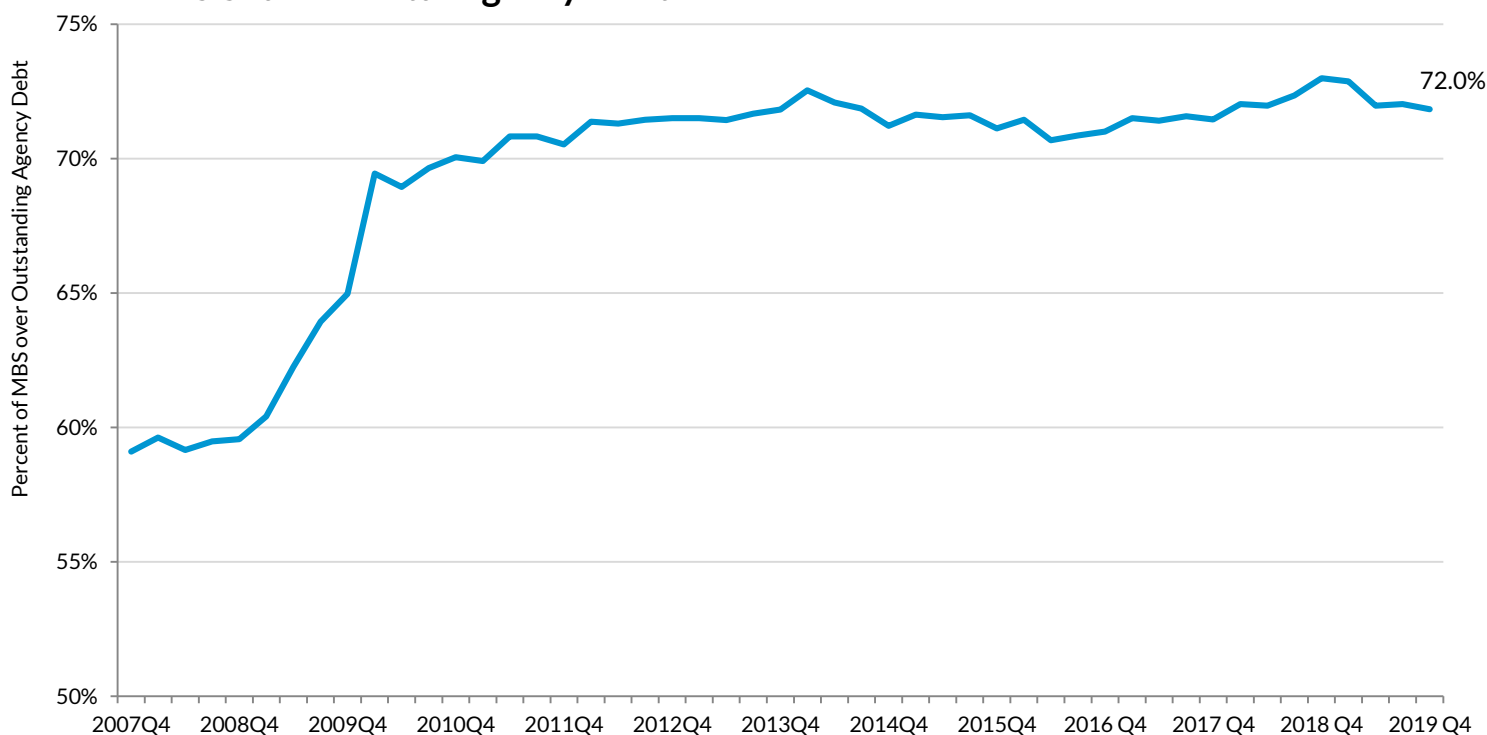


Sources: Federal Reserve Flow of Funds and Urban Institute. **Note:** The "other" category includes primarily life insurance companies, state and local govts, households, and nonprofits. Data as of Q4 2019.

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 \$2.1 trillion in holdings as of the end of February 2020, \$1.5 trillion was held by the top 25 domestic banks.

MBS Share of Total Agency Debt



Sources: Federal Reserve Flow of Funds and Urban Institute. Note: Data as of Q4 2019.

	Commercial Bank Holdings (\$Billions)								Week Ending			
	Jan-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Jan 29	Feb 5	Feb 12	Feb 19
Largest 25 Domestic Banks	1,394.9	1,464.4	1,471.3	1,495.3	1,508.6	1,529.1	1,507.9	1,526.9	1,548.8	1,550.0	1,528.8	1,531.5
Small Domestic Banks	485.3	506.0	506.2	511.5	515.4	520.5	528.9	534.4	534.0	537.3	537.6	537.6
Foreign Related Banks	26.0	29.6	33.8	34.7	36.5	37.4	37.0	38.0	39.0	40.4	39.8	38.7
Total, Seasonally Adjusted	1,906.2	2,000.0	2,011.3	2,041.5	2,060.5	2,087.0	2,073.8	2,099.3	2,121.8	2,127.7	2,106.2	2,107.8

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 February 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

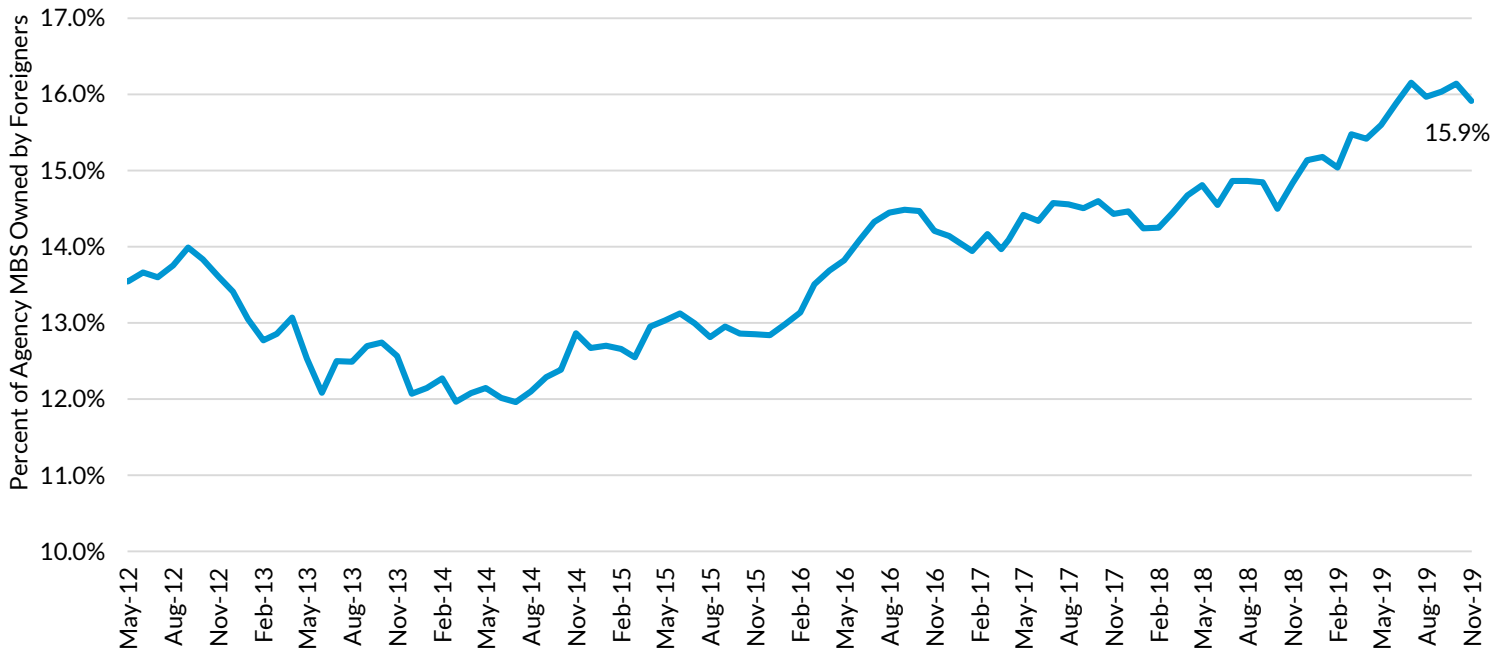
Top Bank & Thrift Residential MBS Investors		Total (\$MM)	GSE PT (\$MM)	GNMA PT (\$MM)	Agency REMIC (\$MM)	Non-Agency (\$MM)	Market Share
1	Bank of America Corporation	\$331,072	\$188,861	\$131,989	\$10,134	\$88	16.7%
2	Wells Fargo & Company	\$252,535	\$182,814	\$65,936	\$2,958	\$827	12.7%
3	JP Morgan 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

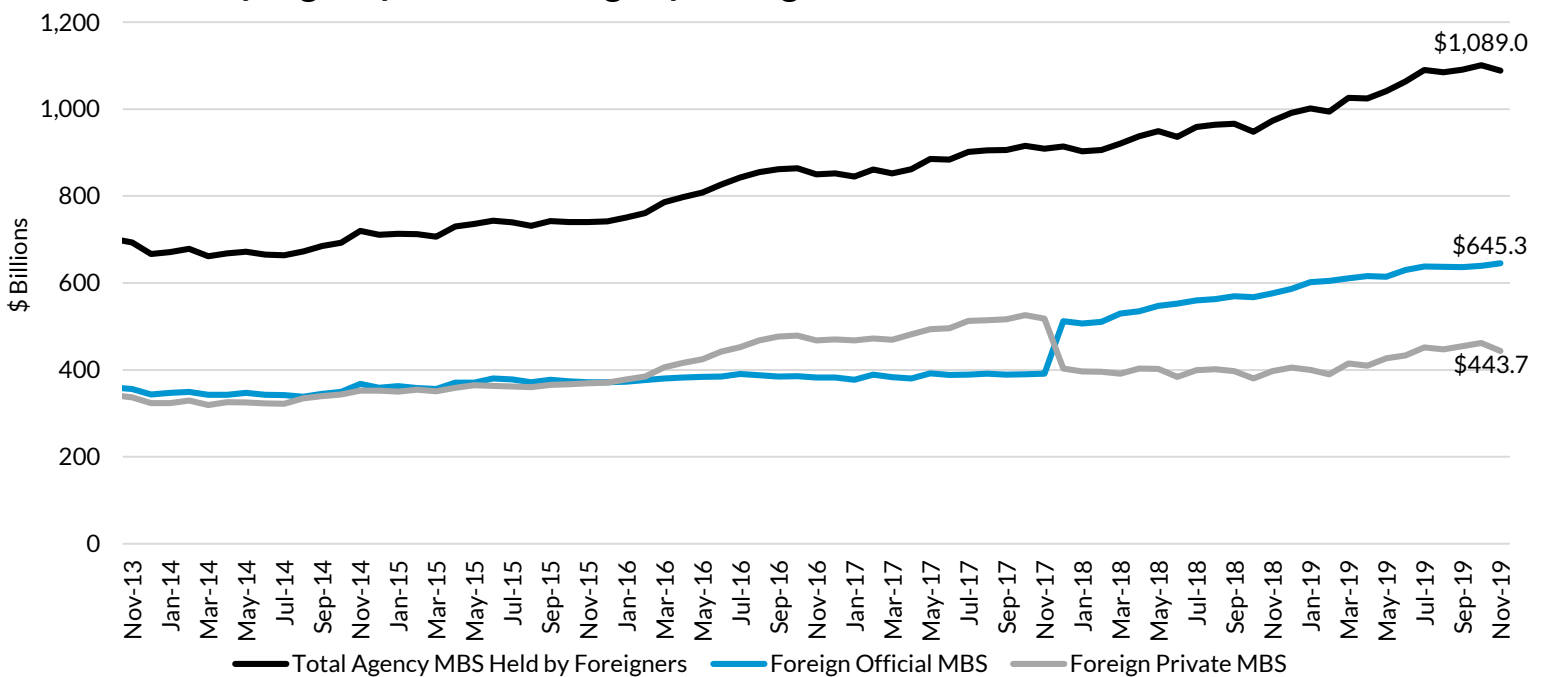
Foreign investors held 15.9 percent of agency MBS in November 2019, up from a low of 12.0 percent in July 2014. For the month of November 2019, this represents \$1.09 trillion in Agency MBS, \$444 billion held by foreign private institutions and \$645 billion held by foreign institutions.

Foreign Share of Agency MBS



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

Monthly Agency MBS Holdings by Foreigners



Sources: Treasury International Capital (TIC) and Urban Institute. Note: Data as of November 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 November 2019, we estimate Japan has increased their agency MBS holdings by \$40.9 billion, China has increased their holdings by \$57.6 billion and Taiwan has increased their holdings by \$10.9 billion.

Agency MBS+ Agency Debt

Country	Level of Holdings (\$Millions)*								Change in Holdings (\$Millions)*						
	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Oct-19	Nov-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Oct-19	Nov-19
Japan	257,547	254,511	271,999	284,322	296,445	311,043	315,885	298,043	-3,036	17,488	12,323	12,123	14,598	4,842	-17,842
Taiwan	250,009	250,639	261,262	265,992	265,520	263,011	262,781	260,893	630	10,623	4,730	-472	-2,509	-230	-1,888
China	180,635	190,203	188,921	208,540	227,312	233,778	234,745	237,757	9,568	-1,282	19,619	18,772	6,466	967	3,012
Ireland	46,817	48,220	48,020	46,623	44,850	41,374	39,672	42,108	1,403	-200	-1,397	-1,773	-3,476	-1,702	2,436
Luxembourg	36,372	38,800	50,869	44,561	46,328	46,606	41,034	41,083	2,428	12,069	-6,308	1,767	278	-5,572	49
South Korea	44,039	43,944	44,794	42,604	42,669	41,309	40,917	40,625	-95	850	-2,190	65	-1,360	-392	-292
Bermuda	27,866	27,610	28,777	28,450	29,286	29,183	28,697	28,345	-256	1,167	-327	836	-103	-486	-352
Cayman Islands	31,017	31,638	31,398	30,374	30,819	29,432	31,005	30,615	621	-240	-1,024	445	-1,387	1,573	-390
Malaysia	12,710	12,874	12,671	12,395	12,108	15,585	16,223	16,759	164	-203	-276	-287	3,477	638	536
Netherlands	11,995	12,229	9,601	9,400	13,548	10,546	10,909	10,829	234	-2,628	-201	4,148	-3,002	363	-80
Rest of World	125,197	128,807	128,323	130,053	128,049	135,460	143,846	144,683	3,610	-484	1,730	-2,004	7,411	8,386	837
Total	1,024,200	1,039,475	1,076,635	1,103,314	1,136,934	1,157,327	1,165,714	1,151,740	15,275	37,160	26,679	33,620	20,393	8,387	-13,974

Agency MBS Only (Estimates)

Country	Level of Holdings (\$Millions)*								Change in Holdings (\$Millions)*						
	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19	Oct-19	Nov-19	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Oct-19	Nov-19
Japan	253,972	250,851	268,150	280,394	293,002	307,681	312,631	294,863	-3,121	17,299	12,244	12,608	14,678	4,950	-17,767
Taiwan	249,773	250,397	261,008	265,733	265,293	262,789	262,566	260,683	624	10,611	4,725	-440	-2,504	-223	-1,883
China	176,345	185,811	184,302	203,827	223,181	229,743	230,840	233,941	9,466	-1,509	19,525	19,354	6,562	1,097	3,101
Ireland	37,832	39,021	38,346	36,751	36,197	32,923	31,493	34,116	1,189	-676	-1,594	-554	-3,274	-1,430	2,623
Luxembourg	34,012	36,384	48,328	41,968	44,055	44,386	38,886	38,984	2,372	11,944	-6,360	2,087	331	-5,501	98
South Korea	33,064	32,708	32,977	30,546	32,100	30,986	30,927	30,863	-356	269	-2,431	1,554	-1,113	-60	-63
Bermuda	24,969	24,644	25,658	25,267	26,496	26,458	26,060	25,768	-325	1,014	-391	1,229	-38	-398	-292
Cayman Islands	24,384	24,847	24,256	23,086	24,431	23,193	24,967	24,715	463	-591	-1,170	1,345	-1,238	1,774	-252
Malaysia	12,319	12,474	12,250	11,965	11,731	15,217	15,867	16,411	155	-224	-285	-234	3,486	650	544
Netherlands	11,437	11,658	9,000	8,787	13,011	10,021	10,401	10,333	221	-2,658	-213	4,224	-2,989	380	-68
Rest of World	95,510	98,414	96,359	97,436	99,460	107,538	116,822	118,278	2,904	-2,056	1,078	2,023	8,078	9,285	1,456
Total	953,612	967,209	1,000,632	1,025,760	1,068,956	1,090,935	1,101,459	1,088,956	13,597	33,423	25,128	43,196	21,979	10,524	-12,503

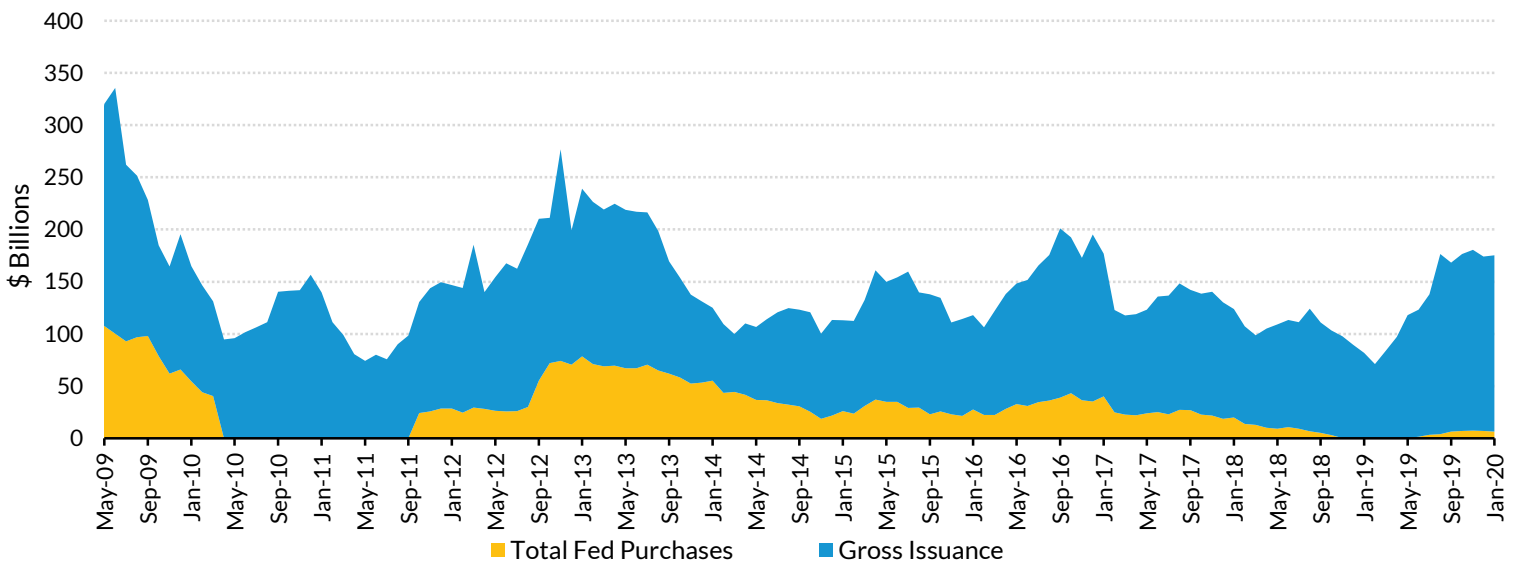
Sources :Treasury International Capital (TIC) and Urban Institute.

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 November 2019.

MBS Ownership

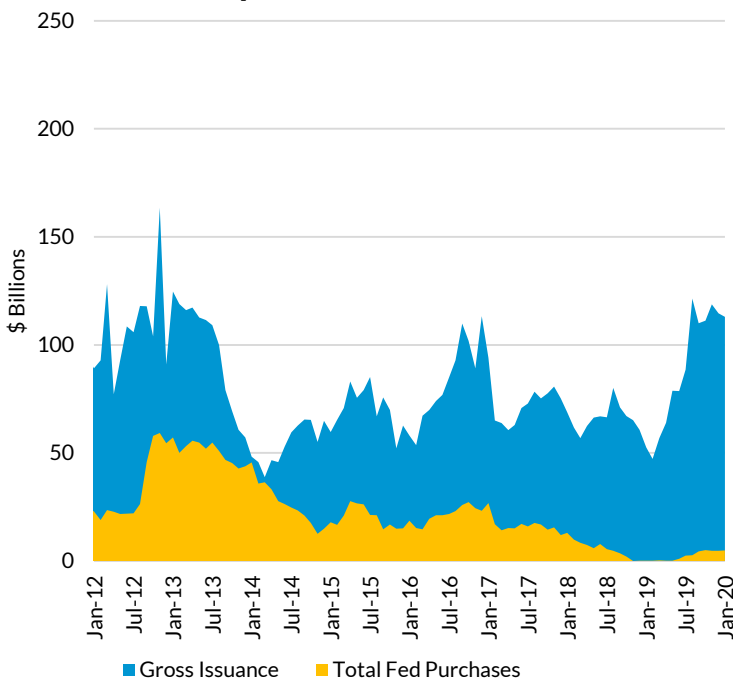
The Federal Reserve is actively winding down its mortgage portfolio; MBS purchases are very low. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross issuance. In October 2017, the Fed began to taper their mortgage holdings, initially letting securities run off at the rate of \$4 billion per month in Q4, 2017; \$8 billion per month in Q1, 2018; \$12 billion per month in Q2; \$16 billion per month in Q3; and \$20 billion per month in Q4, 2018 and thereafter. With the Fed now at its maximum taper, Fed absorption of gross issuance was 3.80 percent in January 2020.

Total Fed Absorption



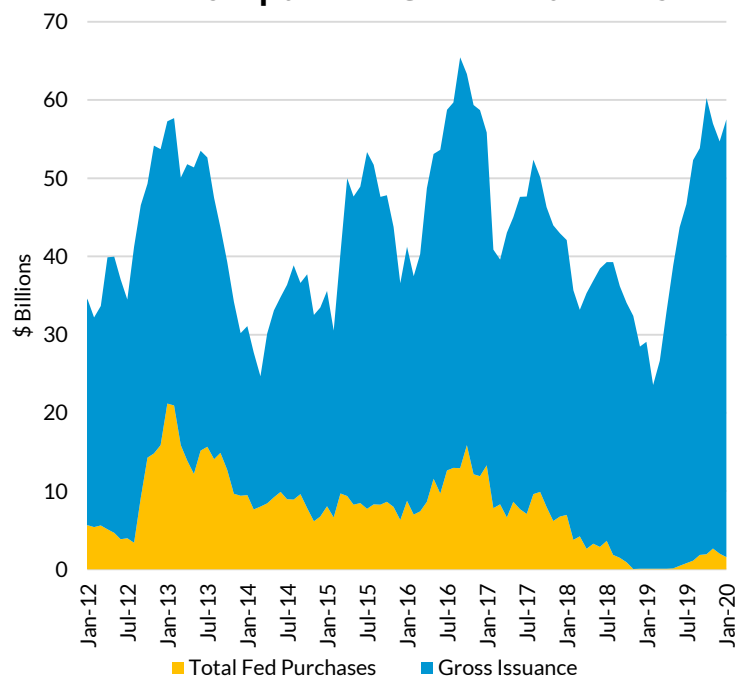
Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of January 2020.

Fed Absorption of GSE MBS



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

Fed Absorption of Ginnie Mae MBS



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

Disclosures

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